CONTRACT FOR CONSTRUCTION

THIS CONTRACT FOR CONSTRUCTION ("Contract") is made and entered into as of the date stated on the City's signature page below (the "Effective Date") by and between the CITY AND COUNTY OF DENVER, a municipal corporation of the State of Colorado acting on behalf of its Department of Aviation (the "City"), and PCL CONSTRUCTION SERVICES, INC., a Colorado corporation ("Contractor") (collectively the "Parties").

WITNESSETH

WHEREAS, the City, for at least three (3) consecutive days, advertised that proposals would be received for furnishing all labor, tools, supplies, equipment, materials and everything necessary and required for the construction and installation of task orders issued under Contract No. 202056250-00, Tunnel Sewer Repairs at Denver International Airport ("DEN"); and

WHEREAS, a bid in response to said advertisement has been received by the Chief Executive Officer of DEN (the "CEO"), who has recommended that a contract for the work be made and entered into with Contractor, which was the lowest, responsive, qualified bidder; and

WHEREAS, Contractor is qualified, willing, and able to perform the work in accordance with its proposal and the Contract Documents defined below;

NOW, THEREFORE, for and in consideration of the compensation to be paid by the City to Contractor and subject to the terms of this Contracts, the Parties agree as follows:

ARTICLE I. CONTRACT DOCUMENTS

It is agreed by the Parties that the instruments, drawings, and documents described below and whether attached to and bound with this Contract or not (the "Contract Documents"), are incorporated into the Contract by this reference, and are as fully a part of this Contract as if they were set out here verbatim and in full:

- Contract
- Notice to Proceed
- Form of Final Receipt
- Building Information Modeling ("BIM") if applicable
- Change Directives
- Change Orders
- Exhibit A Federal Appendices
- Exhibit B Equal Employment Opportunity Provisions
- Exhibit C Insurance Requirements
- Exhibit D Prevailing Wage Schedules
- Exhibit E Special Conditions
- Exhibit F Standard Specifications for Construction General Contract Conditions (2011 Edition) (the "Yellow Book") ("General Conditions") (Table of Contents attached as Exhibit F)
- Exhibit G Performance Bond

•	Exhibit H	Payment Bond

- Exhibit I Technical Specifications
- Exhibit J Contract Drawings
- Exhibit K Invitation for Bid and Contractor's Response

In the event of an irreconcilable conflict between a provision of Article I through XXXI of this Contract document and any other provisions of the Contract Documents such that it is impossible to give effect to both, the order of precedence to determine which document shall control to resolve such conflict is as follows, in descending order:

1.	Exhibit A	Federal	Appendices	3
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- 2. Contract
- 3. Exhibit K Invitation for Bid and Contractor's Response
- 4. Change Directives
- 5. Change Orders
- 6. Exhibit B Equal Employment Opportunity Provisions
- 7. Exhibit E Special Conditions
- 8. Exhibit F Standard Specifications for Construction General Contract Conditions

(2011 Edition) (the "Yellow Book") ("General Conditions")

(Table of Contents attached as Exhibit F)

- 9. Exhibit C Insurance Requirements
- 10. Exhibit D Prevailing Wage Schedules
- 11. Exhibit I Technical Specifications
- 12. Exhibit J Contract Drawings
- 13. Exhibit G Performance Bond
- 14. Exhibit H Payment Bond
- 15. Notice to Proceed
- 16. Form of Final Receipt
- 17. Building Information Modeling ("BIM") if applicable

The remaining order of precedence is established in General Conditions Title 4.

ARTICLE II. SCOPE OF WORK

Contractor shall furnish all labor and tools, supplies, equipment, superintendence, materials, and everything necessary for and required to do, perform, and complete all of the work described, drawn, set forth, shown, and included in the Contract Documents (the "Work"), including Alternatives 1, 2 and 3 as described in the Contract Documents.

ARTICLE III. TERM OF CONTRACT

The Senior Vice President of Aviation – Airport Infrastructure Management (the "SVP-AIM") will issue a written notice to proceed to Contractor (the "Notice to Proceed"), and Contractor shall begin performing the Work required under this Contract within ten (10) days of such Notice to Proceed (the "Commencement Date"). Contractor shall fully complete the Work in its entirety within 365 consecutive calendar days from the date of the Notice to Proceed

("Contract Time"). Contractor is not authorized to commence work prior to its receipt of the Notice to Proceed.

ARTICLE IV. TERMS OF PAYMENT

The City agrees to pay Contractor for the performance and completion of all of the Work as required by the Scope of Work and the Contract Documents, and Contractor agrees to accept as its full and only compensation therefor, a total amount of **Seven Million, Four Hundred and Twelve Thousand, One Hundred and Sixty-Five Dollars and No Cents (\$7,412,165.00)** (the "**Maximum Contract Amount**"). In no event will the City's liability exceed the Maximum Contract Amount, as adjusted by duly authorized Change Orders in accordance with this Contract. The Parties specifically agree that any performance by Contractor hereunder shall not subject the City to any cost, charge, or fee not specified above.

ARTICLE V. VERIFIED STATEMENT OF CLAIMS

Colorado Revised Statutes § 38-26-107 ("C.R.S.") requires that, in the event any person or company files a verified statement of amounts due and unpaid in connection with a claim for labor and materials supplied on this project, the City shall withhold from payments to Contractor sufficient funds to insure the payment of any such claims. Should the City be made a party to any lawsuit to enforce such unpaid claims or any lawsuit arising out of or relating to such withheld funds, Contractor agrees to pay to the City its costs and a reasonable attorney's fee incurred in any such lawsuit. Because the City Attorney Staff does not bill the City for legal services on an hourly basis, Contractor agrees a reasonable fee shall be computed at the rate of two hundred dollars and no cents (\$200.00) per hour of City Attorney time.

ARTICLE VI. DISPUTES

All disputes arising under or related to this Contract shall be resolved by administrative hearing under the procedures described in Denver Revised Municipal Code Section 5-17 ("**D.R.M.C.**") and all related rules and procedures. The determination resulting from said administrative hearing shall be final, subject only to Contractor's right to appeal the determination under Colorado Rule of Civil Procedure, Rule 106.

ARTICLE VII. DEFENSE AND INDEMNIFICATION

- **A.** To the fullest extent permitted by law, the Contractor hereby agrees to defend, indemnify, reimburse and hold harmless City, its appointed and elected officials, agents and employees for, from and against all liabilities, claims, judgments, suits or demands for damages to persons or property arising out of, resulting from, or related to the work performed under this Contract that are due to the negligence or fault of the Contractor or the Contractor's agents, representatives, subcontractors, or suppliers ("Claims"). This indemnity shall be interpreted in the broadest possible manner consistent with the applicable law to indemnify the City.
- **B.** Contractor's duty to defend and indemnify City shall arise at the time written notice of the Claim is first provided to City regardless of whether suit has been filed and even if Contractor is not named as a Defendant.

- C. Contractor will defend any and all Claims which may be brought or threatened against City and will pay on behalf of City any expenses incurred by reason of such Claims including, but not limited to, court costs and attorney fees incurred in defending and investigating such Claims or seeking to enforce this indemnity obligation, including but not limited to time expended by the City Attorney Staff, whose costs shall be computed at the rate specified in Article V. Such payments on behalf of City shall be in addition to any other legal remedies available to City and shall not be considered City's exclusive remedy.
- **D.** Insurance coverage requirements specified in this Contract shall in no way lessen or limit the liability of the Contractor under the terms of this indemnification obligation. The Contractor shall obtain, at its own expense, any additional insurance that it deems necessary for the City's protection.
- **E.** This defense and indemnification obligation shall survive the expiration or termination of this Contract.

ARTICLE VIII. WAIVER OF C.R.S. § 13-20-801, et seq.

Notwithstanding any other provision of this Contract, Contractor specifically waives all of the provisions of C.R.S. §§ 13-20-801 *et seq.* as they may relate to Contractor's performance under this Contract.

ARTICLE IX. LIQUIDATED DAMAGES

If Contractor fails to achieve Substantial Completion of the Work within the Contract Time or fails to substantially complete the Work described in the Scope of Work within the time set forth in the Special Conditions, the City will suffer substantial damages, which damages would be difficult to accurately determine. The Parties hereto have considered the possible elements of damages and have agreed that the amount of liquidated damages for Contractor's failure to substantially complete the work within the Contract Time shall be \$1,500.00 per day as further provided in the Special Conditions.

If Contractor shall fail to pay such liquidated damages promptly upon demand therefor, the Surety on its Performance Bond and Payment Bond shall pay such damages. Also, the City may withhold all, or any part of, such liquidated damages from any payment due Contractor. Additional provisions relating to liquidated damages are set forth in the Construction Contract General Conditions and Special Conditions.

ARTICLE X. INSURANCE REQUIREMENTS

- **A.** Contractor shall obtain and keep in force all of the minimum insurance coverage forms and amounts set forth in *Exhibit C* ("Insurance Requirements") during the entire term of this Contract, including any extensions of the Contract or other extended period stipulations stated in *Exhibit C*. All certificates of insurance and any required endorsements must be received and approved by DEN Risk Management before any airport access or work commences.
- **B.** Unless specifically excepted in writing by DEN Risk Management, if Contractor shall be using subcontractors to provide any part of the services under this Contract, Contractor shall do

one of the following:

- 1. Include all subcontractors performing services hereunder as insureds under its required insurance and specifically list on all submitted certificates of insurance required under *Exhibit C*; or
- 2. Ensure that each subcontractor provides its own insurance coverage in accordance with the requirements set forth in this Contract.
- C. The City in no way warrants or represents the minimum limits contained herein are sufficient to protect Contractor from liabilities arising out of the performance of the terms and conditions of this Contract by Contractor, its agents, representatives, employees, or subcontractors. Contractor shall assess its own risks and maintain higher limits and/or broader coverage as it deems appropriate and/or prudent. Contractor is not relieved of any liability or other obligations assumed or undertaken pursuant to this Contract by reason of its failure to obtain or maintain insurance in sufficient amounts, duration, or types.
- **D.** In no event shall the City be liable for any of the following: (i) business interruption or other consequential damages sustained by Contractor; (ii) damage, theft, or destruction of Contractor's inventory, or property of any kind; or (iii) damage, theft, or destruction of an automobile, whether or not insured.
- **E.** The Parties understand and agree that the City, its elected and appointed officials, employees, agents and volunteers are relying on, and do not waive or intend to waive by any provisions of this Contract, the monetary limitations and any other rights, immunities and protections provided by the Colorado Governmental Immunity Act, C.R.S. §§ 24-10-101, *et seq.*, or otherwise available to the City, its elected and appointed officials, employees, agents and volunteers.

ARTICLE XI. CONTRACT BINDING

It is agreed that this Contract shall be binding on and inure to the benefit of the Parties hereto, their heirs, executors, administrators, assigns, and successors.

ARTICLE XII. SEVERABILITY

If any part, portion, or provision of this Contract shall be found or declared null, void, or unenforceable for any reason whatsoever by any court of competent jurisdiction or any governmental agency having authority thereover, only such part, portion, or provision shall be affected thereby and all other parts, portions, and provisions of this Contract shall remain in full force and effect.

ARTICLE XIII. ASSIGNMENT

Contractor shall not assign, pledge or transfer its duties, obligations, and rights under this Contract, in whole or in part, without first obtaining the written consent of the CEO or his/her authorized representative. Any attempt by Contractor to assign or transfer its rights hereunder without such prior written consent shall, at the option of the CEO or his/her authorized

representative, automatically terminate this Contract and all rights of Contractor hereunder.

ARTICLE XIV. APPROPRIATIONS

Payment will be in accordance with the provisions of the Contract Documents, including Title 9 of the General Conditions, and will be made solely and exclusively from funds appropriated and otherwise lawfully made available for the purposes of this Contract from the City and County of Denver Airport System Funds. The City has no obligation to make payments from any other fund or source or to make additional appropriations or allocations to such fund to satisfy such costs or other obligations.

ARTICLE XV. APPROVALS

In the event this Contract calls for the payment by the City of Five Million Dollars and no cents (\$5,000,000.00) or more, approval by the Denver City Council, acting by Resolution in accordance with Section 3.2.6 of the Charter of the City and County of Denver, is and shall be an express condition precedent to the lawful and binding execution and performance of this Contract.

ARTICLE XVI. JOINT VENTURE

If Contractor is a Joint Venture, the partners to the Joint Venture shall be jointly and severally liable to the City for the performance of all duties and obligations of Contractor which are set forth in the Contract.

ARTICLE XVII. NO DISCRIMINATION IN EMPLOYMENT

In connection with the performance of work under this Contract, Contractor agrees not to refuse to hire, discharge, promote or demote, or to discriminate in matters of compensation against any person otherwise qualified, solely because of race, color, religion, national origin, gender, age, military status, sexual orientation, gender variance, marital status, or physical or mental disability; and Contractor further agrees to insert the foregoing provision in all subcontracts hereunder.

ARTICLE XVIII. COORDINATION OF SERVICES

Contractor agrees to perform its work under this Contract in accordance with the operational requirements of DEN, and all work and movement of personnel or equipment on areas included within the DEN site shall be subject to the regulations and restrictions established by the City or its authorized agents.

ARTICLE XIX. COMPLIANCE WITH ALL LAWS AND REGULATIONS

Contractor and its subcontractor(s) shall perform all work under this Contract in compliance with all existing and future applicable laws, rules, regulations and codes of the United States and the State of Colorado and with the Charter, ordinances and rules and regulations of the City.

ARTICLE XX. PROMPT PAYMENT

- **A.** The City will make monthly progress payments to the Contractor for all services performed under this Contract based upon the Contractor's monthly invoices. Such invoices shall be in a form acceptable to the City and shall include detail of the time worked by the Contractor's own personnel, billings from subcontractors, and all other information necessary to assess the Contractor's progress. Invoices shall be accompanied by documentation of expenses for which reimbursement is sought, and all other supporting documentation required by the City. The City's Prompt Payment Ordinance, §§ 20-107 to 20-118, D.R.M.C., applies to invoicing and payment under this Contract.
- **B.** Final Payment to the Contractor shall not be made until after the Project is accepted, and all certificates of completion, record drawings and reproducible copies are delivered to the City, and the Contract is otherwise fully performed by the Contractor. The City may, at the discretion of the Director, withhold reasonable amounts from billing and the entirety of the final payment until all such requirements are performed to the satisfaction of the Director. However, no deductions shall be made from the Contractor's compensation because of penalty, liquidated damages or other sums withheld from payments to contractor(s).
- C. For contracts of one million dollars (\$1,000,000.00) and over, the Contractor is required to comply with the Contractor Prompt Payment provisions under § 28-72, D.R.M.C., with regard to payments by the Contractor to MWBE subcontractors. The Contractor shall make payment by no later than thirty-five (35) days from receipt by the Contractor of the subcontractor's invoice.

ARTICLE XXI. OWNERSHIP AND DELIVERABLES.

Upon payment to Contractor, all records, data, deliverables, and any other work product prepared by Contractor or any custom development work performed by Contractor for the purpose of performing this Contract on or before the day of payment shall become the sole property of the City. Upon request by the City, or based on any schedule agreed to by Contractor and the City, Contractor shall provide the City with copies of the data/files that have been uploaded to any database maintained by or on behalf of Contractor or otherwise saved or maintained by Contractor as part of the services provided to the City under this Contract. All such data/files shall be provided to the City electronically in a format agreed to by the Parties. Contractor also agrees to allow the City to review any of the procedures Contractor uses in performing any work or other obligations under this Contract, and to make available for inspection any and all notes, documents, materials, and devices used in the preparation for or performance of any of the scope of work, for up to six (6) years after termination of this Contract. Upon written request from the City, Contractor shall deliver any information requested pursuant to this Article within ten (10) business days in the event a schedule or otherwise agreed-upon timeframe does not exist.

ARTICLE XXII. COLORADO OPEN RECORDS ACT

A. Contractor acknowledges that the City is subject to the provisions of the Colorado Open Records Act ("CORA"), C.R.S. §§ 24-72-201 *et seq.*, and Contractor agrees that it will fully cooperate with the City in the event of a request or lawsuit arising under such act for the disclosure of any materials or information which Contractor asserts is confidential or otherwise exempt from

disclosure. Any other provision of this Contract notwithstanding, all materials, records, and information provided by Contractor to the City shall be considered confidential by the City only to the extent provided in CORA, and Contractor agrees that any disclosure of information by the City consistent with the provisions of CORA shall result in no liability of the City.

B. In the event of a request to the City for disclosure of such information, time and circumstances permitting, the City will make a good faith effort to advise Contractor of such request in order to give Contractor the opportunity to object to the disclosure of any material Contractor may consider confidential, proprietary, or otherwise exempt from disclosure. In the event Contractor objects to disclosure, the City, in its sole and absolute discretion, may file an application to the Denver District Court for a determination of whether disclosure is required or exempted. In the event a lawsuit to compel disclosure is filed, the City may tender all such material to the court for judicial determination of the issue of disclosure. In both situations, Contractor agrees it will either waive any claim of privilege or confidentiality or intervene in such legal process to protect materials Contractor does not wish disclosed. Contractor agrees to defend, indemnify, and hold harmless the City, its officers, agents, and employees from any claim, damages, expense, loss, or costs arising out of Contractor's objection to disclosure, including prompt reimbursement to the City of all reasonable attorney's fees, costs, and damages the City may incur directly or may be ordered to pay by such court, including but not limited to time expended by the City Attorney Staff, whose costs shall be computed at the rate specified in Article V.

ARTICLE XXIII. EXAMINATION OF RECORDS AND AUDITS

A. Any authorized agent of the City, including the City Auditor or his or her representative, has the right to access, and the right to examine, copy and retain copies, at City's election in paper or electronic form, any pertinent books, documents, papers and records related to Contractor's performance pursuant to this Contract, provision of any goods or services to the City, and any other transactions related to this Contract. Contractor shall cooperate with City representatives and City representatives shall be granted access to the foregoing documents and information during reasonable business hours and until the latter of six (6) years after the final payment under the Contract or expiration of the applicable statute of limitations. When conducting an audit of this Contract, the City Auditor shall be subject to government auditing standards issued by the United States Government Accountability Office by the Comptroller General of the United States, including with respect to disclosure of information acquired during the course of an audit. No examination of records and audits pursuant to this paragraph shall require Contractor to make disclosures in violation of state or federal privacy laws. Contractor shall at all times comply with D.R.M.C. § 20-276.

B. Additionally, Contractor agrees until the expiration of six (6) years after the final payment under this Contract, any duly authorized representative of the City, including the CEO or his or her representative, shall have the right to examine any pertinent books, documents, papers and records of Contractor related to Contractor's performance of this Contract, including communications or correspondence related to Consultant's performance, without regard to whether the work was paid for in whole or in part with federal funds or was otherwise related to a federal grant program.

C. In the event the City receives federal funds to be used toward the services performed under this Contract, the Federal Aviation Administration ("FAA"), the Comptroller General of the United States and any other duly authorized representatives shall have access to any books, documents, papers and records of Contractor which are directly pertinent to a specific grant program for the purpose of making audit, examination, excerpts and transcriptions. Contractor further agrees that such records will contain information concerning the hours and specific services performed along with the applicable federal project number.

ARTICLE XXIV. PREVAILING WAGE REQUIREMENTS

A. Contractor shall comply with, and agrees to be bound by, all requirements, conditions and determinations of the City regarding the Payment of Prevailing Wages Ordinance, D.R.M.C. §§20-76 through 20-79, including, but not limited to, the requirement that every covered worker working on a City-owned or leased building or on City-owned land shall be paid no less than the prevailing wages and fringe benefits in effect on the date the bid or request for proposal was advertised. In the event a request for bids, or a request for proposal, was not advertised, Contractor shall pay every covered worker no less than the prevailing wages and fringe benefits in effect on the date funds for the contract were encumbered.

Date bid or proposal issuance was advertised November 20, 2020.

If contract opportunity was not advertised, date of written encumbrance N/A

- **B.** Certain initial Prevailing Wage Schedules are attached as *Exhibit D*. Other rates may apply based on the work performed. Prevailing wage and fringe rates will adjust on the yearly anniversary of the actual date of bid or proposal issuance, if applicable, or the date of the written encumbrance if no bid/proposal issuance date is applicable. Unless expressly provided for in this Contract, Contractor will receive no additional compensation for increases in prevailing wages or fringe rates.
- C. Contractor shall provide the Auditor of the City and County of Denver with a list of all subcontractors providing any services under the Contract.
- **D.** Contractor shall provide the Auditor with electronically-certified payroll records for all covered workers employed under the Contract in a manner specified by the Auditor.
- E. Contractor shall prominently post at the work site the current prevailing wage and fringe rates. The posting must inform workers that any complaints regarding the payment of prevailing wages or fringe benefits may be submitted to the Denver Auditor by calling 720-913-5000 or emailing auditor@denvergov.org.
- **F.** If Contractor fails to pay workers as required by the Prevailing Wage Ordinance, Contractor will not be paid until documentation of payment satisfactory to the Auditor has been provided. The Auditor may enforce the Prevailing Wage Ordinance in a manner provided by law, including the Prevailing Wage Ordinance. The City also may, by written notice, suspend or terminate work if Contractor fails to pay required wages and fringe rates.

ARTICLE XXV. MINIMUM WAGE REQUIREMENTS

To the extent required by law, Contractor shall comply with and agrees to be bound by all requirements, conditions, and City determinations regarding the City's Minimum Wage Ordinance, D.R.M.C. §§ 20-82 through 20-84, including, but not limited to, the requirement that every covered worker shall be paid no less than the City Minimum Wage in accordance with the City's Minimum Wage Ordinance. By executing this Contract, Contractor expressly acknowledges that Contractor is aware of the requirements of the City's Minimum Wage Ordinance and that any failure by Contractor, or any other individual or entity acting subject to this Contract, to strictly comply with the foregoing D.R.M.C. Sections shall result in the penalties and other remedies authorized therein.

ARTICLE XXVI. COMPLIANCE WITH MINORITY/WOMEN BUSINESS ENTERPRISE REQUIREMENTS

A. This Contract is subject to Article III, Divisions 1 and 3 of Chapter 28, Denver Revised Municipal Code ("**D.R.M.C.**"), designated as §§ 28-31 to 28-40 and 28-51 to 28-90 (the "MWBE Ordinance") and any Rules or Regulations promulgated pursuant thereto. The contract goal for MWBE participation established for this Contract by the Division of Small Business Opportunity ("**DSBO**") is 18 %.

B. Under § 28-68, D.R.M.C., Contractor has an ongoing, affirmative obligation to maintain for the duration of this Contract, at a minimum, compliance with its originally achieved level of MWBE participation upon which this Contract was awarded, unless the City initiates a material alteration to the scope of work affecting MWBEs performing on this Contract through change order, contract amendment, force account, or as otherwise described in § 28-70, D.R.M.C. Contractor acknowledges that:

- 1. If directed by DSBO, Contractor is required to develop and comply with a Utilization Plan in accordance with § 28-62, D.R.M.C. Along with the Utilization Plan requirements, Contractor must establish and maintain records and submit regular reports, as directed by DSBO, which will allow the City to assess progress in complying with the Utilization Plan and achieving the MWBE participation goal. The Utilization Plan is subject to modification by DSBO.
- 2. If change orders or any other contract modifications are issued under the Contract, Contractor shall have a continuing obligation to immediately inform DSBO in writing of any agreed upon increase or decrease in the scope of work of such contract, upon any of the bases discussed in § 28-70, D.R.M.C., regardless of whether such increase or decrease in scope of work has been reduced to writing at the time of notification.
- 3. If change orders or other amendments or modifications are issued under the contract that include an increase in the scope of work of this Contract, whether by amendment, change order, force account or otherwise, which increases the dollar value of the contract, whether or not such change is within the scope of work designated for performance by an MWBE at the time of contract award, such change orders or contract modification shall be immediately submitted to DSBO for notification purposes.
- 4. Those amendments, change orders, force accounts or other contract modifications that

involve a changed scope of work that cannot be performed by existing project subcontractors are subject to the original contract goal. Contractor shall satisfy the goal with respect to such changed scope of work by soliciting new MWBEs in accordance with § 28-70, D.R.M.C. Contractor must also satisfy the requirements under §§ 28-60 and 28-73, D.R.M.C., with regard to changes in scope or participation. Contractor shall supply to the DSBO Director all required documentation described in §§ 28-60, 28-70, and 28-73 D.R.M.C. with respect to the modified dollar value or work under the contract.

- 5. Failure to comply with these provisions may subject Contractor to sanctions set forth in § 28-76 of the MWBE Ordinance.
- 6. Should any questions arise regarding specific circumstances, Contractor should consult the MWBE Ordinance or may contact the Project's designated DSBO representative at (720) 913-1999.

ARTICLE XXVII. SENSITIVE SECURITY INFORMATION

Contractor acknowledges that, in the course of performing its work under this Contract, Contractor may be given access to Sensitive Security Information ("SSI"), as material is described in the Code of Federal Regulations, 49 C.F.R. Part 1520. Contractor specifically agrees to comply with all requirements of the applicable federal regulations, including but not limited to, 49 C.F.R. Parts 15 and 1520. Contractor understands any questions it may have regarding its obligations with respect to SSI must be referred to the DEN's Security Office.

ARTICLE XXVIII. DEN SECURITY

- A. Contractor, its officers, authorized officials, employees, agents, subcontractors, and those under its control, shall comply with safety, operational, or security measures required of Contractor or the City by the FAA or TSA. If Contractor, its officers, authorized officials, employees, agents, subcontractors or those under its control, fail or refuse to comply with said measures and such noncompliance results in a monetary penalty being assessed against the City, then, in addition to any other remedies available to the City, Contractor shall fully reimburse the City any fines or penalties levied against the City, and any attorney fees or related costs paid by the City as a result of any such violation. Contractor must pay this amount within fifteen (15) days from the date of the invoice or written notice. Any fines and fees assessed by the FAA or TSA against the City due to the actions of Contractor and/or its agents will be deducted directly from the invoice for that billing period.
- **B.** Contractor is responsible for compliance with Airport Security regulations and 49 C.F.R. Parts 1542 (Airport Security) and 14 C.R.F. Parts 139 (Airport Certification and Operations). Any and all violations pertaining to Parts 1542 and 139 resulting in a fine will be passed on to and borne by Contractor. The fee/fine will be deducted from the invoice at time of billing.

ARTICLE XXIX. FEDERAL RIGHTS

A. This Contract is subject and subordinate to the terms, reservations, restrictions and conditions of any existing or future contracts between the City and the United States, the execution

of which has been or may be required as a condition precedent to the transfer of federal rights or property to the City for airport purposes, and the expenditure of federal funds for the extension, expansion or development of the Denver Municipal Airport System.

- 1. General Civil Rights: Contractor agrees to comply with pertinent statutes, Executive Orders and such rules as are promulgated to ensure that no person shall, on the grounds of race, creed, color, national origin, sex, age, or disability be excluded from participating in any activity conducted with or benefiting from Federal Assistance. This provision binds Contractor and subtier contractors from the bid solicitation period through the completion of the contract. This provision is in addition to that required of Title VI of the Civil Rights Act of 1964.
- 2. Federal Fair Labor Standards Act: This Contract incorporates by reference the provisions of 29 C.F.R. Part 201, the Federal Fair Labor Standards Act ("FLSA"), with the same force and effect as if given in full text. The FLSA sets minimum wage, overtime pay, recordkeeping, and child labor standards for full and part-time workers. Contractor agrees to incorporate by reference the provisions of FLSA in all contracts and subcontracts resulting from this Contract. Contractor has full responsibility to monitor compliance to the referenced regulation. Contractor must address any claims or disputes arising from this requirement directly with the U.S. Department of Labor Wage and Hour Division.
- 3. Occupational Safety and Health Act: This Contract incorporates by reference the requirements of 29 C.F.R. Part 1910 with the same force and effect as if given in full text. Contractor must provide a work environment that is free from recognized hazards that may cause death or serious physical harm to the employee. Contractor retains full responsibility to monitor its compliance and any subcontractor's compliance with the applicable requirements of the Occupational Safety and Health Act of 1970 (29 C.F.R. Part 1910). Contractor must address any claims or disputes that pertain to a referenced requirement directly with the U.S. Department of Labor Occupational Safety and Health Administration.
- 4. Contractor covenants it will include the provisions of this section in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Federal Acts, Regulations and directives issued pursuant thereto. Contractor covenants it will take action with respect to any subcontract or procurement as City or the FAA may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if Contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, Contractor may request City to enter into any litigation to protect the interests of City. In addition, Contractor may request the United States to enter into the litigation to protect the interests of the United States.

ARTICLE XXX. CITY EXECUTION OF CONTRACT

This Contract is expressly subject to, and shall become effective upon, the execution of all signatories of the City and, if required, the approval of Denver City Council. This Contract may

be executed in two or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same.

ARTICLE XXXI. ELECTRONIC SIGNATURES AND ELECTRONIC RECORDS

The Contract, and any other documents requiring a signature hereunder, may be signed electronically by the City and/or Contractor in the manner specified by the City. The Parties agree not to deny the legal effect or enforceability of the Contract solely because it is in electronic form or because an electronic record was used in its formation. The Parties agree not to object to the admissibility of the Contract in the form of an electronic record, or a paper copy of an electronic document, or a paper copy of a document bearing an electronic signature, on the ground that it is an electronic record or electronic signature or that it is not in its original form or is not an original.

[END OF PAGE]

Contract Control Number: PLANE-202056250-00

Contractor Name:	PCL CONSTRUCTION SERVICES, INC.	
N WITNESS WHEREOF, the par Denver, Colorado as of:	ties have set their hands and affixed their seals at	
SEAL	CITY AND COUNTY OF DENVER:	
ATTEST:	By:	
APPROVED AS TO FORM:	REGISTERED AND COUNTERSIGNED:	
Attorney for the City and County of	Denver	
By:	By:	
	By:	

Contract Control Number: Contractor Name:

PLANE-202056250-00 PCL CONSTRUCTION SERVICES, INC.

DocuSigned by:			
By:			
Бу			
Ryan Schmidt Name:			
(please print)			
Title:District Manager			
(please print)			
ATTEST: [if required]			
DocuSigned by:			
By: David Clarke			
E03F80A8054F480			
David Clarke Name:			
Name:(please print)			
Title: Assistant Secretary			
(please print)			

EXHIBIT A

Standard Federal Assurances and Nondiscrimination Non-Federal Contract Provision

A5 CIVIL RIGHTS - GENERAL

A5.3.1 Clause that is used for Contracts

GENERAL CIVIL RIGHTS PROVISIONS

The Contractor agrees to comply with pertinent statutes, Executive Orders and such rules as are promulgated to ensure that no person shall, on the grounds of race, creed, color, national origin, sex, age, or disability be excluded from participating in any activity conducted with or benefiting from Federal assistance.

This provision binds the Contractor and subcontractors from the bid solicitation period through the completion of the contract. This provision is in addition to that required by Title VI of the Civil Rights Act of 1964.

A6 CIVIL RIGHTS - TITLE VI ASSURANCE

A6.3.1 Title VI Solicitation Notice

Title VI Solicitation Notice:

The (Name of Sponsor), in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 USC §§ 2000d to 2000d-4) and the Regulations, hereby notifies all bidders or offerors that it will affirmatively ensure that any contract entered into pursuant to this advertisement, [select disadvantaged business enterprises or airport concession disadvantaged business enterprises] will be afforded full and fair opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award.

A6.4 CONTRACT CLAUSES

A6.4.1 Title VI Clauses for Compliance with Nondiscrimination Requirements

Compliance with Nondiscrimination Requirements:

During the performance of this contract, the Contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "Contractor"), agrees as follows:

- 1. **Compliance with Regulations:** The Contractor (hereinafter includes consultants) will comply with the Title VI List of Pertinent Nondiscrimination Acts and Authorities, as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.
- 2. **Nondiscrimination:** The Contractor, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The Contractor will not participate directly or indirectly in the discrimination prohibited by the Nondiscrimination Acts and Authorities, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR part 21.

- 3. Solicitations for Subcontracts, including Procurements of Materials and Equipment: In all solicitations, either by competitive bidding or negotiation made by the Contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier will be notified by the Contractor of the contractor's obligations under this contract and the Nondiscrimination Acts and Authorities on the grounds of race, color, or national origin.
- 4. **Information and Reports:** The Contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the sponsor or the Federal Aviation Administration to be pertinent to ascertain compliance with such Nondiscrimination Acts and Authorities and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish the information, the Contractor will so certify to the sponsor or the Federal Aviation Administration, as appropriate, and will set forth what efforts it has made to obtain the information.
- 5. **Sanctions for Noncompliance:** In the event of a Contractor's noncompliance with the non-discrimination provisions of this contract, the sponsor will impose such contract sanctions as it or the Federal Aviation Administration may determine to be appropriate, including, but not limited to:
 - a. Withholding payments to the Contractor under the contract until the Contractor complies; and/or
 - b. Cancelling, terminating, or suspending a contract, in whole or in part.
- 6. **Incorporation of Provisions:** The Contractor will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations, and directives issued pursuant thereto. The Contractor will take action with respect to any subcontract or procurement as the sponsor or the Federal Aviation Administration may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the Contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, the Contractor may request the sponsor to enter into any litigation to protect the interests of the sponsor. In addition, the Contractor may request the United States to enter into the litigation to protect the interests of the United States.

A6.4.2 Title VI Clauses for Deeds Transferring United States Property CLAUSES FOR DEEDS TRANSFERRING UNITED STATES PROPERTY

The following clauses will be included in deeds effecting or recording the transfer of real property, structures, or improvements thereon, or granting interest therein from the United States pursuant to the provisions of the Airport Improvement Program grant assurances.

NOW, THEREFORE, the Federal Aviation Administration as authorized by law and upon the condition that the (*Title of Sponsor*) will accept title to the lands and maintain the project

constructed thereon in accordance with (*Name of Appropriate Legislative Authority*), for the (Airport Improvement Program or other program for which land is transferred), and the policies and procedures prescribed by the Federal Aviation Administration of the U.S. Department of Transportation in accordance and in compliance with all requirements imposed by Title 49, Code of Federal Regulations, U.S. Department of Transportation, Subtitle A, Office of the Secretary, Part 21, Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation pertaining to and effectuating the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252; 42 USC § 2000d to 2000d-4), does hereby remise, release, quitclaim and convey unto the (*Title of Sponsor*) all the right, title and interest of the U.S. Department of Transportation/Federal Aviation Administration in and to said lands described in (*Exhibit A attached hereto or other exhibit describing the transferred property*) and made a part hereof.

(HABENDUM CLAUSE)

TO HAVE AND TO HOLD said lands and interests therein unto (*Title of Sponsor*) and its successors forever, subject, however, to the covenants, conditions, restrictions and reservations herein contained as follows, which will remain in effect for the period during which the real property or structures are used for a purpose for which Federal financial assistance is extended or for another purpose involving the provision of similar services or benefits and will be binding on the (*Title of Sponsor*), its successors and assigns.

The (*Title of Sponsor*), in consideration of the conveyance of said lands and interests in lands, does hereby covenant and agree as a covenant running with the land for itself, its successors and assigns, that (1) no person will on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination with regard to any facility located wholly or in part on, over, or under such lands hereby conveyed [,] [and]* (2) that the (Title of Sponsor) will use the lands and interests in lands and interests in lands so conveyed, in compliance with all requirements imposed by or pursuant to Title 49, Code of Federal Regulations, U.S. Department of Transportation, Subtitle A, Office of the Secretary, Part 21, Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation, Effectuation of Title VI of the Civil Rights Act of 1964, and as said Regulations and Acts may be amended[, and (3) that in the event of breach of any of the above-mentioned nondiscrimination conditions, the Department will have a right to enter or re-enter said lands and facilities on said land, and that above described land and facilities will thereon revert to and vest in and become the absolute property of the Federal Aviation Administration and its assigns as such interest existed prior to this instruction].*

(*Reverter clause and related language to be used only when it is determined that such a clause is necessary in order to make clear the purpose of Title VI.)

A6.4.3 Title VI Clauses for Transfer of Real Property Acquired or Improved Under the Activity, Facility, or Program

CLAUSES FOR TRANSFER OF REAL PROPERTY ACQUIRED OR IMPROVED UNDER THE AIRPORT IMPROVEMENT PROGRAM

The following clauses will be included in (deeds, licenses, leases, permits, or similar instruments) entered into by the (*Title of Sponsor*) pursuant to the provisions of the Airport Improvement Program grant assurances.

- A. The (grantee, lessee, permittee, etc. as appropriate) for himself/herself, his/her heirs, personal representatives, successors in interest, and assigns, as a part of the consideration hereof, does hereby covenant and agree [in the case of deeds and leases add "as a covenant running with the land"] that:
 - 1. In the event facilities are constructed, maintained, or otherwise operated on the property described in this (deed, license, lease, permit, etc.) for a purpose for which a Federal Aviation Administration activity, facility, or program is extended or for another purpose involving the provision of similar services or benefits, the (grantee, licensee, lessee, permittee, etc.) will maintain and operate such facilities and services in compliance with all requirements imposed by the Nondiscrimination Acts and Regulations listed in the Pertinent List of Nondiscrimination Authorities (as may be amended) such that no person on the grounds of race, color, or national origin, will be excluded from participation in, denied the benefits of, or be otherwise subjected to discrimination in the use of said facilities.
- B. With respect to licenses, leases, permits, etc., in the event of breach of any of the above Nondiscrimination covenants, (*Title of Sponsor*) will have the right to terminate the (lease, license, permit, etc.) and to enter, re-enter, and repossess said lands and facilities thereon, and hold the same as if the (lease, license, permit, etc.) had never been made or issued.*
- C. With respect to a deed, in the event of breach of any of the above Nondiscrimination covenants, the (*Title of Sponsor*) will have the right to enter or re-enter the lands and facilities thereon, and the above described lands and facilities will there upon revert to and vest in and become the absolute property of the (*Title of Sponsor*) and its assigns.*

(*Reverter clause and related language to be used only when it is determined that such a clause is necessary to make clear the purpose of Title VI.)

A6.4.4 Title VI Clauses for Construction/Use/Access to Real Property Acquired Under the Activity, Facility or Program

CLAUSES FOR CONSTRUCTION/USE/ACCESS TO REAL PROPERTY ACQUIRED UNDER THE ACTIVITY, FACILITY OR PROGRAM

The following clauses will be included in deeds, licenses, permits, or similar instruments/agreements entered into by (*Title of Sponsor*) pursuant to the provisions of the Airport Improvement Program grant assurances.

A. The (grantee, licensee, permittee, etc., as appropriate) for himself/herself, his/her heirs, personal representatives, successors in interest, and assigns, as a part of the consideration hereof, does hereby covenant and agree (in the case of deeds and leases add, "as a covenant running with the land") that (1) no person on the ground of race, color, or

national origin, will be excluded from participation in, denied the benefits of, or be otherwise subjected to discrimination in the use of said facilities, (2) that in the construction of any improvements on, over, or under such land, and the furnishing of services thereon, no person on the ground of race, color, or national origin, will be excluded from participation in, denied the benefits of, or otherwise be subjected to discrimination, (3) that the (grantee, licensee, lessee, permittee, etc.) will use the premises in compliance with all other requirements imposed by or pursuant to the List of discrimination Acts And Authorities.

- B. With respect to (licenses, leases, permits, etc.), in the event of breach of any of the above nondiscrimination covenants, (*Title of Sponsor*) will have the right to terminate the (license, permit, etc., as appropriate) and to enter or re-enter and repossess said land and the facilities thereon, and hold the same as if said (license, permit, etc., as appropriate) had never been made or issued.*
- C. With respect to deeds, in the event of breach of any of the above nondiscrimination covenants, (*Title of Sponsor*) will there upon revert to and vest in and become the absolute property of (*Title of Sponsor*) and its assigns. *

(*Reverter clause and related language to be used only when it is determined that such a clause is necessary to make clear the purpose of Title VI.)

A6.4.5 Title VI List of Pertinent Nondiscrimination Acts and Authorities Title VI List of Pertinent Nondiscrimination Acts and Authorities

During the performance of this contract, the Contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "Contractor") agrees to comply with the following non-discrimination statutes and authorities; including but not limited to:

- Title VI of the Civil Rights Act of 1964 (42 USC § 2000d et seq., 78 stat. 252) (prohibits discrimination on the basis of race, color, national origin);
- 49 CFR part 21 (Non-discrimination in Federally-assisted programs of the Department of Transportation—Effectuation of Title VI of the Civil Rights Act of 1964);
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 USC § 4601) (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- Section 504 of the Rehabilitation Act of 1973 (29 USC § 794 et seq.), as amended (prohibits discrimination on the basis of disability); and 49 CFR part 27;
- The Age Discrimination Act of 1975, as amended (42 USC § 6101 et seq.) (prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982 (49 USC § 471, Section 47123), as amended (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987 (PL 100-209) (broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, the Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of

the terms "programs or activities" to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);

- Titles II and III of the Americans with Disabilities Act of 1990, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 USC §§ 12131 12189) as implemented by U.S. Department of Transportation regulations at 49 CFR parts 37 and 38;
- The Federal Aviation Administration's Nondiscrimination statute (49 USC § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures nondiscrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;
- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);
- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 USC 1681 et seq).

A17 FEDERAL FAIR LABOR STANDARDS ACT (FEDERAL MINIMUM WAGE) A17.3 SOLICITATION CLAUSE

All contracts and subcontracts that result from this solicitation incorporate by reference the provisions of 29 CFR part 201, the Federal Fair Labor Standards Act (FLSA), with the same force and effect as if given in full text. The FLSA sets minimum wage, overtime pay, recordkeeping, and child labor standards for full and part-time workers.

The [Contractor | Consultant] has full responsibility to monitor compliance to the referenced statute or regulation. The [Contractor | Consultant] must address any claims or disputes that arise from this requirement directly with the U.S. Department of Labor – Wage and Hour Division.

A20 OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970 A20.3 CONTRACT CLAUSE

All contracts and subcontracts that result from this solicitation incorporate by reference the requirements of 29 CFR Part 1910 with the same force and effect as if given in full text. The employer must provide a work environment that is free from recognized hazards that may cause death or serious physical harm to the employee. The employer retains full responsibility to monitor its compliance and their subcontractor's compliance with the applicable requirements of

the Occupational Safety and Health Act of 1970 (20 CFR Part 1910). The employer must address any claims or disputes that pertain to a referenced requirement directly with the U.S. Department of Labor – Occupational Safety and Health Administration.

CITY AND COUNTY OF DENVER RULES AND REGULATIONS AND BID CONDITIONS OF THE MANAGER OF PUBLIC WORKS

PERTAINING TO EQUAL EMPLOYMENT OPPORTUNITY IN THE CITY AND COUNTY OF DENVER

APPROVED FOR LEGALITY:	APPROVED AND ADOPTED:
/s/	/s/
Attorney for the City and County of Denver	Manager of Public Works

Adopted and Published Pursuant to Article 111, Division 2 of Chapter 28 the Revised Municipal Code of the City and County of Denver

These Rules and Regulations cancel and supersede any and all previous issued Rules and Regulations on the subject

RULES AND REGULATIONS REGARDING EQUAL EMPLOYMENT OPPORTUNITY

Promulgated and adopted by the Manager of Public Works pursuant to and by authority of Article III, Division 2, Chapter 28 of the Revised Municipal Code of the City and County of Denver, and for the purpose of insuring that contractors. subcontractors and suppliers soliciting and receiving compensation for contract work from or through the City and County of Denver provide equal opportunity in employment without regard to race, color, creed, sex, national origin, age, religion, marital status, political opinion or affiliation or mental or physical handicap and meet certain requirements for the hiring' training promotion and treatment during employment of members of ethnic groups subjected to differential treatment, including persons of African descent (Black), Spanish-surnamed (Hispanic), Asian-American and American Indian groups.

RULE I DEFINITIONS

- A. "City" means the City and County of Denver.
- B. "Manager" shall mean the Manager of Public Works for the City and County of Denver.
- C. "Contract" means a contract entered into with the City and County of Denver, financed in whole or in part by local resources or funds of the City and County of Denver, for the construction of any public building or prosecution or completion of any public work.
- D. "Contractor" means the original party to a contract with the City and County of Denver, also referred to as the "general" or "prime" contractor.
- E. "Director" means the Director of the Mayor's Office of Contract Compliance.
- F. "Subcontractor" means any person company, association, partnership, corporation, or other entity which assumes by subordinate agreement some or all of the obligations of the general or prime contractor.
- G. The Phrase "Bidding Specifications" as used in Article 111, Division 2 of Chapter 28 of the Revised Municipal Code shall include BID CONDITION, INVITATION TO BID AND NOTICE OF PROPOSAL.
- H. "Affirmative Action Program" means a set of specific and result-oriented procedures or steps to which a contractor commits himself to apply every good faith effort to employ members of ethnic minority groups, to include persons of African descent (Black), Spanish surnamed (Hispanic), Asian-American, American Indians, and persons with mental or physical handicap.
- I. "Mayor's Office of Contract Compliance" means the City agency established pursuant to Article III, Division 1 of Chapter 28 of the Denver Revised Municipal Code.

RULE II NOTICE OF HEARING

When results of conciliation efforts are unsatisfactory to the Manager and he is informed in accordance with Article III, Division 2 of Chapter 28 of the Revised Municipal Code that a contractor or subcontractor has apparently failed to meet affirmative action and equal employment opportunity requirements after a reasonable period of notice to correct deficiencies, the Manager will, prior to imposition of any sanctions, afford the general contractor a hearing in order to determine whether the contractor or his subcontractors have failed to comply with the affirmative action and equal employment opportunity requirements of Article III, Division 2 of Chapter 28 of the Revised Municipal Code or of the contract. Written notice of such hearing shall be delivered personally or sent by certified mail return receipt requested, to the contractor and to any subcontractor involved at least ten days prior to the date scheduled for the hearing.

RULE III HEARING

- A. Contractors will appear at hearings and may be represented by counsel, and may present testimony orally and other evidence.
- B. Hearings shall be conducted by one or more hearing examiners designated as such by the Manager.
- C. The Director of the Mayor's Office of Contract Compliance may participate in hearings as a witness.
- D. Hearings shall be held at the place specified in the notice of hearing.
- E. All oral testimony shall be given under oath or affirmation and a record of such proceedings shall be made.
- F. All hearings shall be open to the public.
- G. The hearing officer shall make recommendations to the Manager who shall make a final decision.

REGULATIONS

REGULATION NO. 1. **ORDINANCE**: The Rules and Regulations of the Manager shall be inserted in the bidding specifications for every contract for which bidding is required.

<u>REGULATION NO. 2</u>. EXEMPTIONS: Each contract and subcontract, regardless of dollar amount, shall be subject to affirmative action requirements unless specifically exempted in writing individually by the Manager. Exemptions apply only to "affirmative action" in equal employment opportunity, and are not to be construed as condonation in any manner of "discrimination" or "discriminatory practices" in employment because of race, color, creed sex age national origin, religion, marital status, political opinion or mental or physical handicap.

REGULATION NO. 3. DIRECTOR OF CONTRACT COMPLIANCE: The Director of the Mayor's Office of Contract Compliance shall perform the duties assigned to such official by Article III, Division 2 of Chapter 28 of the Revised Municipal Code and by the Manager. (1) The Director of the Mayor's Office of Contract Compliance or designated representatives shall inform. bidders and contractors of affirmative action procedures, programs, and goals in accordance with the ordinance at pre-bid and pre-construction conference; (2) make regular on-site inspections; (3) supply contractors and subcontractors with report forms to be completed by them when requested, and furnished to the Director of the Mayor's Office of Contract Compliance; and (4) review payroll records, employment records and practices of general contractors and their subcontractors and suppliers during the performance of any contract. The Director of the Mayor's Office of Contract Compliance shall promptly report apparent affirmative action deficiencies to the Manager.

REGULATION NO. 4. GOALS AND TIMETABLES: In general, goals and timetables should take into account anticipated vacancies and the availability of skills in the market place from which employees should be drawn. In addition, where discrimination in employment by a general contractor or any of his subcontractors is indicated, a corrective action program will take into account the need by the general contractor and his subcontractors to correct past discriminatory practices and reach goals of minority manpower utilization on a timely basis through such recruiting and advertising efforts as are necessary and appropriate.

<u>REGULATION NO.5.</u> AWARD OF CONTRACTS: It shall be the responsibility of the Director of the Mayor's Office of Contract Compliance to determine the affirmative action capability of bidders, contractors and subcontractors and to recommend to the Manager the award of contracts to those bidders, contractors and subcontractors and suppliers who demonstrate the ability and willingness to comply with the terms of their contract.

<u>REGULATION NO. 6</u>. PUBLICATION AND DUPLICATION: Copies of these Rules and Regulations as amended by the Manager from time to time, shall as soon as practicable and after Notice being published will be made a part of all City Contracts.

REGULATION NO. 7. NOTICE TO PROCEED: Prior to issuance of Notice to Proceed a sign-off will be required of the Director of the Mayor's Office of Contract Compliance or his designee.

<u>REGULATION NO. 8</u>. **CONTRACTS WITH SUBCONTRACTORS:** To the greatest extent possible the contractor shall make a good faith effort to contract with minority contractors, subcontractors and suppliers for services and supplies by taking affirmative actions which include but are not limited to the following:

- 1. Advertise invitations for subcontractor bids in minority community news media.
- 2. Contact minority contractor organizations for referral of prospective subcontractors.
- 3. Purchase materials and supplies from minority material suppliers.

<u>REGULATION NO. 9.</u> AGENCY REFERRALS: it shall be no excuse that the union with which the contractor or subcontractor has an agreement providing for referral, exclusive or otherwise, failed to refer minority employees.

REGULATION NO. 10. CLAUSES: The Manager shall include the appropriate clauses in every contract and the contractor shall cause to be inserted in every subcontract the appropriate clauses:

- 1. **APPENDIX A:** City and County of Denver Equal Opportunity Clause-ALL CONTRACTS funded only with City & County of Denver monies.
- 2. APPENDIX B: Equal Opportunity Clause (11246)-ALL FEDERAL ASSISTED
- 3. APPENDIX C: Section 3-Assurance of Compliance-HUD ASSISTED PROJECTS.
- 4. APPENDIX D: Section 3-Clause-HUD ASSISTED PROJECTS.

All amendments to the appendices shall be included by reference.

<u>REGULATION NO. 11</u>. SHOW CAUSE NOTICES: When the Manager has reasonable cause to believe that a contractor has violated Article III, Division 2 of Chapter 28 of the Revised Municipal Code, he may issue a notice requiring the contractor to show cause, within fifteen days why enforcement procedures, or other appropriate action to insure compliance, should not be instituted.

REGULATION NO. 12. BID CONDITIONS-AFFIRMATIVE ACTION REQUIREMENTS- EQUAL EMPLOYMENT OPPORTUNITY:

1. APPENDIX E:

The Bid Conditions- Affirmative Action Requirements-Equal Employment Opportunity as amended and published by the U.S. Department of Labor, Employment Standards Administration, Office of Federal Contract Compliance, shall be inserted verbatim for bidding specification for every non-exempt contract involving the use of Federal funds.

2. APPENDIX F:

The Bid Conditions- Affirmative Action Requirements-Equal Employment Opportunity as published by the Department of Public Works, City and County of Denver shall be inserted verbatim as bidding specifications for every non-exempt contract using City funds.

APPENDIX A

CITY AND COUNTY OF DENVER EQUAL OPPORTUNITY CLAUSE-ALL CONTRACTS

- 1. The contractor will not discriminate against any employee or applicant for employment because of race creed, color, sex, age, national origin, religion, marital status, political opinion or affiliation, or mental or physical handicap. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, creed, color, sex, age, national origin, religion, marital status, political opinion or affiliation, or mental or physical handicap. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.
- 2. The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, creed, color, sex, age, national origin, religion, marital status, political opinion or affiliation, or mental or physical handicap.
- 3. The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided, advising the said labor union or workers' representatives of the contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
- 4. Each contractor will comply with all provisions of Article III, Division 2, Chapter 28 of the Revised Municipal Code, and the rules, regulations, and relevant orders of the Manager and Director.
- 5. The contractor will furnish all information and reports required by Article III, Division 2, Chapter 28 of the Revised Municipal Code, and by rules, regulations and orders of the Manager and Director or pursuant thereto, and will permit access to his books, records, and accounts by the Manager, Director or their designee for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
- 6. In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations or orders this contract may be cancelled, terminated., or suspended in whole or in part and the contractor may be declared ineligible for further City contracts in accordance with procedures authorized in Article III, Division 2, Chapter 28 of the Revised Municipal Code, or by rules, regulations, or order of the Manager.
- 7. The contractor will include Regulation 12 Paragraph 2 and the provisions of paragraphs (1) through (6) in every subcontract or purchase order unless, exempted by rules, regulations, or orders of the Manager issued pursuant to Article III, Division 2, Chapter 28 of the Revised Municipal Code, so that such provisions will be binding upon each subcontractor or suppliers. The contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance.

The applicant further agrees to be bound by the above equal opportunity clauses with respect to its own employment practices when it participates in City contracts. The contractor agrees to assist and cooperate actively with the Manager and the Director in obtaining compliance of subcontractors and suppliers with the equal opportunity clause and the rules, regulations and relevant orders of the Manager, and will furnish the Manager and the Director such information as they may require for the supervision of compliance, and will otherwise assist the Manager and Director in the discharge of the City's primary responsibility for securing compliance. The contractor further agrees to refrain from entering into any contract or contract modification subject to Article III, Division 2, Chapter 28 of the Revised Municipal Code with a contractor debarred from, or who has not demonstrated eligibility for, City contracts.

The contractor will carry out such sanctions and penalties for violation of the equal opportunity clause as may be imposed upon contractors and subcontractors by the Manager and Director. In addition, the contractor agrees that failure or refusal to comply with these undertakings the Manager may take any or all of the following actions:

- A. Cancellation, termination, or suspension in whole or in part of this contract.
- B. Refrain from extending any further assistance to the applicant under the program with respect to which the failure occurred until satisfactory assurance of future compliance has been received from such applicant.
- C. Refer the case to the City Attorney for appropriate legal proceedings.

SUBCONTRACTS: Each prime contractor or subcontractor shall include the equal opportunity clause in each of its subcontracts.

APPENDIX F BID CONDITIONS AFFIRMATIVE ACTION REQUIREMENTS EQUAL EMPLOYMENT OPPORTUNITY

For all Non-Exempt Construction Contracts to be Awarded by the City and County of Denver, Department of Public Works

NOTICE

EACH BIDDER, CONTRACTOR OR SUBCONTRACTOR (HEREINAFTER THE CONTRACTOR) MUST FULLY COMPLY WITH THE REQUIREMENTS OF THESE BID CONDITIONS AS TO EACH CONSTRUCTION TRADE IT INTENDS TO USE ON THIS CONSTRUCTION CONTRACT, AND ALL OTHER CONSTRUCTION WORK (BOTH CITY AND NON-CITY) IN THE DENVER AREA DURING THE PERFORMANCE OF THIS CONTRACT OR SUBCONTRACT. THE CONTRACTOR COMMITS ITSELF TO THE GOALS FOR MINORITY MANPOWER UTILIZATION, AS APPLICABLE, AND ALL OTHER REQUIREMENTS, TERMS AND CONDITION OF THESE BID CONDITIONS BY SUBMITTING A PROPERLY SIGNED BID.

THE CONTRACTOR SHALL APPOINT A COMPANY EXECUTIVE TO ASSUME THE RESPONSIBILITY FOR THE IMPLEMENTATION OF THE REQUIREMENTS, TERMS AND CONDITIONS OF THESE BID CONDITIONS.

EULOIS CLECKLEY

Manager of Public Works

City and County of Denver

A. REQUIREMENTS --AN AFFIRM ATIVE ACTION PLAN:

Contractors shall be subject to the provisions and requirements of these bid conditions including the goals and timetables for minority' and female utilization, and specific affirmative action steps set forth by the Office of Contract Compliance. The contractor's commitment to the goals for minority, and female utilization as required constitutes a commitment that it will make every good faith effort to meet such goals.

1. GOALS AND TIMETABLES:

The goals and timetables for minority¹ and female participation, expressed in percentage terms for the contractor's aggregate workforce in each trade are as follows:

GOALS FOR MINORITY PARTICIPATION FOR EACH TRADE

From January 1, 1982 to 6.9%

Until Further Notice

FOR EACH TRADE

GOALS FOR FEMALE PARTICIPATION

to 21.7% - 23.5% Until Further Notice

The goals for minority and female utilization above are expressed in terms of hours of training and employment as a proportion of the total number of hours to be worked by the contractor's aggregate workforce, which includes all supervisory personnel, in each trade, on all projects for the City and County of Denver during the performance of its contract (i.e., The period beginning with the first day of work on the City and County of Denver funded construction contract and ending with the last day of work).

The hours of minority and female employment and training must be substantially uniform throughout the length of the contract in each trade and minorities and females must be employed evenly on each of a contractor's projects. Therefore, the transfer of minority or female employees from contractor to contractor or from project to project for the purpose of meeting the contractor's goals shall be a violation of these Bid Conditions.

If the contractor counts the nonworking hours of apprentices they must be employed by the contractor during the training period; the contractor must have made a commitment to employ apprentices at the completion of their training subject to the availability of employment opportunities; and the apprentices must be trained pursuant to training programs approved by the Bureau of Apprenticeship and Training.

¹ "Minority" is defined as including, Blacks, Spanish Surname Americans, Asian-Americans, and American Indians, and includes both men and Minority women.

2. SPECIFIC AFFIRMATIVE ACTION STEPS:

No contractor shall be found to be in noncompliance solely on account of its failure to meet its goals, but will be given an opportunity to demonstrate that the contractor has instituted all the specific affirmative action steps specified and has made every good faith effort to make these steps work toward the attainment of its goals within the timetables, all to the purpose of expanding minority and female utilization in its aggregate workforce. A contractor, who fails to comply with its obligation under the Equal Opportunity Clause of its contract and fails to achieve its commitments to the goals for minority and female utilization has the burden of proving that it has engaged in an Affirmative Action Program directed at increasing minority and female utilization and that such efforts were at least as extensive and as specific as the following:

- a. The contractor should have notified minority and female organizations when employment opportunities were available and should have maintained records of the organization's response.
- b. The contractor should have maintained a file of the names and addresses of each minority and female referred to it by any individual or organization and what action was taken with respect to each such referred individual, and if the individual was not employed by the contractor, the reasons. If such individual was sent to the union hiring hall for referral and not referred back by the union or if referred, not employed by the contractor, the file should have documented this and their reasons.
- c. The contractor should have promptly notified the Department of Public Works, and Mayor's Office of Contract Compliance when the union or unions with which the contractor has collective bargaining agreements did not refer to the contractor a minority or female sent by the contractor, or when the contractor has other information that the union referral process has impeded efforts to meet its goals.
- d. The contractor should have disseminated its EEO policy within its organization by including it in any employee handbook or policy manual; by publicizing it in company newspapers and annual reports and by advertising such policy at reasonable intervals in union publications. The EEO policy should be further disseminated by conducting staff meetings to explain and discuss the policy; by posting of the policy; and by review of the policy with minority and female employees.
- e. The contractor should have disseminated its EEO policy externally by informing and discussing it with all recruitment sources; by advertising in news media, specifically including minority and female news media; and by notifying and discussing it with all subcontractors.
- f. The contractor should have made both specific and reasonably recurrent written and oral recruitment efforts. Such efforts should have been directed at minority and female organizations, schools with substantial minority and female enrollment, and minority and female recruitment and training organizations within the contractor's recruitment area.

- g. The contractor should have evidence available for inspection that all tests and other selection techniques used to select from among candidates for hire, transfer, promotion, training, or retention are being used in a manner that does not violate the OFCCP Testing Guidelines in 41 CFR Part 60-3.
- h. The contractor should have made sure that seniority practices and job classifications do not have a discriminatory effect.
- i. The contractor should have made certain that all facilities are not segregated by race.
- j. The contractor should have continually monitored all personnel activities to ensure that its EEO policy was being carried out including the evaluation of minority and female employees for promotional opportunities on a quarterly basis and the encouragement of such employees to seek those opportunities.
- k. The contractor should have solicited bids for subcontracts from available minority and female subcontractors engaged in the trades covered by these Bid conditions, including circulation of minority and female contractor associations.

NOTE: The Director and the Mayor's Office of Contract Compliance will provide technical assistance on questions pertaining to minority and female recruitment sources, minority and female community organizations, and minority and female news media upon receipt of a request for assistance from a contractor.

3. **NON-DISCRIMINATION**:

In no event may a contractor utilize the goals and affirmative action steps required in such a manner as to cause or result in discrimination against any person on account of race, color, religion, sex, marital status, national origin, age, mental or physical handicap, political opinion or affiliation.

4. **COMPLIANCE AND ENFORCEMENT**:

In all cases, the compliance of a contractor will be determined in accordance with its obligations under the terms of these Bid Conditions. All contractors performing or to perform work on projects subject to these Bid Conditions hereby agree to inform their subcontractors in writing of their respective obligations under the terms and requirements of these Bid Conditions, including the provisions relating to goals of minority and female employment and training.

A. Contractors Subject to these Bid Conditions:

In regard to these Bid Conditions, if the contractor meets the goals set forth therein or can demonstrate that it has made every good faith effort to meet these goals, the contractor shall be presumed to be in compliance with Article III, Division 2, Chapter 28 of the Revised Municipal Code, the implementing regulations and its obligations under these Bid Conditions. In the event, no formal sanctions or proceedings leading toward sanctions shall be instituted unless the contracting or administering agency otherwise determines that the contractor is violating the Equal Opportunity Clause.

1. Where the Office of Contract Compliance finds that a contractor failed to comply with the requirements of Article 111, Division 2, Chapter 28 of the Revised Municipal

Code or the implementing regulations and the obligations under these Bid Conditions, and so informs the Manager, the Manager shall take such action and impose such sanctions, which include suspension, termination, cancellation, and debarment, as may be appropriate under the Ordinance and its regulations. When the Manager proceeds with such formal action it has the burden of proving that the contractor has not met the goals contained in these Bid Conditions. The contractor's failure to meet its goals shall shift to it the requirement to come forward with evidence to show that it has met the good faith requirements of these Bid Conditions.

- 2. The pendency of such proceedings shall be taken into consideration by the Department of Public Works in determining whether such contractor can comply with the requirements of Article 111, Division 2, Chapter 28 of the Revised Municipal Code, and is therefore a "responsible prospective contractor".
- 3. The Mayor's Office of Contract Compliance shall review the contractor's employment practices during the performance of the contract. If the Mayor's Office of Contract Compliance determines that the contractor's Affirmative Action Plan is no longer an acceptable program, the Director shall notify the Manager.

B. Obligations Applicable to Contractors:

It shall be no excuse that the union with which the contractor has a collective bargaining agreement providing for exclusive referral failed to refer minority or female employees. Discrimination in referral for employment, even if pursuant to provisions of a collective bargaining agreement, is prohibited by the National Labor Relations Act, as amended, Title VI of the Civil Rights Act of 1964, as amended, and Article III, Division 2, Chapter 28 of the Revised Municipal Code. It is the policy of the Department of Public Works that contractors have a responsibility to provide equal employment opportunity, if they wish to participate in City and County of Denver contracts. To the extent they have delegated the responsibility for some of their employment practices to a labor organization and, as a result, are prevented from meeting their obligations pursuant to Article III, Division 2, Chapter 28 of the Revised Municipal Code, such Contractors cannot be considered to be in compliance with Article III, Division 2, Chapter 28 of the Revised Municipal Code, or its implementing rules and regulations.

C. <u>General Requirements</u>

Contractors are responsible for informing their subcontractors in writing regardless of tier, as to their respective obligations. Whenever a contractor subcontracts a portion of work in any trade covered by these Bid Conditions, it shall include these Bid Conditions in such subcontracts and each subcontractor shall be bound by these Bid Conditions to the full extent as if it were the prime contractor. The contractor shall not, however, be held accountable for the failure of its subcontractors to fulfill their obligations under these Bid Conditions. However, the prime contractor shall give notice to the Director of any refusal or failure of any subcontractor to fulfill the obligations under these Bid Conditions. A subcontractor's failure to comply will be treated in the same manner as such failure by a prime contractor.

- Contractors hereby agree to refrain from entering into any contract or contract
 modification subject to Article 111, Division 2, Chapter 28 of the Revised
 Municipal Code with a contractor debarred from, or who is determined not to be
 a "responsive" bidder for the City and County of Denver contracts pursuant to
 the Ordinance.
- 2. The contractor shall carry out such sanctions and penalties for violation of these Bid Conditions and the Equal Opportunity Clause including suspension, termination and cancellation of existing subcontracts and debarment from future contracts as may be ordered by the Manager pursuant to Article 111, Division 2, Chapter 28 of the Revised Municipal Code and its implementing regulations.
- 3. Nothing herein is intended to relieve any contractor during the term of its contract from compliance with Article III, Division 2, Chapter 28 of the Revised Municipal Code, and the Equal Opportunity Clause of its contract with respect to matters not covered in these Bid Conditions.
- 4. Contractors must keep such records and file such reports relating to the provisions of these Bid Conditions as shall be required by the Office of Contract Compliance.
- 5. Requests for exemptions from these Bid Conditions must be made in writing, with justification, to the Manager of Public Works, City and County Building, Room 379, Denver, Colorado 80202, and shall be forwarded through and with the endorsement of the Director.

EXHIBIT C

CITY AND COUNTY OF DENVER INSURANCE REQUIREMENTS FOR DEPARTMENT OF AVIATION PROFESSIONAL SERVICES AGREEMENT – ROCIP PROJECT

APPLICABILITY OF ROCIP: City and County of Denver and Denver International Airport (hereinafter referred to collectively as "DEN") has arranged for certain construction activities at DEN to be insured under an Owner Controlled Insurance Program (OCIP) or a Rolling Owner Controlled Insurance Program (ROCIP) (hereinafter collectively referred to as "ROCIP"). A ROCIP is a single insurance program that insures DEN, the Contractor and subcontractors of any tier, and other designated parties (Enrolled Parties), for work performed at the Project Site. Contractor is not eligible for or provided coverage under the ROCIP program and instead Contractor must provide its own insurance as further specified in the Agreement, including this Exhibit C. Contractor must comply with the provisions of the DEN ROCIP III Safety Manual, which is part of the Contract Documents and which is linked below. DEN also is providing links to the DEN ROCIP III Insurance Manual and the DEN ROCIP III Claims Guide solely for Contractor's information.

DEN ROCIP III Insurance Manual DEN ROCIP III Safety Manual DEN ROCIP III Claims Guide

NOTICE OF CHANGE TO ROCIP: DEN reserves the right to terminate or modify the DEN ROCIP or any portion thereof. Further, dependent on factors including, but not limited to, the official timing and duration of the ROCIP project for which services are provided under this Agreement, DEN may need to transition from one ROCIP program to another and introduce corresponding requirements for contractors. DEN will provide Contractor notice in accordance with the terms and conditions of this Agreement.

A. Certificate Holder

The certificate shall be issued to: CITY AND COUNTY OF DENVER

Denver International Airport 8500 Peña Boulevard, Suite 8810

Denver CO 80249 Attn: Risk Management

B. Acceptable Certificate of Insurance Form and Submission Instructions

Please read these requirements carefully to ensure proper documentation and receipt of your certificate(s) of insurance.

- ACORD FORM (or equivalent) certificate is required.
- SUBMIT via emailed in pdf format to: contractadmininvoices@flydenver.com
- ELECTRONIC CERTIFICATES are required, hard copy documents will not be accepted.
- THIRD PARTY SOFTWARE may be implemented during the term of this Agreement to manage insurance compliance and documents with required use by Vendor of such system.
- REFERENCE on the certificate must include the DEN assigned Contract Number.

C. Coverages and Limits

1. Commercial General Liability:

Contractor shall maintain insurance coverage including bodily injury, property damage, personal injury, advertising injury, independent contractors, host liquor, and products and completed operations in minimum limits of \$1,000,000 each occurrence, \$2,000,000 products and completed operations aggregate; if policy contains a general aggregate, a minimum limit of \$2,000,000 annual per location aggregate must be maintained.

- a. Coverage shall include contractual liability covering liability assumed under this Agreement (including defense costs assumed under contract) within the scope of coverages provided.
- b. Coverage shall include Mobile Equipment Liability, if used to perform services under this Agreement.

2. Business Automobile Liability:

Contractor shall maintain a minimum limit of \$1,000,000 combined single limit each occurrence for bodily injury and property damage for all owned, leased, hired and/or non-owned vehicles used in performing services under this Agreement.

- a. If operating vehicles unescorted airside at DEN, a \$10,000,000 combined single limit each occurrence for bodily injury and property damage is required.
- b. If Contractor does not have blanket coverage on all owned and operated vehicles and will require unescorted airside driving privileges, then a schedule of insured vehicles (including year, make, model and VIN number) must be submitted with the Certificate of Insurance.
- c. The policy must not contain an exclusion related to operations on airport premises.
- d. If transporting waste, hazardous material, or regulated substances, Contractor shall carry a Broadened Pollution Endorsement and an MCS 90 endorsement on its policy.
- e. If Contractor is an individual or represents that Contractor does not own any motor vehicles and/or Contractor's owners, officers, directors, and employees use their personal vehicles for business purposes, Personal Automobile Liability insurance coverage will be accepted provided it includes a business use endorsement.
- f. If Contractor will be completing all services to DEN under this Agreement remotely, this requirement will be waived.

3. Workers' Compensation and Employer's Liability Insurance:

Contractor shall maintain workers compensation coverage in compliance with the statutory requirements of the state(s) of operation and Employer's Liability insurance with limits no less than \$100,000 per occurrence for each bodily injury claim, \$100,000 per occurrence for each bodily injury caused by disease claim, and \$500,000 aggregate for all bodily injuries caused by disease claims.

- a. If Contractor is a sole proprietor, Workers' Compensation and Employer's Liability is exempt under the Colorado Workers' Compensation Act. It is the sole responsibility of the Contractor to determine their eligibility for providing this coverage and executing all required documentation with the State of Colorado.
- 4. Professional Liability (Errors and Omissions) Insurance:

Contractor shall maintain a minimum limit of \$1,000,000 each claim and annual aggregate, providing coverage for all applicable professional services outlined in this Agreement. [AMEND TO REQUIRE PROJECT SPECIFIC COVERAGE IF PERTINENT BASED ON SCOPE OF WORK.]

5. Technology Errors and Omissions, Network Security, and Privacy Liability (Cyber): [REMOVE IF NOT PERTINENT PER SCOPE OF WORK.]

Contractor shall maintain a limit no less than \$1,000,000 each claim and annual aggregate.

- a. Coverage shall include negligent acts, errors, mistakes and omissions arising out of the scope of services of this Agreement performed by Contractor, or any person employed or contracted by Contractor.
- b. Coverage shall include, but not be limited to, liability arising from theft, dissemination and/or use of personal, private, confidential, information subject to a non-disclosure agreement, including information stored or transmitted, privacy or cyber laws, damage to or destruction of information, intentional and/or unintentional release of private information, alteration of information, extortion and network security, introduction of a computer virus into, or otherwise causing damage to, a customer's or third person's computer, computer system, network or similar computer related property and the

data, software, and programs thereon, advertising injury, personal injury (including invasion of privacy), intellectual property offenses related to internet, forensic investigations and business interruption coverage.

6. Unmanned Aerial Vehicle (UAV) Liability:

If Lessee desires to use drones in any aspect of its work or presence on DEN premises, the following requirements must be met prior to commencing any drone operations:

- a. Express written permission must be granted by DEN.
- b. Express written permission must be granted by the Federal Aviation Administration (FAA).
- c. Drone equipment must be properly registered with the FAA.
- d. Drone operator(s) must be properly licensed by the FAA.
- e. Contractor must maintain UAV Liability including flight coverage, personal and advertising injury liability, and hired/non-owned UAV liability for its commercial drone operations with a limit no less than \$1,000,000 combined single limit each occurrence for bodily injury and property damage.

7. Excess/Umbrella Liability:

Combination of primary and excess coverage may be used to achieve minimum required coverage limits. Excess/Umbrella policy(ies) must follow form of the primary policies with which they are related to provide the minimum limits and be verified as such on any submitted Certificate of Insurance.

D. Reference to Project and/or Contract

The City Project and/or Contract Number and project description shall be noted on the Certificate of Insurance.

E. Additional Insured

For all coverages required under this Agreement (excluding Workers' Compensation, Employer's Liability and Professional Liability), Contractor's insurer(s) shall include the City and County of Denver, its elected and appointed officials, agents, employees and volunteers as Additional Insureds by policy endorsement.

F. Waiver of Subrogation

For all coverages required under this Agreement, Contractor's insurer(s) shall waive subrogation rights against the City and County of Denver, its elected and appointed officials, agents, employees and volunteers by policy endorsement.

G. Notice of Material Change, Cancellation or Nonrenewal

Each certificate and related policy shall contain a valid provision requiring notification to the Certificate Holder in the event any of the required policies be canceled or non-renewed or reduction in required coverage before the expiration date thereof.

- 1. Such notice shall reference the DEN assigned contract number related to this Agreement.
- 2. Said notice shall be sent thirty (30) days prior to such cancellation or non-renewal or reduction in required coverage unless due to non-payment of premiums for which notice shall be sent ten (10) days prior.
- 3. If such written notice is unavailable from the insurer or afforded as outlined above, Contractor shall provide written notice of cancellation, non-renewal and any reduction in required coverage to the Certificate Holder within seven (7) business days of receiving such notice by its insurer(s) and include documentation of the formal notice received from its insurer's as verification.

H. Additional Provisions

- 1. Deductibles, Self-Insured Retentions, or any other type of retention are the sole responsibility of the Contractor.
- 2. Defense costs shall be in addition to the limits of liability. If this provision is unavailable that limitation must be evidenced on the Certificate of Insurance.
- 3. A severability of interests or separation of insureds provision (no insured vs. insured exclusion) is included

- under all policies where Additional Insured status is required.
- 4. A provision that coverage is primary and non-contributory with other coverage or self-insurance maintained by the City is included under all policies where Additional Insured status is required.
- 5. The insurance requirements under this Agreement shall be the greater of (i) the minimum limits and coverage specified hereunder or (ii) the broader coverage and maximum limits of coverage of any insurance policy or proceeds available to the Lessee. It is agreed that the insurance requirements set forth herein shall not in any way act to reduce coverage that is broader or that includes higher limits than the minimums set forth in this Agreement.
- 6. All policies shall be written on an occurrence form. If an occurrence form is unavailable or not industry norm for a given policy type, claims-made coverage will be accepted by the City provided the retroactive date is on or before the Agreement Effective Date or the first date when any goods or services were provided to the City, whichever is earlier, and continuous coverage will be maintained or an extended discovery period of three years beginning at the time work under this Agreement is completed or the Agreement is terminated, whichever is later.
- 7. Contractor shall advise the City in the event any general aggregate or other aggregate limits are reduced below the required minimum per occurrence limits. At their own expense, and where such general aggregate or other aggregate limits have been reduced below the required minimum per occurrence limit, the Contractor will procure such per occurrence limits and furnish a new certificate of insurance showing such coverage remains in force.
- 8. Certificates of Insurance must (i) specify the issuing companies, policy numbers and policy periods for each required form of coverage, (ii) be issued and signed by an authorized entity and (iii) be submitted to the City at the time Contractor signed this Agreement.
- 9. The insurance shall be underwritten by an insurer licensed or authorized to do business in the State of Colorado and rated by A.M. Best Company as A- VIII or better.
- 10. Certificate of Insurance and Related Endorsements: The City's acceptance of a certificate of insurance or other proof of insurance that does not comply with all insurance requirements set forth in this Agreement shall not act as a waiver of Contractor's breach of this Agreement or of any of the City's rights or remedies under this Agreement. The City's acceptance of any submitted insurance certificate is subject to the approval of DEN Risk Management. All coverage requirements specified in the certificate shall be enforced unless waived or otherwise modified in writing by DEN Risk Management. Contractor is solely responsible for ensuring all formal policy endorsements are issued by their insurers to support the requirements herein.
- 11. The City shall have the right to verify or confirm, at any time, all coverage, information or representations, and the insured and its undersigned agent shall promptly and fully cooperate in any such audit the City may elect to undertake.
- 12. No material changes, modifications or interlineations to insurance coverage required by this Agreement shall be allowed without the review and written approval of DEN Risk Management.
- 13. Contractor shall be responsible for ensuring DEN is provided updated Certificate(s) of Insurance ten (10) days prior to each policy renewal.
- 14. Contractor's failure to maintain the insurance required by this Agreement shall be the basis for immediate termination of this Agreement at DEN's sole discretion and without penalty to the City.

EXHIBIT D



TO: All Users of the City and County of Denver Prevailing Wage Schedules

FROM: Ryland Feno, Classification & Compensation Technician II

DATE: August 31, 2020

SUBJECT: Latest Change to Prevailing Wage Schedules

The effective date for this publication will be **Friday**, **August 28**, **2020** and applies to the City and County of Denver for **HEAVY CONSTRUCTION PROJECTS** in accordance with the Denver Revised Municipal Code, Section 20-76(c).

General Wage Decision No. CO20200002 Superseded General Decision No. CO20190002 Modification No. 2 Publication Date: 08/28/2020 (6 pages)

Unless otherwise specified in this document, apprentices shall be permitted only if they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor (DOL). The employer and the individual apprentice must be registered in a program which has received prior approval by the DOL. Any employer who employs an apprentice and is found to be in violation of this provision shall be required to pay said apprentice the full journeyman scale.

Attachments as listed above.

*Career Service Board approved to adjust all Davis Bacon classifications under \$13.00 to comply with the city's minimum wage. The effective date is August 15, 2019. See page 7 for reference.

"General Decision Number: CO20200002 08/28/2020

Superseded General Decision Number: CO20190002

State: Colorado

Construction Type: Heavy

Counties: Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, El Paso, Jefferson, Larimer, Mesa, Pueblo and Weld Counties in Colorado.

HEAVY CONSTRUCTION PROJECTS

Note: Under Executive Order (EO) 13658, an hourly minimum wage of \$10.80 for calendar year 2020 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least \$10.80 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2020. If this contract is covered by the EO and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must pay workers in that classification at least the wage rate determined through the conformance process set forth in 29 CFR 5.5(a)(1)(ii) (or the EO minimum wage rate, if it is higher than the conformed wage rate). The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification	Number	Publication	Date
0		01/03/2020	
1		01/31/2020	
2		08/28/2020	

ASBE0028-001 07/01/2019

Rates Fringes

Asbestos Workers/Insulator (Includes application of

all insulating materials, protective coverings, coatings and finishings to all types of mechanical				
systems)	•	14.73		
BRC00007-004 01/01/2019				
ADAMS, ARAPAHOE, BOULDER, BROOMF JEFFERSON AND WELD COUNTIES	IELD, DENVER	, DOUGLAS,		
	Rates	Fringes		
BRICKLAYER	.\$ 29.52	10.48		
BRC00007-006 05/01/2018				
EL PASO AND PUEBLO COUNTIES				
	Rates	Fringes		
BRICKLAYER	.\$ 25.88	10.34		
ELEC0012-004 06/01/2019				
PUEBLO COUNTY				
	Rates	Fringes		
ELECTRICIAN Electrical contract over				
\$1,000,000	.\$ 27.50	12.50+3%		
Electrical contract under \$1,000,000	•	12.50+3%		
ELEC0068-001 06/01/2019				
ADAMS, ARAPAHOE, BOULDER, BROOMFIELD, DENVER, DOUGLAS, JEFFERSON, LARIMER, AND WELD COUNTIES				
	Rates	Fringes		
ELECTRICIAN	'	16.18		
ELEC0111-001 03/01/2019				
	Rates	Fringes		
Line Construction: Groundman	.\$ 20.41	13.75%+\$6.20		

Line Equipment Operator Lineman and Welder	\$ 44.92	
* ELEC0113-002 02/01/2020		
EL PASO COUNTY		
	Rates	Fringes
ELECTRICIAN		16.72
ELEC0969-002 06/01/2019		
MESA COUNTY		
	Rates	Fringes
ELECTRICIAN	•	
* ENGI0009-001 05/01/2020		
	Rates	Fringes
Power equipment operators: Blade: Finish	\$ 30.37 \$ 30.37 \$ 30.20 \$ 30.47 \$ 31.55 \$ 33.67 \$ 29.67 \$ 30.53 \$ 29.29 \$ 30.20	11.15 11.15 11.15 11.15 11.15 11.15 11.15 11.15 11.15 11.15 11.15
	Rates	Fringes
Ironworkers:	\$ 30.85	22.26
LAB00086-001 05/01/2009		

Fringes

Rates

Laborers: Pipelayer		6.78			
PLUM0003-005 06/01/2017					
	ADAMS, ARAPAHOE, BOULDER, BROOMFIELD, DENVER, DOUGLAS, JEFFERSON, LARIMER AND WELD COUNTIES				
	Rates	Fringes			
PLUMBER		16.44			
PLUM0058-002 07/01/2018					
EL PASO COUNTY					
	Rates	Fringes			
Plumbers and Pipefitters	\$ 32.75	14.85			
PLUM0058-008 07/01/2018					
PUEBLO COUNTY					
	Rates	Fringes			
Plumbers and Pipefitters		14.85			
PLUM0145-002 07/01/2016					
MESA COUNTY					
	Rates	Fringes			
Plumbers and Pipefitters		11.70			
PLUM0208-004 06/01/2016					
ADAMS, ARAPAHOE, BOULDER, BROOMFIELD, DENVER, DOUGLAS, JEFFERSON, LARIMER AND WELD COUNTIES					
	Rates	Fringes			
PIPEFITTER		16.62			
SHEE0009-002 07/01/2019					
	Rates	Fringes			

Sheet metal worker\$	34.62	17.95
TEAM0455-002 07/01/2019		
Ra	ates Fr	inges
Truck drivers: Pickup\$ Tandem/Semi and Water\$		4.42 4.42
SUCO2001-006 12/20/2001		
Ra	ates Fr.	inges
BOILERMAKER\$	17.60	
Carpenters: Form Building and Setting\$ 1 All Other Work\$		2.74
Cement Mason/Concrete Finisher\$	17.31	2.85
IRONWORKER, REINFORCING\$	18.83	3.90
Laborers: Common\$ Flagger\$ Landscape\$	8.91	2.92 3.80 3.21
Painters: Brush, Roller & Spray\$	15.81	3.26
Power equipment operators: Backhoe\$ Front End Loader\$ Skid Loader\$	17.24 15.37	2.48 3.23 4.41

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

Office of Human Resources Supplemental Rates (Specific to the Denver Projects) (Supp #74, Revised: 08-21-2019)

Classification		Base	Fringe
Ironworker	Ornamental	\$24.80	\$10.03
Laborer	Group 1	\$18.18	\$8.27
	Group 2	\$21.59	\$8.61
Laborer (Common)		\$13.00	\$2.92
Laborer (Flagger)		\$13.00	\$3.80
Laborer (Landscape)		\$13.00	\$3.21
Laborer (Janitor)	Janitor/Yardmen	\$17.68	\$8.22
Laborer (Asbestos)	Removal of Asbestos	\$21.03	\$8.55
Laborer (Tunnel)	Group 1	\$18.53	\$8.30
	Group 2	\$18.63	\$8.31
	Group 3	\$19.73	\$8.42
	Group 4	\$21.59	\$8.61
	Group 5	\$19.68	\$8.42
Line Construction	Lineman, Gas Fitter/Welder	\$36.88	\$9.55
	Line Eq Operator/Line Truck		
	Crew	\$25.74	\$8.09
Millwright		\$28.00	\$10.00
Power Equipment Operator	Group 1	\$22.97	\$10.60
	Group 2	\$23.32	\$10.63
	Group 3	\$23.67	\$10.67
	Group 4	\$23.82	\$10.68
	Group 5	\$23.97	\$10.70
	Group 6	\$24.12	\$10.71
	Group 7	\$24.88	\$10.79
Power Equipment Operator (Tunnels above and			
below ground, shafts and raises):	Group 1	\$25.12	\$10.81
	Group 2	\$25.47	\$10.85
	Group 3	\$25.57	\$10.86
	Group 4	\$25.82	\$10.88
	Group 5	\$25.97	\$10.90
	Group 6	\$26.12	\$10.91
	Group 7	\$26.37	\$10.94
Truck Driver	Group 1	\$18.42	\$10.00
	Group 2	\$19.14	\$10.07
	Group 3	\$19.48	\$10.11
	Group 4	\$20.01	\$10.16
	Group 5	\$20.66	\$10.23
	Group 6	\$21.46	\$10.31

Go to http://www.denvergov.org/Auditor to view the Prevailing Wage Clarification Document for a list of complete classifications used.

EXHIBIT E

Page 27 Special Conditions

VI. SPECIAL CONDITIONS

SC-1 CONSTRUCTION CONTRACT GENERAL CONDITIONS

The Construction Contract General Conditions which constitute a part of the Contract Documents are set forth in a separately published document, entitled "City and County of Denver, Department of Aviation and Department of Public Works, Standard Specifications for Construction, General Contract Conditions," 2011 Edition, the Table of Contents to which is bound herein (which may be informally referred to as the Yellow Book). The General Conditions book is available for purchase for \$12.00 per copy at the following locations during the business hours stated, Monday through Friday, excluding holidays:

Office of the Cashier
Wellington E. Webb Municipal Office Building, 2nd Floor
201 West Colfax Avenue
Denver, Colorado, USA 80202
7:30 a.m. to 4:30 p.m.

The General Conditions are also available on the City and County of Denver website at:

https://www.denvergov.org/content/denvergov/en/contract-administration/contractor-resources/general-contract-conditions.html

SC-2 DRAWINGS AND SPECIFICATIONS TO BE FURNISHED BY THE CITY

The City will provide the following Contract Documents to the Contractor in electronic format at no expense to the Contractor:

Documents

Bid Drawings – Concourse A Bid Drawings – Concourse B

Bid Drawings – Concourse C

Tunnel Sewer Repairs IFB Specifications dated January 1, 2020

Additional copies of the foregoing documents will be furnished to the Contractor at the Contractor's expense. The Contractor will be responsible for supplying all subcontractors with copies of the Contract Documents at its expense.

If Sensitive Security Information ("SSI") is provided to the Contractor, the Contractor shall be required to comply with Department of Aviation, Standard Policies and Procedures No. 6003, "Contractor Protection of Sensitive Security Information," or its successor, and 49 C.F.R. § 1520, or its successor.

The City will not supply any copies of the General Contract Conditions to the Contractor at City expense.

SC-3 REVISIONS TO G.C. 201

The second sentence of General Condition 201 is amended to read: "The unit responsible for this management and control is the Airport Infrastructure Management Office under the supervision of the Senior Vice President for Maintenance and Airport Infrastructure Management."

SC-4 CITY LINE OF AUTHORITY AND CONTACTS

PCL Construction Services, Inc. Contract No. 202056250-00

In accordance with General Condition 214, the City's line of authority for administration of this Contract is:

<u>Chief Executive Officer (CEO)</u>. Executive Office, 9th Floor, Airport Office Building, 8500 Peña Boulevard, Denver, CO 80249. Any reference to the Manager of Aviation shall also mean Chief Executive Officer, Department of Aviation (CEO).

<u>Executive Vice President – Chief Operating Officer (EVP-COO)</u> who reports to the CEO. Airport Infrastructure Management office, 9th Floor, Airport Office Building, 8500 Peña Boulevard, Denver, CO 80249.

<u>Senior Vice President - Airport Infrastructure Management (SVP-AIM)</u> who reports to the COO. Airport Infrastructure Management office, 10th Floor, Airport Office Building, 8500 Peña Boulevard, Denver, CO 80249.

<u>Director of Infrastructure and Quality Assurance,</u> reports to the SVP-AIM. The Project Manager reports to the Director of Infrastructure and Quality Assurance. Airport Infrastructure Management Division, 7th Floor, Airport Office Building, 8500 Peña Boulevard, Denver, CO 80249.

<u>Project Manager</u>, the City representative who has day to day administrative responsibility of this Contract, and who reports to the SVP-AIM. All notices, requests, pay applications (pursuant to G.C. 902), and other correspondence from the Contractor shall be sent to the assigned Project Manager unless otherwise provided in this Contract. The Project Manager for this Contract is: Rachael Bray, Airport Infrastructure Management Office, 7th Floor, Airport Office Building, 8500 Peña Boulevard, Denver, CO 80249, phone 303-342-2200.

The CEO may from time to time substitute a different City official as the designated "SVP-AIM" hereunder, and any such change will be effective upon the issuance of written notice to the Contractor which identifies the successor SVP-AIM. The SVP-AIM may from time to time change the assigned Project Manager, and any such change will be effective upon the issuance of written notice to the Contractor which identifies the successor Project Manager.

SC-5 CONTRACTOR PERFORMANCE; SUBCONTRACTING

With respect to General Condition 501, no more than ninety-five percent (95%) of the work may be subcontracted. If it is determined to be in the City's best interest, this percentage may be modified throughout the course of the project by the SVP-AIM.

SC-6 COOPERATION WITH OTHERS

The Technical Specifications describe the constraints on the physical work site areas. These descriptions are not exhaustive, and the Contractor is required to coordinate its activities and work as may be required to meet FAA or City requirements while performing work on DEN.

Without limiting the foregoing, the following contracts administered by the City involve or may involve work overlapping or adjoining the Work under this Contract and may be prosecuted concurrently with the Work performed under this Contract. There may also be other adjoining or overlapping contracts which are not listed.

Contract Number	Description
202054550	Xcel Vault
Various	Concourse Expansion Projects (CCA, CCB, CCC)
Various	CCA/CCC PCA Plant
Various	GARDI
202055228	Boiler 1, 3, 4 Phase 1

SC-7 PROSECUTION AND COMPLETION OF THE WORK:

The Work to be performed under the Contract is described in the Technical Specifications and Contract Drawings. The Contractor shall complete the Work within 365 consecutive calendar days from Notice to Proceed.

The Work to be performed under the Contract may be divided into the Milestone Areas which are described in the Technical Specifications or Contract Drawings. The Contractor shall complete the work included within these areas within the number of days set forth by the Project Manager.

	Milestone	Date of Completion (or, days from NTP)
1.	Drainage Station-1 (DS-1)	110 days from NTP
2.	Drainage Station-2 (DS-2)	200 days from NTP
3.	Drainage Station-3 (DS-3)	300 days from NTP
4.	Drainage Station-4 (DS-4)	365 days from NTP

SC-8 LIQUIDATED DAMAGES

If the Contractor fails to achieve Substantial Completion of the Work within the Contract Time, the Contractor shall be liable to the City for liquidated damages at the rate of One Thousand Five Hundred Dollars (\$1,500.00) per day until substantial completion is achieved.

Article IV of the Contract and General Condition 602 cover payment and withholding of liquidated damages.

SC-9 FACILITY SECURITY AND PERSONNEL ACCESS

The Contractor shall conduct all its activities at the Airport in compliance with the Airport security system rules and regulations, which are administered by the Airport Operations Division. The Contractor shall obtain the proper access authorizations for its employees, subcontractors and suppliers (i.e., Badges and Permits), and shall be responsible for such persons' compliance with all the Airport rules and regulations. A copy of the Contractors' section of the Airport Security rules and regulations are available for Contractor review at the Airport Access Services Office, Concourse A East Subcore, 4th Level. Persons regularly entering the construction areas must obtain personnel access badges from the Airport Access Services Office and must display badges, at all times, upon entering the construction, restricted and sterile areas of the airport. Any employee, subcontractor or supplier who violates such rules may be subject to revocation of his access authorization, including authorization for access to the construction site and all other restricted and sterile areas.

The security status of the Airport is subject to change without notice. These contract Special Conditions are applicable to the current security status of the Airport. Should the security status of the Airport change at any time during the term of this Contract, a written notice shall be issued to the Contractor detailing all applicable security modifications from the airport's current security status. The Contractor shall take **immediate steps** to comply with those security modifications as directed in the written notice.

If these security modifications involve any additional project cost, the Contractor shall submit a Contractor Change Request in accordance with the General Conditions for the additional cost. The Contractor Change Request shall outline in specific detail the effects of the security modifications on the Contractor's performance of the Contract, and shall provide a detailed cost breakdown for each item for which the Contractor is requesting reimbursement.

The Contractor shall return to the City, at contract completion or termination, or upon demand by the City, all access keys issued to it by the City to all areas of the Airport. If the Contractor fails to return any such key or keys at contract completion or termination or upon demand by the City, the Contractor shall be liable to the City for all the City's costs, including the City's labor costs for employees, incurred in re-coring doors and any other work which is required to prevent compromise of the Airport security system. In order to collect such costs hereunder, the City may withhold funds in such amount from any amounts due and payable to the Contractor under this Contract.

The construction of all the Project / Task Items that involve the breaching of any airport perimeter security boundary or continued access to restricted access rooms or areas will require the posting of authorized contract security personnel to maintain required security controls. The Contractor's **Total Contract BID Amount** shall include the cost of providing security services to maintain control and supervision of any and all airport perimeter security boundary breaches and for the duration of work activities where access to restricted areas is required and until the airport perimeter security boundaries are reestablished.

When security boundaries are opened for any reason, the Contractor must maintain one hundred percent (100%) control and supervision for the entire time that the openings are present to prevent unauthorized access to the secure / restricted access areas.

THE IMPORTANCE OF THIS SPECIAL CONDITION CANNOT BE OVER-EMPHASIZED. SEVERE FINANCIAL PENALTIES AS WELL AS CONTRACT TERMINATION COULD RESULT IF AIRPORT PERIMETER SECURITY REQUIREMENTS ARE NOT STRICTLY FOLLOWED. THE REQUIREMENT TO PROVIDE ONE HUNDRED PERCENT (100%) CONTROL AND SUPERVISION OF BREACHES IN THE AIRPORT'S PERIMETER SECURITY BOUNDARY IS ABSOLUTE. AT NO TIME, DURING WORK AND NON-WORK HOURS SHALL ANY BREACHES IN THE AIRPORT'S SECURITY PERIMETER BE UNSUPERVISED AND / OR UNSECURED.

For off-hours of construction, the Contractor may choose to erect a temporary wall to close all perimeter openings. The wall construction shall be of sufficient materials and strength to prevent access to the airport's Sterile/Restricted Areas. The Contractor shall submit for review and approval, the details and materials for the temporary closure of security perimeter breaches for review and approval.

The Contractor will provide contract security guard services to maintain supervision of these openings. The security services must provide coverage to allow for lunch breaks, comfort breaks and etc. The security services **must** be obtained from the following contract security guard company:

HSS 900 S. Broadway, Suite 100 Denver, Colorado 80209

DEN Contact: Glenn Spies (303) 342-4323

All security guards provided for this project must have a Denver Airport SIDA Badge.

The DEN Security Guard Contractor may change between the bidding or Bid phase of this contract from Notice to Proceed to closure of all security perimeter breaches. The Contractor shall maintain a contractual relationship with the Security Guard Contractor holding the most current contract with Denver International Airport.

The Contractor shall continue to provide security of these areas until such time that the breaches in the airport's security perimeter have been permanently secured.

The Contractor shall submit a written security plan for approval to the Director of Airport Security prior to the start of construction on any work where a breach of the perimeter security boundaries is required.

SC-10 CONSTRUCTION ACCESS

The work site is located at DEN Concourses Utility & Baggage Tunnels – 8700 Pena Blvd, Denver, CO 80249. The Contractor shall have access to the work site via Gate 4 with all equipment and materials delivery routes per construction drawings. The Contractor is responsible for ensuring all of the Contractor's and Subcontractor's personnel have the ability to access and locate the areas of work where the scope is to be performed without additional escorting or supervision from DEN.

The City will not provide parking spaces for the Contractor's employees or subcontractor employees at the Airport. Arrangements for transportation and parking for all of its and its subcontractors' employees will be the responsibility of the Contractor. The Total Contract Bid Amount or Contract Amount shall include any and all costs associated with the Contractor's and subcontractors' employee parking. Information about parking facilities and charges is available from the Airport Parking Office. Refundable deposits are required for all parking passes.

Unless specifically required by the Contract Documents, the Contractor shall install no fences or other physical obstructions on or around any project work area without the approval of the City.

SC-11 VEHICLE PERMITTING

Vehicle access on the Airport Operation Area ("AOA") is controlled by and requires permission from the Airport Access Services Office. It is not anticipated that the Contractor will need to operate vehicles on the AOA to perform the Work. Only direct construction support vehicles and/or equipment will be allowed in the contractor's work areas or sites.

SC-12 VENDORS AND SUPPLIERS

The Contractor shall provide the Project Manager's office with a list of its equipment/material vendors and suppliers. Vendors or suppliers shall access the construction work areas via the Contractor's access route, described in SC-10 above. All delivery vehicles are subject to search.

SC-13 COMMUNICATION DEVICES

Any site communications devices, mobile communication devices or internet data devices used at DEN must be approved by DEN Technologies.

SC-14 USE, POSSESSION OR SALE OF ALCOHOL OR DRUGS

The Contractor and its officers, agents, and employees shall cooperate and comply with the provisions of Executive Order No. 94 and Attachment A thereto concerning the use, possession, or sale of alcohol or drugs. Violation of these provisions or refusal to cooperate with implementation of the policy can result in the City's barring the Contractor from City facilities or participating in City operations.

SC-15 ATTORNEYS' FEES

Colorado Revised Statute 38-26-107 requires that in the event any person or company files a verified statement

of amounts due and unpaid in connection with a claim for labor and materials supplied on this project, the City shall withhold from payments to the Contractor sufficient funds to insure the payment of any such claims. Should the City and County of Denver be made a party to any lawsuit to enforce such unpaid claims or any lawsuit arising out of or relating to such withheld funds, Contractor agrees to pay to the City its costs and a reasonable attorney's fee. Because the City Attorney Staff does not bill the City for legal services on an hourly basis, Contractor agrees a reasonable fee shall be computed at the rate of two hundred dollars per hour of City Attorney time.

SC-16 INSURANCE REQUIREMENTS

In accordance with the provisions of Title 16 of the General Conditions, the minimum insurance requirements for this contract are set forth in Section II-14 and Attachment 4 of the Instructions to Bidders. The Contractor specifically agrees to comply with each condition, requirement or specification set forth in the attachment for each required coverage during all periods when the required coverages are in effect.

Contractor and sub-contractors shall procure and maintain until all of their obligations have been discharged, including any warranty periods under this Contract are satisfied, required insurance against claims for injury to persons or damage to property which may arise from or in connection with the performance of the work hereunder by the Contractor, his agents, representatives, employees or sub-contractors.

The insurance requirements herein are minimum requirements for this Contract and in no way limit the indemnity covenants contained in this Contract.

The City and County of Denver in no way warrants that the minimum limits contained herein are sufficient to protect the Contractor from liabilities that might arise out of the performance of the work under this Contract by the Contractor, his agents, representatives, employees or sub- contractors. The Contractor shall assess its own risks as it deems appropriate and/or prudent, maintain higher limits and/or broader coverages. The Contractor is not relieved of any liability or other obligations assumed or pursuant to the Contract by reason of its failure to obtain or maintain insurance in sufficient amounts, duration or types.

Contractor shall furnish the City and County of Denver with certificates of insurance (ACORD form or equivalent approved by CCD) as required by this Contract. The certificates for each insurance policy are to be signed by a person authorized by the insurer to bind coverage on its behalf.

All certificates and any required endorsements are to be received and approved by the City before work commences. Each insurance policy required by this Contract must be in effect at or prior to commencement of work under this Contract and remain in effect for the duration of the project. Failure to maintain the insurance policies as required by this Contract or to provide evidence of renewal is a material breach of the Contract. All insurance coverages for sub-contractors shall be subject to the minimum requirements identified in the Exhibit. All sub-contractors' certificates and endorsements shall be received and approved by the Contractor before work commences. The City reserves the right to request copies of these certificates at any time.

All certificates required by this Contract shall be sent directly to ContractAdminInvoices@flydenver.com. The City project/contract number and project description shall be noted on the certificate of insurance. The City reserves the right to require complete, certified copies of all insurance policies required by this Contract at any time.

The parties hereto understand and agree that the City and County of Denver, its officers, officials and employees, are relying on, and do not waive or intend to waive by any provisions of this Contract, the monetary limitations or any other rights, immunities and protections provided by the Colorado Governmental Immunity Act, §§ 24-10-

101 - 120, C.R.S., or otherwise available to the City and County of Denver, its officers, officials and employees.

SC-17 SUBCONTRACTOR RELEASES

The release form referred to in General Condition 907 is attached to this Contract. It is entitled "Denver International Airport Partial Release."

SC-18 ADDITIONAL AFFIRMATIVE ACTION REQUIREMENTS, FEDERAL PROVISIONS

This contract is subject and subordinate to the terms, reservations, restrictions, and conditions of any existing or future agreements between the City and the United States, the execution of which has been or may be required as a condition precedent to the transfer of federal rights or property to the City for airport purposes, and the expenditure of federal funds for airport purposes. The "Federal Requirements" section attached hereto is made a part of this Contract.

SC-19 ESTIMATED QUANTITIES OF UNIT PRICED ITEMS

The "total estimated quantity" of each unit price item as stated on the bid schedules shall be the estimated quantity which is used to determine the percentage of change in such item for purposes of G.C. 1104.7.

SC-20 REVISIONS TO G.C. 1102

G.C. 1102.2 is amended by replacing the phrase "Change Request" in all its occurrences in such G.C. with the phrase "Change Notice."

G.C. 1102.3 is amended by replacing the phrase "Field Order/Change Order Directive" in all its occurrences in such G.C. with the phrase "Change Order Directive."

SC-21 LISTING OF ACCEPTABLE MANUFACTURERS

The Technical Specifications list "Acceptable Manufacturers" for certain products. Such listing identifies manufacturers of certain products which have been determined by a preliminary review to be able to meet the basic product and/or system technical requirements. The listing is not intended to provide a blanket endorsement or acceptance of the manufacturer's specified products or product line. All products from listed manufacturers must meet the detailed requirements of the Technical Specifications. Products that do not meet all detailed Technical Specifications are not acceptable and will be rejected, regardless of whether the manufacturer was listed as "acceptable." The Contractor is responsible for determining the acceptability of all products under the Technical Specifications prior to submission of products for approval.

SC-22 ACCESSIBLE PARKING SPACES, ACCESS AISLES AND ROUTES OF TRAVEL

If any Work is performed in or adjacent to parking facilities at the Airport, the Contractor is responsible for compliance with this SC-30. "Accessible" parking spaces and access aisles as used in this SC-30 mean parking spaces and access aisles which are accessible for, and reserved for use by, persons with disabilities. These parking spaces and access aisles are designed and built to standards established by federal regulations implementing the Americans with Disabilities Act of 1990 ("ADA"), and are marked by signage. "Accessible routes of travel" as used herein means routes through parking facilities which comply with ADA accessibility standards, including degree of slope and absence of obstructions.

Accessible routes of travel and accessible parking spaces and access aisles must be kept free of obstructions and construction debris at all times. No accessible parking spaces or access aisles or accessible routes of travel shall be relocated, blocked or rendered unusable unless the contractor has obtained specific advance approval in writing for such actions from the airport's ADA Compliance Officer.

When prosecution of the Work requires that accessible spaces be temporarily blocked, those accessible spaces and their access aisles shall be temporarily relocated to another location as close as possible to an accessible building entrance. Temporary signage that identifies these parking spaces and access aisles as reserved for the handicapped shall be installed, and the accessible route shall be clearly marked as required.

Before blocking or relocating accessible parking spaces or accessible routes of travel, the contractor must obtain written approval from the DEN ADA Compliance Officer, by submitting a completed request form, which will be provided to the Contractor by the Project Manager at the preconstruction meeting if it is not included as a standard form in Section 019990 of the Technical Specifications. The request shall include the location of alternative spaces and/or routes, and specifications of the temporary signage to be used. Work shall not proceed without this approval.

If a vehicle is parked in any accessible space which is either temporary or approved to be relocated, the contractor will not remove signage or take any other action which would allow the access aisle for such parking space to be blocked. Such actions must be postponed until the parking space is no longer occupied.

SC-23 SUBCONTRACTOR PAYMENTS AND SUBCONTRACTOR RELEASES – REQUIRED USE OF THE B2G CONTRACT MANAGEMENT SYSTEM

The Contractor is required to use the City B2G Contract Management System to report all subcontractor payments and shall adhere to the City's Procedure for Reporting Subcontractor Payments. It is the Contractor's obligation to ensure that complete subcontractor information is entered into the B2G System prior to submission of the first application for payment in order to avoid any delays in payment. The Contractor shall, prior to the submission of each subsequent invoice, ensure payments to subcontractors have been entered into the B2G System, including subcontractor confirmation of amount of payment received, for services performed during the prior billing period.

SC-24 PAYMENTS TO CONTRACTORS

The Contractor recognizes and agrees that applications for payment shall be submitted using the Textura® Payment Management System (PPM System), which will also be the payment mechanism to disburse payments to sub-contractors used on this Project. For more information, please refer to Division I, Technical Specifications.

The Contractor further agrees that, to the fullest possible within the TPM System, the City shall be entitled to all non-Confidential records, reports, data and other information related to the project that are available to Contractor through the TPM System, including, but not limited to, information related to Contractor and subcontractor billings. To that end, Contractor agrees that it will activate any available settings within the TPM System that are necessary to grant the City access to such non-Confidential information related to the contract and the project. Applications for payment shall be based on the Contract Unit Prices or the approved Schedule of Values described in GC 903.1

In accordance with General Contract Condition 902, PAYMENT PROCEDURE, the party(ies) responsible for review of all Pay Applications shall be:

Agency/Firm

DEN Division CA
DEN Division PM

DEN Division Director
DEN Contract Services CA
CCD Denver Prevailing Wage

In accordance with General Contract Condition 906, APPLICATIONS FOR PAYMENT, each Application submitted shall include the following:

- 1. The estimate of Work completed shall be based on the approved schedule of values or unit prices, as applicable, and the percent of the Work complete.
- 2. Each Application for Payment shall include each and every independent subcontractor's payroll information including pay dates and pay amounts.
- 3. The Contractor shall also submit to the Auditor and other appropriate officials of the City in a timely fashion, information required by General Contract Condition 1004, REPORTING WAGES PAID.

In accordance with General Contract condition 907, RELEASES AND CONTRACTORS CERTIFICATION OF PAYMENT, Applications for Payment must be accompanied by a completed Partial or Final Claim Release Form, as appropriate, from EACH subcontractor and supplier, <u>AND</u> the Contractor's Certification of Payment Form.

City and County of Denver



DEPARTMENT OF AVIATION DEPARTMENT OF PUBLIC WORKS

STANDARD SPECIFICATIONS FOR CONSTRUCTION GENERAL CONTRACT CONDITIONS

2011 Edition

Statement

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EXHIBIT G

Bond No. 6357704, 107272921, K40195609

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned PCL Construction Services, Inc. [Bidder name], a corporation organized under the laws of the State of CO [Bidder state], hereinafter referred to as the "Contractor" and Fidelity and Deposit Company of Maryland, Travelers Casualty and Surety Company of America, Federal Insurance Company [Bond issuer], a corporation organized under the laws of the State of IL, CT, IN [Bond company state], and authorized to transact business in the State of Colorado, hereinafter referred to as Surety, are held and firmly bound unto the CITY AND COUNTY OF DENVER, a municipal corporation of the State of Colorado, hereinafter referred to as the "CITY", in the penal sum of Seven Million, Four Hundred Twelve Thousand, One Hundred Sixty-Five and 0/100 Dollars (\$7,412,165.00), lawful money of the United States of America, for the payment of which sum the Contractor and Surety bind themselves and their heirs, executors, administrators, successors and assigns, jointly and severally by these presents.

WHEREAS, the above Contractor has, as of the date of execution listed on the contract signature page, entered into a written contract with the City for furnishing all labor, materials, equipment, tools, superintendence, and other facilities and accessories for the construction of Contract No. 202056250, Tunnel Sewer Repairs, Denver International Airport, in accordance with the Technical Specifications, Contract Drawings and all other Contract Documents therefor which are incorporated herein by reference and made a part hereof, and are herein referred to as the Contract.

NOW, THEREFORE, the condition of this performance bond is such that if the Contractor:

- Promptly and faithfully observes, abides by and performs each and every covenant, condition and part of said Contract, including, but not limited to, its warranty provisions, in the time and manner prescribed in the Contract, and
- Pays the City all losses, damages (liquidated or actual, including, but not limited to, damages caused by delays in the performance of the Contract), expenses, costs and attorneys' fees, that the City sustains resulting from any breach or default by the Contractor under the Contract, then this bond is void; otherwise, it shall remain in full force and effect.

IN ADDITION, if said Contractor fails to duly pay for any labor, materials, team hire, sustenance, provisions, provender, or any other supplies used or consumed by said Contractor or its subcontractors in its performance of the work contracted to be done or fails to pay any person who supplies rental machinery, tools, or equipment, all amounts due as the result of the use of such machinery, tools, or equipment in the prosecution of the work, the Surety shall pay the same in an amount not exceeding the amount of this obligation, together with interest as provided by law.

PROVIDED FURTHER, that the said Surety, for value received, hereby stipulates and agrees that any and all changes in the Contract or compliance or noncompliance with the formalities in the Contract for making such changes shall not affect the Surety's obligations under this bond and the Surety hereby waives notice of any such changes.

(End of Page)

	d Surety have executed these presents as of this day of
	PCL Construction Services, Inc.
	CONTRACTOR
	By: President District Manager
	Fidelity and Deposit Company of Maryland Travelers Casualty and Surety Company of America Federal Insurance Company SURETY By: Maryland Attorney-in-Fact Sandra M. Winsted
(Accompany this bond with Attorney-in-Fact's and date of the bond.)	uthority from the Surety to execute bond, certified to include the
	CITY AND COUNTY OF DENVER
	By:
	MAYOR
Signatures by CEO, CAO	
and the Mayor will be	
provided later and shall be	
fully incorporated herein	By:
	Chief Executive Officer Denver International Airport
	APPROVED AS TO FORM:
	KRISTIN M. BRONSON, Attorney for the City and County of Denver
	ву:
	Assistant City Attorney

Performance Bond and Payment Bond Date Authorization

City and County of Denver c/o Denver International Airport Attention Paul Gilchrist Airport Office Building, 8th Floor Denver, CO 80249 (as Obligee)

RE: Contractor (as Principal): PCL Construction Services, Inc.

Project Name: Contract No. 202056250 - Tunnel Sewer Repairs at Denver

International Airport

Contract Amount: \$7,412,165.00

Performance and Payment Bond(s) No.: 6357704, 107272921, K40195609

The Performance and Payment Bond(s) covering the above captioned project were executed by this agency, through Fidelity and Deposit Company of Maryland, Travelers Casualty and Surety Company of America, Federal Insurance Company, as Surety(ies), on February 19, 2021.

We hereby authorize the City and County of Denver to date all bonds and powers of attorney to coincide with the date of the contract

If you should have any additional questions or concerns, please do not hesitate to call the undersigned at 312-381-4589.

Thank you.

	Sincerely, Aon
	Va. O. M. Denslie
,	Signature Sandra M. Winsted
	Print Name Attorney-in-Fact
	Print Title

EXHIBIT H

Bond No. 6357704, 107272921, K40195609

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned PCL Construction Services, Inc. [Bidder name], a corporation organized under the laws of the State of CO [Bidder state], hereinafter referred to as the "Contractor" and Fidelity and Deposit Company of Maryland, Travelers Casualty and Surety Company of America, Federal Insurance Company [Bonding company name], a corporation organized under the laws of the State of IL, CT, IN [Bonding company state], and authorized to transact business in the State of Colorado, hereinafter referred to as Surety, are held and firmly bound unto the CITY AND COUNTY OF DENVER, a municipal corporation of the State of Colorado, hereinafter referred to as the "CITY", in the penal sum of Seven Million, Four Hundred Twelve Thousand, One Hundred Sixty-Five and 0/100 Dollars (\$7,412,165.00), lawful money of the United States of America, for the payment of which sum the Contractor and Surety bind themselves and their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the above Contractor has entered into a written contract with the City for furnishing all labor, materials, tools, superintendence, and other facilities and accessories for the construction of Contract No. 202056250 Tunnel Sewer Repairs, Denver International Airport, in accordance with the Technical Specifications, Contract Drawings and all other Contract Documents therefor which are incorporated herein by reference and made a part hereof, and are herein referred to as the Contract.

NOW, **THEREFORE**, the condition of this payment bond obligation is such that if the Contractor shall at all times promptly make payments of all amounts lawfully due to all persons supplying or furnishing it or its subcontractors with labor and materials, rental machinery, tools, or equipment, used or performed in the prosecution of work provided for in the above Contract and shall indemnify and save harmless the City to the extent of any and all payments in connection with the carrying out of such Contract which the City may be required to make under the law, then this obligation shall be null and void, otherwise, it shall remain in full force and effect;

PROVIDED FURTHER, that the said Surety, for value received, hereby stipulates and agrees that any and all changes in the Contract, or compliance or noncompliance with the formalities in the Contract for making such changes shall not affect the Surety's obligations under this bond and the Surety hereby waives notice of any such changes.

[END OF PAGE]

	<u> </u>	
		PCL Construction Services, Inc.
		CONTRACTOR
		By: President District Manage
		Fidelity and Deposit Company of Maryland Travelers Casualty and Surety Company of America Federal Insurance Company SURETY
		By Sandush Wash
		Attorney-in-Fact Sandra M. Winsted
clude the date of the b		
		CITY AND COUNTY OF DENVER
Signature	es hy CFO.	Ву:
CAO and will be pro	es by CEO, the Mayor ovided later be fully	
CAO and will be pr and shall	the Mayor ovided later be fully	By:
CAO and will be pr and shall	the Mayor ovided later	Ву:
CAO and will be pr and shall	the Mayor ovided later be fully	By: MAYOR By: Chief Executive Officer
CAO and will be pr and shall	the Mayor ovided later be fully	By: MAYOR By: Chief Executive Officer Denver International Airport

ZURICH AMERICAN INSURANCE COMPANY COLONIAL AMERICAN CASUALTY AND SURETY COMPANY FIDELITY AND DEPOSIT COMPANY OF MARYLAND POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS: That the ZURICH AMERICAN INSURANCE COMPANY, a corporation of the State of New York, the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, a corporation of the State of Illinois, and the FIDELITY AND DEPOSIT COMPANY OF MARYLAND a corporation of the State of Illinois (herein collectively called the "Companies"), by Robert D. Murray, Vice President, in pursuance of authority granted by Article V, Section 8, of the By-Laws of said Companies, which are set forth on the reverse side hereof and are hereby certified to be in full force and effect on the date hereof, do hereby nominate, constitute, and appoint Sandra M. WINSTED, Diane M. O'LEARY, Susan A. WELSH, Judith A. LUCKY-EFTIMOV, James B. MCTAGGART, Debra J. DOYLE, Sandra M. NOWAK, Jessica B. DEMPSEY, Christina L. SANDOVAL, Kristin L HANNIGAN and Samantha CHIERICI, all of Chicago, Illinois, EACH, its true and lawful agent and Attorney-in-Fact, to make, execute, seal and deliver, for, and on its behalf as surety, and as its act and deed: any and all bonds and undertakings, and the execution of such bonds or undertakings in pursuance of these presents, shall be as binding upon said Companies, as fully and amply, to all intents and purposes, as if they had been duly executed and acknowledged by the regularly elected officers of the ZURICH AMERICAN INSURANCE COMPANY at its office in New York, New York, the regularly elected officers of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND at its office in Owings Mills, Maryland, in their own proper persons.

The said Vice President does hereby certify that the extract set forth on the reverse side hereof is a true copy of Article V, Section 8, of the By-Laws of said Companies and is now in force.

IN WITNESS WHEREOF, the said Vice-President has hereunto subscribed his/her names and affixed the Corporate Seals of the said ZURICH AMERICAN INSURANCE COMPANY, COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, and FIDELITY AND DEPOSIT COMPANY OF MARYLAND, this 8th day of April, A.D. 2020.







ATTEST: ZURICH AMERICAN INSURANCE COMPANY COLONIAL AMERICAN CASUALTY AND SURETY COMPANY FIDELITY AND DEPOSIT COMPANY OF MARYLAND

By: Robert D. Murray Vice President

Dawn & Brown

By: Dawn E. Brown Secretary

State of Maryland County of Baltimore

On this 8th day of April, A.D. 2020, before the subscriber, a Notary Public of the State of Maryland, duly commissioned and qualified, **Robert D. Murray**, **Vice President and Dawn E. Brown**, **Secretary** of the Companies, to me personally known to be the individuals and officers described in and who executed the preceding instrument, and acknowledged the execution of same, and being by me duly sworn, deposeth and saith, that he/she is the said officer of the Company aforesaid, and that the seals affixed to the preceding instrument are the Corporate Seals of said Companies, and that the said Corporate Seals and the signature as such officer were duly affixed and subscribed to the said instrument by the authority and direction of the said Corporations.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my Official Seal the day and year first above written.

opal's and

Constance a. Dunn

Constance A. Dunn, Notary Public My Commission Expires: July 9, 2023

EXTRACT FROM BY-LAWS OF THE COMPANIES

"Article V, Section 8, Attorneys-in-Fact. The Chief Executive Officer, the President, or any Executive Vice President or Vice President may, by written instrument under the attested corporate seal, appoint attorneys-in-fact with authority to execute bonds, policies, recognizances, stipulations, undertakings, or other like instruments on behalf of the Company, and may authorize any officer or any such attorney-in-fact to affix the corporate seal thereto; and may with or without cause modify of revoke any such appointment or authority at any time."

CERTIFICATE

I, the undersigned, Secretary of the ZURICH AMERICAN INSURANCE COMPANY, the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, and the FIDELITY AND DEPOSIT COMPANY OF MARYLAND, do hereby certify that the foregoing Power of Attorney is still in full force and effect on the date of this certificate; and I do further certify that Article V, Section 8, of the By-Laws of the Companies is still in force.

This Power of Attorney and Certificate may be signed by facsimile under and by authority of the following resolution of the Board of Directors of the ZURICH AMERICAN INSURANCE COMPANY at a meeting duly called and held on the 15th day of December 1998.

RESOLVED: "That the signature of the President or a Vice President and the attesting signature of a Secretary or an Assistant Secretary and the Seal of the Company may be affixed by facsimile on any Power of Attorney...Any such Power or any certificate thereof bearing such facsimile signature and seal shall be valid and binding on the Company."

This Power of Attorney and Certificate may be signed by facsimile under and by authority of the following resolution of the Board of Directors of the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY at a meeting duly called and held on the 5th day of May, 1994, and the following resolution of the Board of Directors of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND at a meeting duly called and held on the 10th day of May, 1990.

RESOLVED: "That the facsimile or mechanically reproduced seal of the company and facsimile or mechanically reproduced signature of any Vice-President, Secretary, or Assistant Secretary of the Company, whether made heretofore or hereafter, wherever appearing upon a certified copy of any power of attorney issued by the Company, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

IN TESTIMONY WHEREOF, I have hereunto subscribed my name and affixed the corporate seals of the said Companies, this day of







By:

Brian M. Hodges Vice President

Sum Hodge

TO REPORT A CLAIM WITH REGARD TO A SURETY BOND, PLEASE SUBMIT A COMPLETE DESCRIPTION OF THE CLAIM INCLUDING THE PRINCIPAL ON THE BOND, THE BOND NUMBER, AND YOUR CONTACT INFORMATION TO:

Zurich Surety Claims
1299 Zurich Way
Schaumburg, IL 60196-1056
www.reportsfclaims@zurichna.com
800-626-4577



Travelers Casualty and Surety Company of America Travelers Casualty and Surety Company St. Paul Fire and Marine Insurance Company

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS: That Travelers Casualty and Surety Company of America, Travelers Casualty and Surety Company, and St. Paul Fire and Marine Insurance Company are corporations duly organized under the laws of the State of Connecticut (herein collectively called the "Companies"), and that the Companies do hereby make, constitute and appoint Sandra M. Winsted of Chicago

Illinois , their true and lawful Attorney-in-Fact to sign, execute, seal and acknowledge any and all bonds, recognizances, conditional undertakings and other writings obligatory in the nature thereof on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

IN WITNESS WHEREOF, the Companies have caused this instrument to be signed, and their corporate seals to be hereto affixed, this 3rd day of February, 2017.







State of Connecticut

City of Hartford ss.

By: Robert L. Raney, Senior Vice President

On this the 3rd day of February, 2017, before me personally appeared Robert L. Raney, who acknowledged himself to be the Senior Vice President of Travelers Casualty and Surety Company of America, Travelers Casualty and Surety Company, and St. Paul Fire and Marine Insurance Company, and that he, as such, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

In Witness Whereof, I hereunto set my hand and official seal.

My Commission expires the 30th day of June, 2021



Marie C Tetreault
Marie C. Tetreault, Notary Public

This Power of Attorney is granted under and by the authority of the following resolutions adopted by the Boards of Directors of Travelers Casualty and Surety Company of America, Travelers Casualty and Surety Company, and St. Paul Fire and Marine Insurance Company, which resolutions are now in full force and effect, reading as follows:

RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President, any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary may appoint Attorneys-in-Fact and Agents to act for and on behalf of the Company and may give such appointee such authority as his or her certificate of authority may prescribe to sign with the Company's name and seal with the Company's seal bonds, recognizances, contracts of indemnity, and other writings obligatory in the nature of a bond, recognizance, or conditional undertaking, and any of said officers or the Board of Directors at any time may remove any such appointee and revoke the power given him or her; and it is

FURTHER RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President may delegate all or any part of the foregoing authority to one or more officers or employees of this Company, provided that each such delegation is in writing and a copy thereof is filed in the office of the Secretary; and it is

FURTHER RESOLVED, that any bond, recognizance, contract of indemnity, or writing obligatory in the nature of a bond, recognizance, or conditional undertaking shall be valid and binding upon the Company when (a) signed by the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary and duly attested and sealed with the Company's seal by a Secretary or Assistant Secretary; or (b) duly executed (under seal, if required) by one or more Attorneys-in-Fact and Agents pursuant to the power prescribed in his or her certificate or their certificates of authority or by one or more Company officers pursuant to a written delegation of authority; and it is

FURTHER RESOLVED, that the signature of each of the following officers: President, any Executive Vice President, any Senior Vice President, any Secretary, any Assistant Vice President, any Secretary, and the seal of the Company may be affixed by facsimile to any Power of Attorney or to any certificate relating thereto appointing Resident Vice Presidents, Resident Assistant Secretaries or Attorneys-in-Fact for purposes only of executing and attesting bonds and undertakings and other writings obligatory in the nature thereof, and any such Power of Attorney or certificate bearing such facsimile signature or facsimile seal shall be valid and binding upon the Company and any such power so executed and certified by such facsimile signature and facsimile seal shall be valid and binding on the Company in the future with respect to any bond or understanding to which it is attached.

I, Kevin E. Hughes, the undersigned, Assistant Secretary of Travelers Casualty and Surety Company of America, Travelers Casualty and Surety Company, and St. Paul Fire and Marine Insurance Company, do hereby certify that the above and foregoing is a true and correct copy of the Power of Attorney executed by said Companies, which remains in full force and effect.

Dated this

day of







Kevin E. Hughes, Assistant Secretary



Power of Attorney

Federal Insurance Company | Vigilant Insurance Company | Pacific Indemnity Company Westchester Fire Insurance Company | ACE American Insurance Company

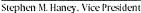
Know All by These Presents, that FEDERAL INSURANCE COMPANY, an Indiana corporation, VIGILANT INSURANCE COMPANY, a New York corporation, PACIFIC INDEMNITY COMPANY, a Wisconsin corporation, WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY corporations of the Commonwealth of Pennsylvania, do each hereby constitute and appoint Samantha Chierici, Jessica B. Dempsey, Debra J. Doyle, Derek J. Elston, Kristin L Hannigan, Jennifer L. Jakaitis, Andrew Marks, James B. McTaggart, Judith A. Lucky-Eftimov, Sandra M. Nowak, Diane M. O'Leary, Nicholas Pantazis, Christina L. Sandoval, Bartlomiej Siepierski, Christopher P. Troha, Aerie Walton, Susan A. Welsh and Sandra M. Winsted of Chicago, Illinois -

each as their true and lawful Attorney-in-Fact to execute under such designation in their names and to affix their corporate seals to and deliver for and on their behalf as surety thereon or otherwise, bonds and undertakings and other writings obligatory in the nature thereof (other than bail bonds) given or executed in the course of business, and any instruments amending or altering the same, and consents to the modification or alteration of any instrument referred to in said bonds or obligations.

In Witness Whereof, said FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, PACIFIC INDEMNITY COMPANY, WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY have each executed and attested these presents and affixed their corporate seals on this 16th day of January, 2020.

Drewn M. Chlaras

Dawn M. Chloros, Assistant Secretary



















Hutuf Adu Notary Public



STATE OF NEW JERSEY

County of Hunterdon

SS.

On this 16th day of January, 2020 before me, a Notary Public of New Jersey, personally came Dawn M. Chloros and Stephen M. Haney, to me known to be Assistant Secretary and Vice President, respectively, of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, PACIFIC INDEMNITY COMPANY, WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY, the companies which executed the foregoing Power of Attorney, and the said Dawn M. Chloros and Stephen M. Haney, being by me duly sworn, severally and each for herself and himself did depose and say that they are Assistant Secretary and Vice President, respectively, of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, PACIFIC INDEMNITY COMPANY, WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY and know the corporate seals thereof, that the seals affixed to the foregoing Power of Attorney are such corporate seals and were thereto affixed by authority of said Companies; and that their signatures as such officers were duly affixed and subscribed by like authority.

Notarial Seal



KATHERINE J. ADELAAR NOTARY PUBLIC OF NEW JERSEY No. 2316685 Commission Expires July 16, 2024

CERTIFICATION

Resolutions adopted by the Boards of Directors of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, and PACIFIC INDEMNITY COMPANY on August 30, 2016; WESTCHESTER FIRE INSURANCE COMPANY on December II, 2006; and ACE AMERICAN INSURANCE COMPANY on March 20, 2009:

"RESOLVED, that the following authorizations relate to the execution, for and on behalf of the Company, of bonds, undertakings, recognizances, contracts and other written commitments of the Company entered into in the ordinary course of business (each a "Written Commitment"):

- Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise
- Each duly appointed attorney-in-fact of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or (2) otherwise, to the extent that such action is authorized by the grant of powers provided for in such person's written appointment as such attorney-in-fact.
- Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to appoint in writing any person the attorneyin-fact of the Company with full power and authority to execute, for and on behalf of the Company, under the seal of the Company or otherwise, such Written Commitments of the Company as may be specified in such written appointment, which specification may be by general type or class of Written Commitments or by specification of one or more particular
- (4) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to delegate in writing to any other officer of the Company the authority to execute, for and on behalf of the Company, under the Company's seal or otherwise, such Written Commitments of the Company as are specified in such written delegation, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.
- The signature of any officer or other person executing any Written Commitment or appointment or delegation pursuant to this Resolution, and the seal of the Company, may be affixed by facsimile on such Written Commitment or written appointment or delegation.

FURTHER RESOLVED, that the foregoing Resolution shall not be deemed to be an exclusive statement of the powers and authority of officers, employees and other persons to act for and on behalf of the Company, and such Resolution shall not limit or otherwise affect the exercise of any such power or authority otherwise validly granted or vested."

I. Dawn M. Chloros, Assistant Secretary of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, PACIFIC INDEMNITY COMPANY, WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY (the "Companies") do hereby certify that

- the foregoing Resolutions adopted by the Board of Directors of the Companies are true, correct and in full force and effect,
- the foregoing Power of Attorney is true, correct and in full force and effect.

Given under my hand and seals of said Companies at Whitehouse Station. NI. this



Driver M. Orlores

Dawn M. Chloros, Assistant Secretary

IN THE EVENT YOU WISH TO VERIFY THE AUTHENTICITY OF THIS BOND OR NOTIFY US OF ANY OTHER MATTER, PLEASE CONTACT US AT: Fax (908) 903-3656 Telephone (908) 903-3493

Performance Bond and Payment Bond Date Authorization

City and County of Denver c/o Denver International Airport Attention Paul Gilchrist Airport Office Building, 8th Floor Denver, CO 80249 (as Obligee)

RE: Contractor (as Principal): PCL Construction Services, Inc.

Project Name: Contract No. 202056250 - Tunnel Sewer Repairs at Denver

International Airport

Contract Amount: \$7,412,165.00

Performance and Payment Bond(s) No.: 6357704, 107272921, K40195609

The Performance and Payment Bond(s) covering the above captioned project were executed by this agency, through Fidelity and Deposit Company of Maryland, Travelers Casualty and Surety Company of America, Federal Insurance Company, as Surety(ies), on February 19, 2021.

We hereby authorize the City and County of Denver to date all bonds and powers of attorney to coincide with the date of the contract

If you should have any additional questions or concerns, please do not hesitate to call the undersigned at 312-381-4589.

Thank you.

Sincerely,
Aon

Signature

Sandra M. Winsted

Print Name

Attorney-in-Fact

Print Title



EXHIBIT I

PROJECT MANUAL

TUNNEL SEWER REPAIRS

DEN Contract Number: 202056250

VOLUME 1

Issue For Conformed Documents 12/22/2020

City and County of Denver Department of Aviation

Kim Day, CEO

DEN TUNNEL SEWER REPAIRS

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CERTIFICATION(S)

ARCHITECTURAL



MECHANICAL/PLUMBING







STRUCTURAL





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SECTION 011100 - SUMMARY OF WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY AND DESCRIPTION

- A. The Work specified in this contract consists of furnishing all management, supervision, labor, materials, tools, equipment, services, testing and incidentals for the construction of the Work indicated in the contract documents including lump sum items and unit price items.
- B. The Work in this Contract may affect operations at DEN. The Contractor shall bid, plan and execute the Work to minimize disruption of operations and inconvenience to the public.

C. Change Notice:

- 1. The Contractor will be required to submit a proposal for each Change Notice
- 2. The Contractor shall submit a proposal for the complete scope of the Work within the specified duration identified by the Notice. Where there is no time requirement identified by the notice documents, the Contractor shall submit a proposal within 20 days of receiving the notice or as allowed in Title 11 Changes in the Work, Contract Price, or Contract Time of the General Contract Conditions, 2011 Edition.
- 3. The proposal could contain both competitive bid and estimated costs and shall adhere to the requirements of Title 11 of the General Contract Conditions.
- 4. The Contractor shall not proceed on any change notice work until a change order is issued.

D. Change Directives:

- The DEN Project Manager may issue Change Directive(s) for a Scope of Work.
 The Contractor shall keep all Time and Material record for any Change
 Directive(s) issued until a final settlement for the task is settled and finalized in a
 Change Order.
- 2. The Contractor shall keep records and approvals for all Time and Material impacts of a Change Directive until a final settlement is reached and fully executed by the DEN Project Manager.
- 3. The Contractor may invoice for a Change Directive in accordance with Title 11 of the General Contract Conditions, 2011 Edition.
- E. Guaranteed Maximum Price (GMP): For Contracts assigned as GMP the Contractor

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shall follow the Special Conditions issued for the Contract.

- F. This Project will be administered using the current Project Management Information System (PMIS). The application will be supplied by DEN at no cost to the Contractor. DEN will provide PMIS training for up to two (2) of the contractor's personnel.
- G. The Contractor shall participate in a preconstruction coordination meeting and update the existing BIM Project Execution Plan or prepare a BIM Project Execution Plan if one does not exist based upon the DEN BIM Project Execution Plan (BPXP) template included as provided by the DEN BIM group and the coordination meeting instructions.
- H. DEN utilizes several programs as part of the Asset Management System. Keeping accurate as-built record and operation and maintenance data are essential in the integrity and the validity of the airport operation. The Contractor is required to make every effort to keep the airport data informed, updated and accurate in the format required by DEN Project Manager:
 - 1. The Contractor shall provide and implement BIM Project Execution Plan based on the DEN BIM Project Execution Plan. The Contractor shall employ or contract a consultant to provide all the requirements to produce the Project model in the latest edition of the [currently approved DEN format] <insert requirements>.
 - 2. The Contractor shall comply with all the requirements of DEN BIM Project Execution Plan and provide the data to DEN to produce the complete record of the BIM model of the Project
- I. Inspection Requirements:
 - Special Inspection and Testing required by the building official or the Engineer of Record in the Contract Documents or in the Statement of Special Inspections will be performed by DEN contracted Agencies.
 - 2. Contractor shall subcontract Qualified Material Testing Agency(s) to perform all necessary Quality Control, processing control and any additional Testing required by the Contract Documents.
 - 3. DEN Quality Assurance Manager may audit all material tests performed by the Contractor Quality Control at any time. Testing and Inspections for structural elements [reinforced concrete, steel, masonry caissons, fire protection, precast and post tension concrete] not identified as special inspection will be performed by the Contractor Quality Control Program and Contractor Material Testing Agency and audited and confirmed by DEN Quality Assurance Manager. DEN will perform 100% visual inspection on all weldments. DEN will perform Quality Assurance testing at a frequency of approximately 10% of the Quality Control test and inspection frequencies. The testing frequencies by DEN may escalate to higher percentages and the Contractor will be responsible for all costs associated with failing tests of the same pay item elements. The Contractor may not hire the DEN contracted or testing agency in any capacity on this Project.
- J. DEN Quality Assurance will perform all quality assurance pull and adhesion tests on all airfield joint sealants. Contractor shall perform all quality control tests for the same items.

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K. DEN Quality Assurance is required to submit a letter indicating that all Work performed on the project complies with all applicable codes. The Contractor shall make sure that all required test frequencies and all deficiencies has been corrected to comply with all applicable codes standards and the requirements of the Contract Documents.

1.3 WORK BY OTHERS AND FUTURE WORK

A. Refer to Title 7 – Cooperation, Coordination and Rate of Progress of the General Contract Conditions, 2011 Edition

1.4 SITE CONDITIONS

A. Refer to Title 14 – Site Conditions of the General Contract Conditions, 2011 Edition

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 CONTRACTOR'S DUTIES

- A. Refer to Title 3 Contractor Performance and Services of the General Contract Conditions, 2011 Edition
- B. Execute the Work as specified and in a timely manner. Submit a schedule of Work that will be performed at times other than during the eight-hour working day of Monday through Friday, daylight hours. Submit this schedule five (5) working days prior to the beginning of Work to the DEN Project Manager for review and acceptance. Approval to work at night may be obtained after Contractor presents a written program outlining special precautions to be taken to control the extraordinary hazards presented by night work. That program shall include, but not limited to, supplementary lighting of work areas, availability of medical facilities, security precautions, and noise limitations.

3.2 COORDINATION

- A. Coordinate execution of the Work with those public utilities, governmental bodies, private utilities and other contractors performing work on and adjacent to the worksites. Eliminate or minimize delays in the Work and conflicts with those utilities, bodies, and contractors. Schedule governmental, private utility and public utility work that relies upon survey points, lines and grades established by the Contractor to occur immediately after those points, lines and grades have been established. Confirm coordination measures for each individual case with the DEN Project Manager in writing.
- B. In the coordination effort of work by others, the Contractor shall obtain and refer to equipment locations and other layouts, as available, to avoid interface problems.

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C. The City reserves the right to permit access to the site of the Work for the performance of work by other contractors and persons at such times that the City deems proper. The exercise of such reserved right shall in no way or to any extent relieve the Contractor from liability for loss and damage to the Work due to or resulting from its operations or from responsibility for complete execution of the Contract. The Contractor shall cooperate with other contractors and persons in all matters requiring common effort.

3.3 CONTRACTOR USE OF WORK SITE

- A. Confine work site operations to areas permitted by law, ordinances, permits, and the Contract.
- B. Consider the safety of the Work and that of the people and property on and adjacent to the work site when determining amount, location, movement, and use of materials and equipment on work site.
- C. Do not load work site with equipment and products that would interfere with the Work. Only equipment, tools, or materials required for this Work may be stored at the work site.
- D. Protect products, equipment, and materials stored on work site.
- E. Relocate stored products, equipment, and materials that interfere with operations of City, government bodies, public, and private utilities, and other contractors.

PART 4 - MEASUREMENT

4.1 METHOD OF MEASUREMENT

A. No separate measurement shall be made for work under this Section.

PART 5 - PAYMENT

5.1 METHOD OF PAYMENT

A. No separate payment will be made for work under this Section.

END OF SECTION 011100

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SECTION 011400 - WORK SEQUENCE AND CONSTRAINTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 OTHER WORK

A. Other concurrent construction contracts with which the Contractor must interface are described elsewhere in the Contract Documents. Refer to Section 013210 "Schedule" and the Special Conditions for specific work constraints and milestones.

1.3 WORK SEQUENCE

A. The work sequence shall comply with Phasing, Sequencing, and Milestones as indicated in the Contract Documents and in accordance with the approved Construction Schedule developed by the Contractor. The schedule shall comply with requirements indicated in the Special Conditions and Section 011400 "Work Sequence and Constraints". The Construction Schedule is described in Section 013210 "Schedule".

1.4 WORK CONSTRAINTS

A. Site Constraints:

- Access to the Project shall be generally as indicated in the Contract Documents.
 Access shall be organized and planned by the Contractor to ensure no disruption of airline or DEN operations.
- 2. Access to work sites will be strictly monitored and must comply with DEN Airport Operations and FAA Regulations. The Contractor shall provide monitoring and escorts as required by DEN Operations in the area of the Work.
- 3. The Contractor's staging area will be as indicated in the Construction Documents.
- 4. Contractor employee parking will not be allowed within the existing revenue control system. Parking facilities will be as indicated in the Construction Documents.
- 5. Material for work in the Terminal may be brought in through the [Terminal Loading Dock accessed via Gate 1] <Insert location>. Employee and material access to the Concourses will be via [Gate 5] <Insert location>.
- 6. The Contractor shall use the haul routes specified in the Construction Documents.

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7. If required, the Contractor shall provide a bus and driver to transport the Contractor's employees between the designated employee parking area and the work sites. No separate payment will be made for this bus and driver. The cost shall be included in the bid item "Mobilization". The bus driver shall be provided at all times when Contractor employees are working on the Project.

B. System Interruptions:

- 1. DEN is a 24/7/365 facility. Construction activity that requires any system shutdown must be coordinated with the project manager and DEN AIM MCC.
- 2. The Shutdown cannot proceed unless all approver groups have approved the request. If any of the groups rejects the request, you may not proceed with the Shutdown. If a Shutdown is determined to be an emergency due to pending health issues or the risk of additional damage, this process may be bypassed. If the Shutdown is an emergency, proceed with the shutdown without the approvals. Approvals must be obtained as follows
 - a. Airfield Shutdowns must be submitted at least 72 hours prior to the shutdown start date.
 - b. All other Shutdowns must be submitted at least five (5) business days prior to the shutdown start date.
 - c. All Shutdown Requests must be submitted using the Shutdown Request form, which can be accessed via the Home page of the DEN intranet.

C. Airfield Operations at Denver International Airport:

- 1. Full airport and aircraft operations are underway adjacent to this Project. Contractors are required to obtain a Contractor Participant Manual from the Security Manager and must follow the guidelines in the manual. Copies of the Contractor section of the manual are available for review at the Denver International Airport Access Services Office.
 - If any Work contains requirements for Work activities or access through or in the restricted area, reference Section 011420 "Security Requirements & Sensitive Security Information (SSI)" for requirements.
 - b. If not in a restricted area, the Contractor personnel still must be badged; reference Section 011420 "Security Requirements & Sensitive Security Information (SSI).
- D. Conduct of persons using the Denver Municipal Airport system:
 - Contractor activities shall comply with Airport Operations and Regulation 130
 "TRAFFIC" and Regulation 20 "CONDUCT OF PERSONS USING THE DENVER
 MUNICIPAL AIRPORT SYSTEM" shall be followed at all times. These
 regulations are available from Airport Operations at Denver International Airport.
- E. Operational safety on airports during construction:
 - 1. All Work shall be accomplished in accordance with FAA Advisory Circular

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AC150/5370-2C, "Operational Safety on Airports during Construction", FAR Part 139 and FAR Part 107 except as herein modified.

- F. Welding Equipment, Procedures and Constraints:
 - Natural gas-powered portable welders or inverter single- and three-phase electric
 portable welders are the only acceptable welding equipment to be used inside
 the building basement or tunnel areas. Acceptability of equipment other than the
 equipment noted above shall be at the sole discretion of the DEN Project
 Manager.
 - Welding activities inside buildings require submittal of a System Interruption Request (See paragraph "System Interruptions" above). Prior to welding in any area, the Contractor shall locate smoke detectors and shall request interruption of the fire alarm system. Subsequent to the interruption of the fire alarm system and prior to welding activities, the Contractor shall cover and protect smoke detectors until work is complete. Prior to expiration of each interruption of the system, the Contractor shall uncover the smoke detectors.
 - 3. Electrical Service: The Contractor shall be responsible for verifying with the. DEN Project Manager or representatives locations acceptable for accessing electrical power for welders and other electrical equipment feeders. The Contractor shall be responsible for all work and equipment required to install temporary or permanent electrical modifications for construction power and lighting.
 - a. Temporary Hook-up: In addition to the requirements of paragraph "Temporary Power and Lighting for Construction" below, comply with the following:
 - 1) Provide wiring sized to accommodate full load of welding equipment, accounting for voltage drop.
 - 2) Provide appropriate NEMA twist-lock or ANSI receptacle for welder hook-up.
 - 3) 480V, 3 phase, 3 pole, 4-wire twist lock ground line.
 - NEMA L16-20 or ANSI C73.87.
 - b. The Contractor may not begin operation of the equipment prior to request for inspection by DEN representatives and acceptance of the installation.
 - c. Permanent installation of electrical branch circuiting for welding equipment shall be made in accordance with all Division 26 Specification Sections
 - 4. Welding Practices: All standard safe welding practices must be followed, including but not limited to the following:
 - a. Flash protection for surrounding areas.
 - b. Contractor fire extinguisher in area.
 - c. One person in each welding area solely designated as fire watch for each welder.
 - d. Protect all equipment, cable trays and contents, etc., in area.
 - e. Use fire blankets and other appropriate materials to confine sparks and molten metal from the welding, cutting, and/or grinding activities.

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- f. All welders shall have been qualified through welding tests in accordance with applicable welding code, such as but not limited to AWS, ASME, API, within one year prior to welding taking place. Evidence of qualification shall be through Welding Performance Qualification Records (WPQR).
- g. All welder qualifications test shall be or shall have been administered and witnessed by an Independent Testing Agency (ITA), AWS Certified Welding Inspector (CWI).
- h. If recertification of welders is required, delay costs and retesting costs shall be borne by the Contractor.
- 5. Grounding: Review with DEN representative's area of work prior to beginning work to ensure ground procedures do not induce undesirable charges in steel building system or other systems. This review should take place subsequent to the pre-work meeting. Do not ground to adjacent building systems, baggage system, hangers, or devices that support mechanical or electrical equipment.
- G. Temporary Power and Lighting for Construction:
 - The Contractor shall be responsible for all work and equipment required to install temporary or permanent electrical modifications for construction power and lighting.
 - 2. The Contractor shall be responsible for all work and equipment required to install temporary or permanent electrical modifications for construction power and lighting.
 - a. Comply with all requirements of NEC Article 590.
 - b. Flexible cords used for temporary power shall be listed in accordance with NEC Article 400. and rated for 'extra-hard' usage.
 - c. Provide an equipment grounding conductor with all temporary power circuits.
 - d. All temporary power distribution devices and equipment shall be listed and rated for the application.
 - e. Provide ground fault protection for personnel.
 - f. Temporary lighting fixtures shall be protected from physical damage.

H. Cleaning Equipment and Spoils:

- Discharge of water, liquids, or chemicals into a building sanitary sewer system or storm drainage systems is prohibited. The Contractor shall comply with all Federal, State, and Local requirements for disposal of chemicals and equipment wash water. The Contractor shall maintain and service all equipment in work areas and collect all wash water, spoils and water from excavations in containers for discharge or removal off site.
- I. Vehicle Permitting for Tunnel and Basement Use:
 - 1. Electric carts require permitting. The Contractor shall provide at least one (1) electric cart for Contractor use during the work in the tunnel and basements of the buildings. Only electric or CNG powered trucks are allowed in the tunnel and

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basements of the buildings. Only electric or CNG trucks may be used and shall not be parked overnight or for long terms within the tunnel or basements. All vehicles require permitting. Permits may be acquired at the DEN Airport Security Office.

J. Radio and Cell Phone Use:

- 1. The Contractor shall have wireless communications in place prior to initiation of work in the tunnel or basements by use of cell phone and/or radio. Radio and cell phone coverage in the tunnels and basements varies in signal strength throughout the campus. An RF Application must be submitted for the Radio equipment intended for use at least 14 days prior to intended use. Include the following radio information:
 - a. Make
 - b. Model
 - c. Frequency
 - d. Effective Radiated Power (ERP)
- 2. Contractors must receive an approval letter from the RF Systems Manager prior to use of the radio equipment on the DEN campus.

K. Keys:

 The Contractor shall be required to contact DEN Maintenance Control to procure keys for access to all rooms having locks in order to gain access. Keys may be checked out at the beginning of each work shift by the Contractor and shall be returned to DEN Maintenance Control at the end of each work shift

1.5 COORDINATION

- A. The Contractor will designate a contact person for coordination with the DEN Project Manager and airline tenants. The contact person shall have the authority to make decisions for the Contractor firm and shall have binding signatory power for changes in work. The contact person shall be on site at all times during work activity.
- B. No additional costs shall be considered for coordination activities throughout this project. The Contractor shall include in the Contractor's bid costs for coordination of all activities.

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PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 DUST/PROTECTION BARRIERS

- A. HVAC system containment. The Contractor shall submit to DEN Maintenance HVAC and Fire Alarm shutdown requests prior to modifications to the area of work for dust containment. The HVAC system shall be interrupted, re-routed, or blocked off to prevent dust from entering return or supply ducts.
- B. Debris and Protection Barriers:. The Contractor shall construct code-approved and DEN-approved dust and debris barriers on both sides of walls and doors that are to be modified. Barriers shall be constructed to allow emergency ingress and egress to and from equipment and spaces. Barriers shall be constructed to allow continual uninterrupted function of building equipment and spaces.
 - 1. Return all removed door hardware to DEN. Label each hardware set correlating the door number of the original hardware set. Coordinate with the DEN Project Manager for storage and return of hardware.

3.2 EQUIPMENT

- A. Equipment: CNG-powered equipment is allowed within the buildings. No other fossil fuel equipment may be used within the buildings unless the equipment is directly vented to the building exterior.
- B. Electric: Electric powered equipment is acceptable in the Work area.

PART 4 - MEASUREMENT

4.1 METHOD OF MEASUREMENT

A. No separate measurement shall be made for work under this Section.

PART 5 - PAYMENT

5.1 METHOD OF PAYMENT

A. No separate payment will be made for work under this Section.

END OF SECTION 011400

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SECTION 011420 - SECURITY REQUIREMENTS & SENSITIVE SECURITY INFORMATION (SSI)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 DESCRIPTION

- A. Each Contractor is required to become a "Participant" in the DEN Airport Security Program (ASP), and must remain in good standing in order to retain Airport Security privileges.
- B. All Contractor employees and all vehicles requiring access to the Secured Area, Sterile Area, and/or any other Controlled Areas shall be required to obtain the proper access authorizations for Airport ID badges and vehicle permits.

1.3 PARTICIPANT OF AIRPORT SECURITY PROGRAM

- A. Contractors are required to become a "Participant" of the ASP. In order to become a "Participant", your company must attend a Participant meeting within the Airport Security Office.
- B. The Contractor shall comply with all Denver Municipal Airport System Rules and Regulations and all Transportation Security Administration (TSA) regulations. Special emphasis should be paid to Denver Municipal Airport System Rules and Regulations Part 20 Airport Security Rules and Regulations and Part 130 Operating Vehicles In The Secured Area" and Part 35 Operations Infraction Accountability Program". The Denver Municipal Airport System Rules and Regulations can be found on the flydenver.com website.
- C. The TSA has the authority to issue civil penalties for failure to adhere to their regulations.
- D. It is the responsibility of the Airport Security Office to ensure all fences and gates are secure. If a Contractor's operations necessitate the frequent use of a particular gate, the Contractor shall place, at the Contractor's expense, two (2) contract security guards at the gate that shall have been trained and certified by the Airport Operations Division to facilitate access to its Work. The Contractor assumes full responsibility for maintaining security once this is done. If the perimeter gate will be used as a haul route, the contractor must also place, at the Contractor's expense, Haul Route Monitors as dictated by the TSA approved Temporary Amendment. Any fines levied

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against the Airport as a result of the failure by the Contractor to provide adequate security shall be passed on to the Contractor.

- 1. If the Contractor provides guards or monitors, the Contractor must also supply a shelter for the guards/monitors. The shelter must meet the following requirements:
 - a. One 10 x 12 Tuff Shed or similar type structure with a window, 24-inch convex mirror mounted outside for vehicle inspection, sufficient HVAC capability, generator, light plant, and sanitary services, which are maintained by the Contractor.
- E. Contractors will be required at all times to have a supervisor or foreman at each work location in Secured, Sterile, and Controlled Areas.
- F. All Work shall be accomplished in accordance with the most current FAA Advisory Circular (AC) 150/5370-2, "Operational Safety on Airports during Construction", 49 Code of Federal Regulations (CFR) Part 1542 and 14 CFR Part 139 except as modified herein.
- G. All Work shall be accomplished in accordance with the most current TSA Security Directives applicable to DEN, except as modified herein.
- H. This Section intends to supplement, modify, change, delete from, or add to the most current FAA AC150/5370-2. Where any paragraph, subparagraph, or clause of the AC is modified or deleted by these supplements, the unaltered provisions of that paragraph, subparagraph, or clause shall remain in effect.

1.4 SENSITIVE SECURITY INFORMATION (SSI)

- A. If the Contract involves SSI information or procedures, the Contractor must contact the Assistant Director of Airport Security or designee, for disclosure information, as well as protocols that must be followed with SSI distribution.
- B. This Section governs the maintenance, safeguarding, and disclosure of records and information that the TSA has determined to be SSI as defined by 49 CFR Part 1520, "Protection of Sensitive Security Information". SSI is information that the TSA has determined to be detrimental to the security of Denver International Airport if disclosed to unauthorized persons. This is a process for the documentation, use, and recovery of SSI of a specific origin.

C. Applicability:

- 1. For all management staff, all authorized departments, all contractors, and subcontractors handling documents or materials containing SSI information.
- 2. Each person employed by, contracted to, or acting on behalf of the Department of Aviation at Denver International Airport is subject to the requirements of this Section.
- 3. SSI disclosure is limited to persons or entities under criteria identified in federal

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regulations, subject to strict "need-to-know" standard, and as otherwise determined by TSA or the Department of Homeland Security (DHS).

- D. Except as otherwise provided in this Section, records containing SSI are not available for public inspection or copying. Denver International Airport will not release such records to persons without a need to know. Prime contractors will not release SSI records to any subcontractor without a need to know. An employee or contractor has a "need to know" SSI if access to the information is necessary for performance of his or her official duties.
- E. Unauthorized disclosure of SSI is a Federal violation of 49 CFR Part 1520 and violation is grounds for a civil penalty and other enforcement action by DHS Security. In addition to the civil penalties, corrective action may include issuance of an order requiring retrieval of SSI to remedy unauthorized disclosure, an order to cease future unauthorized disclosure, and dismissal from the work site.
- F. Except as otherwise provided in writing by the TSA in the interest of public safety or airport security, the following information and records containing such information constitute SSI:
 - 1. Information that would be detrimental to the security of Denver International Airport and aviation transportation.
 - 2. Any performance specification, including a description of devices and procedures used by Denver International Airport, for the detection of any weapon, explosive, incendiary, or destructive substance.
 - 3. Any performance specification, including a description of devices and procedures, for any communications equipment used by Denver International Airport in carrying out any aviation transportation security requirements.
 - 4. Details of any security inspection or investigation of an alleged violation of aviation transportation security requirements of Federal law that could reveal security vulnerability.
 - 5. Specific details of aviation transportation security measures including those recommended by the Federal government.
 - 6. The following information regarding security screening under aviation transportation security requirements of Federal law:
 - a. Procedures for screening of persons, property, checked baggage, U.S. mail, and cargo.
 - b. Information used by a passenger or property-screening program or system, including an automated screening system.
 - c. Detailed information, if determined by the TSA to be SSI, about the locations at which particular screening methods or equipment are used.
 - d. Performance or test data from security equipment or screening systems.
 - 7. Identifying information of certain aviation transportation security personnel including lists of the names or other identifying information that identify persons as having unescorted access to a secure area of the airport.
 - 8. Critical aviation asset information identifying systems so vital to the airport that the incapacity or destruction of such assets would have a debilitating impact on

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aviation security.

- 9. Any information involving the security of operational or administrative data systems identified by the Department of Transportation or DHS as critical to the safety or security of Denver International Airport.
- 10. Solicited or unsolicited proposals, pursuant to a grant or contract, to perform work that relates to security measures.
- G. Restrictions on the Disclosure of SSI:
 - 1. Employees and contractors working onsite have a duty to protect sensitive security information and must take reasonable steps to safeguard SSI in that person's possession from unauthorized disclosure. When a person is not in physical possession of SSI, the person must store it in a secure container such as a locked desk, a locked file cabinet, or in a locked room. SSI is to be disclosed only to persons having a need to know as stated in CFR 1520. Requests for SSI are to be referred to City Project Manager.
 - 2. Prior to receiving SSI records, contractors must sign the "Confidentiality and Non-Disclosure Agreement", Form PS-17, stating that SSI will be guarded from unauthorized persons, that records will be controlled while in use and secured when not in use, and that all SSI plans and records will be returned to the airport or destroyed following the completion of the Project.
 - Return or destruction of SSI documents must be done in a timely manner and documented on the SSI Return or Destruction Compliance Form, Form PS-20. Companies under contract to the City must return or destroy all SSI material following the completion of the Work. Companies not selected during the bidding process must return or destroy all SSI material immediately following the announcement of bid results.
- H. If a record containing SSI is received that is not marked as specified in this Section below, the following steps must be taken:
 - 1. Mark the record as specified in paragraph Part 1 of this Section.
 - 2. Inform the sender of the record that the record must be marked as specified in Part 1 of this Section.
- I. If a person becomes aware that SSI has been released to unauthorized persons, promptly inform the Communication Center Supervisor at 303-342-4020 and request to speak to the on-call Airport Security Coordinator
- J. Marking SSI:
 - In the case of paper records containing SSI, a covered person must mark the record by placing the PROTECTIVE MARKING conspicuously on the top, and the DISTRIBUTION LIMITATION STATEMENT on the bottom, of following parts of the document:
 - a. The outside of any front and back cover, including a binder cover or folder, if the document has a front and back cover.
 - b. Any title page
 - c. Each page of the document

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2. Protective Marking:

- a. SENSITIVE SECURITY INFORMATION
- b. Distribution Limitation Statement:
- c. WARNING: This record contains Sensitive Security Information that is controlled under 49 CFR parts 15 and 1520. No part of this record may be disclosed to persons without a "need to know", as defined in 49 CFR parts 15 and 1520, except with the written permission of the Administrator of the Transportation Security Administration or the Secretary of Transportation. Unauthorized release may result in civil penalty or other action. For U.S. government agencies, public disclosure is governed by 5 U.S.C. 552 and 49 CFR parts 15 and 1520
- 3. In the case of non-paper records that contain SSI, including motion picture films, videotape recordings, audio recording, and electronic and magnetic records, a covered person must clearly and conspicuously mark the records with the protective marking and the distribution limitation statement such that the viewer or listener is reasonably likely to see or hear them when obtaining access to the contents of the record.

K. Destruction of SSI:

- When the employee or contractor no longer needs the SSI to carry out their work requirements, the SSI must be returned to the issuing entity or completely destroyed by burning or cross-shredding to preclude recognition or reconstruction of the information.
- 2. The Contractor shall comply with all the requirements of the Department of Aviation Standards and Procedures, Protection of Sensitive Security Information (SSI) No. 10003 Revised 08/01/15 regarding Contractor Protection of Sensitive Security Information (SSI).

1.5 MISCELLANEOUS

A. Dumpster Security Requirements:

- The following procedures must be followed to provide maximum security with all construction projects in public areas unless an exception has been made by the Airport Security Coordinator (ASC) or designee:
 - a. Roll-off dumpsters must have the ability to be covered (hard side) and locked when not in use.
 - b. When unlocked and in use, the Contractor shall provide an employee, or a subcontractor's employee, to stand by the dumpster to prevent unauthorized placement of prohibited items
- 2. If the Contractor is not able to have a roll-off dumpster with the ability to be locked, the dumpster shall be removed from the public area when the construction site is inactive.

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B. Contractor Fences (Not Perimeter Fence):

- 1. If required, the Contractor shall establish and maintain a secure (fenced) perimeter at its primary operations area to include its field offices, staging and storage areas, and maintenance facilities. The responsibility for security within its operations area shall rest solely with the Contractor. Entrance gates to operations areas shall be equipped with a combination of locks to include a lock provided by the City for its use in accessing emergency equipment, should that need arise. The location, size and other physical characteristics of the Contractor's operations area must be approved by the DEN Project Manager prior to its installation.
- Unless specifically required by the Contract Documents and with the exception of the fenced operations area described above, the Contractor shall install no fences or other physical obstructions on or around the Project work area without the written approval of the DEN Project Manager.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SUBMITTAL FOR AIRPORT ID BADGES

- A. By submitting information for the individual requesting or requiring an Airport ID badge that would permit unescorted access to the Sterile and/or Secured Areas must be fingerprinted and pass a Criminal History Records Check (CHRC) and Security Threat Assessment (STA). Passing a CHRC means the employee shall not have been convicted, given a deferred sentence, found not guilty by reason of insanity or have been arrested and are awaiting judicial proceedings of any felony charge during the ten (10) years before the date of the individual's application for unescorted access authority. For an individual to obtain driver authorization to drive within the Secured Area, the individual must have a valid driver license that allows them to drive their contractor vehicle.
- B. An employee requesting an Airport ID badge must resolve all pending or valid violations before being allowed to proceed in the airport ID badging process. If the employee no longer works for the company and is attempting to be employed by a different company, a management representative from the "new" company must attend the Violation Notice Hearing along with the employee.
- C. Airport ID Badges are obtained as follows:
 - The Contractor shall meet with the City Project Manager to review the
 procedures and required access points at DEN. The Contractor and the DEN
 Project Manager shall visit the site to verify the access points. Access points
 shall be listed and submitted by the Contractor to the DEN Project Manager for
 review and comment prior to Contractor's application for badging.
 - 2. The Contractor shall designate an Authorized Signatory who must attend an

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annual class with Airport Security. The Authorized Signatory must be an employee of the Contractor, have a valid Denver International Airport ID badge. The Authorized Signatory will be authorized to sign for the Contractor on the Fingerprinting and Badge Application Form and will be the primary designation contact for Airport Security related business.

- 3. The Contractor's Authorized Signatory shall schedule a Participant Meeting with the DEN Airport Security Office to review DEN security procedures and receive training on how to ensure that all Participants remain in compliance with Part 20 of the Denver Municipal Airport System Rules and Regulations. A second meeting will be scheduled for the Authorized Signatory to learn how to successfully complete the required forms for Airport ID badges and vehicle permits.
- 4. A CHRC and STA are required for each employee requesting unescorted access to the Secure and/or Sterile Area. The employee will complete the Fingerprinting and Badge Application (two-sided form) and schedule an appointment with the Airport Security Office to have the form reviewed and to be fingerprinted. The Federal Bureau of Investigation will conduct the CHRC and will return the results to the Airport Security Office. For the fee for the Fingerprinting, please see the flydenver.com website. The Transportation Security Administration will process the STA and will return the results to the Airport Security Office.
- 5. When the Authorized Signatory is notified by Airport Security that the CHRC and STA have cleared, the applicants must come to the Airport Security Office to receive regulated security and driver training. The training will take approximately one (1) hour for security training and approximately two (2) hours for security and driver training.
- 6. All applicants must watch and pass all concepts of a computer based security training module for a Security Identification Display Area (SIDA) Airport ID badge. All individuals requesting driver authorization in the non-movement area must also view an interactive computer based driver training module and complete a test by passing all concepts. In addition, the individual must receive non-movement driver orientation training by the Contractor's driver representative before being allowed to drive on the airfield. Non Movement Orientation training should be conducted annually.
- 7. All Airport ID badges must be immediately terminated upon employee separation from the Contractor or when a need for DEN access no longer exists.
- 8. The Airport ID badges must be returned to the Airport Security Office prior to final payment. All Airport ID badges are issued with an annual expiration date. The expiration date is determined by the birthday of the Airport ID badge holder. Contractors shall notify the DEN Project Manager as soon as possible but in no case less than four (4) weeks in advance of any requirement to extend the Sponsorship status.

PART 4 - MEASUREMENT

4.1 METHOD OF MEASUREMENT

A. No separate measurement shall be made for work under this Section.

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PART 5 - PAYMENT

5.1 METHOD OF PAYMENT

A. No separate payment will be made for work under this Section.

END OF SECTION 011420

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SECTION 011430 - VEHICLE AND EQUIPMENT PERMITTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. The Contractor shall comply with the Airport Security Program. Vehicle permits are required for all vehicles operating in the Secured Area. The DEN vehicle permit is required for vehicles operating in the Secured Area but limited to above grade, outdoor activity. Vehicles or machinery operating within buildings shall be required to acquire a DEN emissions permit as well as a DEN vehicle permit.
- B. Special emphasis should be paid to Denver Municipal Airport System Rules and Regulations Part 20 – Airport Security Rules and Regulations and Part 130 – Operating Vehicles In The Secured Area" and Part 35 – Operations Infraction Accountability Program". The Denver Municipal Airport System Rules and Regulations can be found on the flydenver.com website.
 - 1. All Work shall be accomplished in accordance with the most current FAA Advisory Circular (AC) 150/5370-2, "Operational Safety on Airports during Construction", 49 Code of Federal Regulations (CFR) Part 1542 and 14 CFR Part 139 except as modified herein.
 - 2. All Work shall be accomplished in accordance with the most current TSA Security Directives applicable to DEN, except as modified herein.
 - Access to the runways, taxiways, and aprons shall be gained by the Contractor
 after establishing radio communications with Airport Operations through the DEN
 Inspector. No personnel or equipment will be allowed on the runways until radio
 contact has been made with Airport Operations and permission given.
 - 4. Access to the Movement Area will be limited in order to allow the maximum efficient movement of aircraft. As part of this limitation, the Contractor may be required to only use these areas late at night when there is less aircraft traffic
 - Once admitted into the Secured Area, the Contractor shall proceed directly to the work location by way of a route assigned by Airport Security. At no time shall a Contractor or any of its personnel enter onto a taxiway, runway, or ramp without proper clearance from the Airport Operations Manager or Assistant Airport Operations Manager. Contractors or individuals violating these requirements for driving in the Secured Area may be subject to fines, suspension, or permanent revocation of their driver authorization and/or Airport ID badge privileges.
 - 6. The Transportation Security Administration (TSA) requires that all operating airports be secured from the general public and has the authority to issue citations for violations of these requirements. It is the responsibility of the Airport

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to ensure all fences and gates are secure. If a Contractor's operations necessitate the frequent use of a particular gate, the Contractor shall place guards at the gate. Refer to 011420 – Security Requirements and SSI for details regarding the placement of guards.

- C. General Safety Regulations When in Aircraft Operations Areas May Include the Following:
 - At all times, the Contractor shall coordinate its Work with the requirements of the Airport site and operations. All Work, movement of personnel, materials, supplies and equipment in areas used by aircraft shall be subject to regulations and restrictions established by the City. The Contractor shall take special precautions and be fully responsible for the prevention of damage to materials and equipment in the areas affected by the jet blast of taxiing aircraft. No work shall proceed until necessary protective devices are placed as required to protect the public, airport operations, property, and personnel from the hazards of the Work. The Contractor shall proceed with the Contractor's Work, including temporary work and storage of tools, machinery, and materials, to cause no interference with or hazards to the operation of the Airport.
 - 2. Landings, takeoffs, and taxiing shall take precedence over all Contractors' operations. In the event that the Contractor is notified that an emergency landing or a takeoff is imminent, the Contractor shall stop all operations immediately, regardless of the sequence of events in progress and shall immediately evacuate the Contractor's personnel and equipment from the runway and taxiway areas as directed.
 - 3. The Contractor shall remove its personnel and equipment to the distance specified below for the prevailing conditions:
 - a. For emergencies, the Contractor shall move all personnel and equipment as directed by Airport Operations or the DEN Project Manager.
 - b. At the end of a work day in areas where aircraft are operating, all equipment shall be moved to a location that is not less than 750 lineal feet measured from the near edge of the runway, taxiway or ramp area or to the location designated by the City.
 - 4. If the Contractor is asked to leave part of its work site to allow aircraft operation, the Contractor shall clean the area to allow safe aircraft movement. Cleaning may include sweeping the area to prevent damage to aircraft.

D. Vehicle Permitting:

- 1. Refer to the Denver Municipal Airport System Rules and Regulations Part 20 Airport Security Rules and Regulations and Part 130 Operating Vehicles In The Secured Area" and Part 35 Operations Infraction Accountability Program" for information regarding vehicle permitting. These Denver Municipal Airport System Rules and Regulations can be found on the flydenver.com website.
- 2. For additional information regarding permitting, the Contractor must contact DEN Security.
- E. Equipment Permitting

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- 1. Fossil fuel powered equipment to be used in the interior of buildings and/or in basement/tunnel areas shall require inspection by DEN Maintenance and the Denver Fire Department.
 - a. Only CNG fossil fuel powered equipment may be used; gasoline powered, propane powered, or diesel powered equipment will not be acceptable unless identified and operated per Section 011400 "Work Sequence and Constraints".

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PERMITS

- A. Vehicle permits shall not be issued prior to Notice to Proceed. The Contractor may, at the Contractor's own risk, submit required information prior to Notice to Proceed to the following:
 - 1. Vehicle permit: DEN Engineering Group or DEN Airport Security.
 - 2. Equipment and vehicle emissions permit. DEN Engineering or DEN Maintenance Group.

3.2 SCHEDULE

A. The Contractor shall allow in the Contractor's schedule five (5) days for DEN review of submittals for permits. Testing of equipment and review by the Denver Fire Department shall be scheduled by the Contractor. By submitting information for permits, the Contractor certifies that equipment and vehicles comply with Contract documents and with all City, state and federal regulations including but not limited to emissions, licensing and safety requirements.

PART 4 - MEASUREMENT

4.1 METHOD OF MEASUREMENT

A. No separate measurement shall be made for work under this Section.

PART 5 - PAYMENT

5.1 METHOD OF PAYMENT

A. No separate payment will be made for work under this Section.

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END OF SECTION 011430

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SECTION 011810 - UTILITIES INTERFACE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Various utilities are located within the limits of work in the Project area. The owners of these utilities hereinafter noted may require that the Contractor is to work around their existing facilities until such alterations, relocation, or abandonment have been completed. All known existing utilities are shown; however, the Contractor shall verify and satisfy himself that there are no other existing utilities that may not be shown.
- B. The owners of known utilities within the project area and corresponding representatives include, but are not limited to:
 - 1. Century Link Telephone
 - 2. DEN Telephone
 - 3. Xcel Energy Natural Gas
 - 4. Xcel Energy Elec. Services
 - 5. DEN Storm Water
 - 6. DEN Sanitary Sewer
 - 7. Denver Water Department
 - 8. Inland Technologies
 - 9. Fuel System (ASI)
 - 10. Premise Wiring System- DEN IT Section
 - 11. FAA Duct Bank
 - 12. Oil/Gas Wells
 - 13. DEN Electrical Department
 - 14. Fire Alarm System
 - 15. Paging System
- C. The location and establishment of each construction vehicle crossing shall be at sites mutually agreed upon in writing by the Contractor and the owner of the utility.
- D. At the locations where the Contractor needs to establish a construction vehicle crossing over any of the operating pipelines, the furnishing and placing of a crossing shall be by the Contractor. The crossing shall allow the normal operation of the pipeline at all times. Each crossing shall be adequately marked and signed for safe passage of vehicles over the crossing. Construction vehicles shall not be allowed to cross over operating pipelines at any place other than an established crossing.
- E. These utility locations are based upon information provided by the utility companies or

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previous construction contractors that were the basis for determining utility coordinates. The Contractor is responsible for confirming the accuracy of the provided coordinates.

F. The Contractor shall control the Contractor's operations in order to avoid creating any obstacles for the utility owner's access for maintaining or operating their equipment.

1.3 REFERENCE DOCUMENTS

A. Section 312323.33 "Flowable Backfill (Controlled Low-Strength Material)"

1.4 REGULATORY REQUIREMENTS

A. The Contractor shall obtain and pay for all utility company permits, fees, and licenses necessary for the execution of this work. The Contractor shall give all notices and shall comply with all laws, ordinances, rules, and regulations of all authorities having jurisdiction.

1.5 QUALITY CONTROL

A. When the Contractor performs any operations that will affect a utility owner, the Contractor shall give timely notice to the utility owner and the DEN Project Manager so that the Contractor's operations may be observed by the utility owner or their representative.

1.6 WORK INCLUDED

- A. The Work of this Section includes furnishing all materials, equipment, and labor necessary to provide utility crossings as required and as specified herein and subject to approval by the associated utility owner.
- B. North American Resources has a line passing through airport property. The Contractor shall contact the utility prior to beginning earthwork operations to ascertain any special requirements or conditions required to maintain and protect this service during construction activities.
- C. FAA Underground Duct lines: The FAA has duct lines passing under the site. The Contractor shall contact the FAA prior to beginning earthwork operations to ascertain any special requirements or conditions required to maintain this service during construction activities.

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PART 2 - PRODUCTS

2.1 MATERIALS

- A. Suitable cover material shall be in accordance with Colorado Department of Transportation Standard Specifications. Wet, soft, or frozen material, asphalt chunks, or other deleterious substances shall not be used for cover.
- B. Aggregate for road base material shall consist of clean, sound and durable particles of crushed stone, crushed gravel or crushed slag, shall be free from coatings of clay, silt and organic matter, and shall contain no clay balls. Material shall conform to the State of Colorado Standard Specifications for Road and Bridge Construction Class 6 aggregate base unless otherwise specified.
- C. The materials for the load distribution system on top of the cover shall conform to the specification of the American Institute of Steel Construction, the American Institute of Timber Construction, or the American Concrete Institute, as applicable, depending upon the system agreed upon between the Contractor and utility owner.
- D. Materials for the sleeving of the pipelines shall be purchased by the utility owner at the Contractor's expense.
- E. Comply with utility backfill requirements for the use of flowable backfill in Section 312323.33 "Flowable Backfill (Controlled Low-Strength Material)" and Division 26 and Division 33 requirements.

PART 3 - EXECUTION

3.1 NOTIFICATION OF UTILITIES FOR LOCATING AND POTHOLING

- A. The Contractor shall verify the location of all utilities prior to any operations including physically uncovering the utility to verify location as required by the utility owner.
- B. The Contractor shall notify the Utility Notification Center of Colorado at (303) 534-6700 or 811, as a minimum for location of utilities.

PART 4 - MEASUREMENT

4.1 METHOD OF MEASUREMENT

A. No separate measurement shall be made for work under this Section.

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PART 5 - PAYMENT

5.1 METHOD OF PAYMENT

A. No separate payment will be made for work under this Section.

END OF SECTION 011810

TECHNICAL SPECIFICATIONS 01 GENERAL REQUIREMENTS 012300 ALTERNATES DENVER INTERNATIONAL AIRPORT TUNNEL SEWER REPAIRS CONTRACT NO.202056250

SECTION 012300 - ALTERNATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for alternates.

1.3 DEFINITIONS

- A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
 - 1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
 - 2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

- A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
 - 1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
- B. Notification: Prior to the Contractor signing the Contract, the Owner will notify each party involved, in writing, of the status of each alternate, indicating if alternates have been accepted, rejected, or deferred for later consideration. The owner will also include a complete description of negotiated revisions to alternates.
- C. Execute accepted alternates under the same conditions as other Work of the Contract.
- D. Schedule: A schedule of alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to

TECHNICAL SPECIFICATIONS 01 GENERAL REQUIREMENTS 012300 ALTERNATES DENVER INTERNATIONAL AIRPORT TUNNEL SEWER REPAIRS CONTRACT NO.202056250

achieve the Work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

A.

1. Alternates:

Item No.	Add Alternate Description and	Unit	Quantity	Unit	Item Total
	Price			Rate	
1	Provide an add alternate cost associated with providing Schedule 80 PVC pipe in lieu of Schedule 40 PVC for all new buried piping (approximately 180 LF of 12" and 1340 LF of 8", contractor to verify).	Lump Sum			
2	Provide an add alternate cost for CIPP liner for existing piping mains (where specifically indicated on the drawings) East of column W1, including camera/video of existing industrial sewer piping main (exclude all indicated branch piping). Record location and extent of deformation/damage of pipe. Include all requirements outlined in the applicable specifications.	Lump Sum			
3	Provide an add alternate cost to provide point repair of existing 6" industrial sewer main below the East Baggage Tunnel. Include furnishing all equipment, labor and materials and costs to x-ray slab, saw cut the existing slab, excavation, haul off damaged pipe, replace 5 LF of main, import/haul in backfill material and replace the existing reinforced concrete slab and restore surface to the	5 LF	12	\$	\$

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	satisfaction of the owner.			
4	Provide unit price to remove contaminated soils (from the site to the North Stock Pile area) that is encountered during excavation/hand digging. Include cost for testing soil to determine the contamination	Cubic Yard	100	\$ \$

PART 4 - MEASUREMENT

4.1 METHOD OF MEASUREMENT

A. No separate measurement shall be made for work under this Section.

PART 5 - PAYMENT

5.1 METHOD OF PAYMENT

A. No separate payment will be made for work under this Section.

END OF SECTION 012300

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SECTION 012510 - SUBSTITUTIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. All material and equipment substitutions must comply with Title 4, Article 406: Substitution of Materials and Equipment in the General Contract Conditions, 2011 Edition.
- B. The Work specified in this Section consists of submitting form CM-09, Request for Substitution for the approval of a different material, equipment, or process than is described in the Contract Documents.
- C. If the substitution changes the Scope of Work, Contract cost, or Contract time, a Change Order is required.
- D. As-built drawings and specifications must include all substitutions even if a Change Order is not issued.

1.3 REFERENCE DOCUMENTS

- A. Form CM-09, Request for Substitution
- B. Section 013300 "Submittal Procedures"
- C. Section 013325 "Shop and Working Drawings, Product Data and Samples"

1.4 QUALITY CONTROL

1. The substitution shall provide as a minimum, the same performance as specified.

1.5 SUBMITTALS

- A. Refer to Section 013300 "Submittal Procedures" and Section 013325 "Shop and Working Drawings, Product Data and Samples" for submittal procedures.
- B. A completed Form CM-09 shall be submitted at least 60 days prior to when an order needs to be placed or a method needs to be changed.

- C. The submittal shall contain all the data required to be submitted for acceptance of the originally specified item or process, including, as appropriate:
 - 1. Detailed product data sheets for the specified items and the substitution.
 - 2. Samples and shop drawings of the substitution.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SUBSTITUTION PROCESS

A. Provide the information as required on Form CM-09.

3.2 SUBSTITUTION REQUEST

- A. The formal Request for Substitution will be evaluated by the DEN Project Manager and the Designer of Record based on the following criteria:
 - 1. Compatibility with the rest of the project.
 - 2. Reliability, ease of use and maintenance.
 - 3. Both initial and long term cost.
 - 4. Schedule impact.
 - 5. The willingness of the Contractor to share equally in any cost savings.
 - 6. The ability of the item or process to meet all applicable governing regulations, rules, and laws along with funding agency requirements.
 - 7. The cost of evaluating the substitution.
- B. Based upon the above evaluation, the Sr. Director of AIM Development will make a final determination of what is in the best interest of the City and either approve, disapprove or approve as noted the requested substitution.

3.3 CONDITIONS

- A. As a condition for submitting a Request for Substitution the Contractor waives all rights to claim for extra cost or change in Contract time other than those outlined in the request and approved by the Deputy Manager of Aviation. The Contractor, by submitting a Request for Substitution, also accepts all liability for cost and scheduling impact on other contractors or the City due to the substitution.
- B. Included with the Request for Substitution shall be the following statement:
 - 1. "The substitution being submitted is equal to or superior in all respects to the Contract-required item or process. All differences between the substitution and the Contract-required item or process are described in this request along with all required information, cost, and scheduling data."

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- C. The statement shall be signed and dated by the Contractor's Superintendent.
- D. Replacement of Substitution Found to be Not Equal:. The Contractor shall be responsible for all aspects and conditions of the substitution that are not clearly identified in the substitution submittal, and shall be liable for the appearance, function, performance or other aspects of the substitution that are found not to be equal to the originally specified item.
 - 1. The Contractor shall incur all labor and costs associated with replacement of any substitution that is found to be not equal to the originally specified item or process and rejected by the DEN Project Manager.
 - 2. The replacement of any rejected substitution shall either be with the originally specified item or process, or a substitution approved by the DEN Project Manager

PART 4 - MEASUREMENT

- 4.1 METHOD OF MEASUREMENT
 - A. No separate measurement shall be made for work under this Section.

PART 5 - PAYMENT

- 5.1 METHOD OF PAYMENT
 - A. No separate payment will be made for work under this Section.

END OF SECTION 012510

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SECTION 012910 - SCHEDULE OF VALUES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions other Division 01 Specification Sections, and Related Requirements apply to this Section.

1.2 RELATED REQUIREMENTS

- A. The Work specified in this Section consists of preparing and submitting the Schedule of Values ("Schedule") as referenced in the General Conditions. Use the Project Specifications Table of Contents or Bid Tabs, if applicable, as a guide to establish line items for the Schedule of Values. Provide at least one line item for each Specification Section. The Work also includes the preparing and submitting of updated copies of the Schedule if the Schedule is affected by change orders.
- B. A Schedule of Stored Material is a detailed cost breakdown for permanent materials that will be temporarily stored prior to their being installed and for which the Contractor seeks partial payments. The Schedule of Stored Material will be incorporated as a part of the Schedule of Values.
- C. Within 14 calendar days of issuance of the Notice to Proceed (NTP), the Contractor shall submit the Schedule of Values including the Schedule of Stored Material if applicable. The Schedule of Values and Schedule of Stored Material used to prepare the work/cost breakdown for the Schedule will be used for the Contractor's billings.
- D. Any Contract allowances shall be included in the Schedule. Expenditure of allowances shall be done using the Allowance Authorization form. Use of this form does not increase or decrease the Contract value.

1.3 RELATED DOCUMENTS

- A. Title 9 Compensation of the General Contract Conditions, 2011 Edition
- B. Section 013300 "Submittal Procedures"
- C. Section 013325 "Shop and Working Drawings, Product Data and Samples".
- D. Form CM-89, Schedule of Values
- E. Form CM-91, Schedule of Values for Unit Price Contracts

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1.4 SUBMITTALS

- A. The Schedule of Values shall be formally approved by the DEN Project Manager.
- B. The Schedule shall identify each item of work. Work items in the Schedule shall represent all Work and shall be referenced with the Technical Specifications section numbers, specification subparagraph, specification section title and the bid item number used for the Schedule of Prices and Quantities when applicable.
- C. Upon request by the City, the Contractor shall support values given with the data that will substantiate the correctness of the values.
- D. The Schedule will be utilized only as a basis for review of the Contractor's application for progress payment.

1.5 REVIEW AND RESUBMITTAL

A. If review by the DEN Project Manager indicates that changes to the Schedule are required, the Contractor shall revise and resubmit the Schedule.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PREPARING SCHEDULE OF VALUES

- A. Provide a breakdown of the Contract Price in enough detail to facilitate continued evaluation of Applications for Payment and progress reports.
- B. Breakdown of the items used in the Schedule shall include the following item costs. Ensure each item is complete:
 - 1. Delivered cost of product with applicable taxes paid.
 - 2. Total installation cost with overhead and profit.
 - 3. Breakdown costs of each lump sum item with a list of products and major operations for which the Contractor seeks to receive progress payments to recover the Contractor's costs for that bid Item.
 - 4. Each unit price item as listed in the bid Schedule of Prices and Quantities shall list products and major operations for which the Contractor seeks to receive progress payments for that bid item.

3.2 PREPARING SCHEDULE OF STORED MATERIAL

A. The Contractor shall submit with the Schedule an indication of whether products will be stored on or off the work site. The Schedule of Stored Material shall show all quantities and types of products that will be stored.

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- B. Material allowances consist of only the net cost of the product, the cost of delivery and unloading at the storage site, the cost of applicable sales taxes, and all discounts.
- C. In no case will the cost paid for a permanent material be greater than 90 percent of the Contract price for the Work in which they are included.

3.3 PAYMENT FOR STORED MATERIALS

- A. Only materials that are described in the specifications and on the drawings will be considered permanent materials. Permanent materials are materials that will be left in the Work after the Contract is completed.
- B. Nothing in these specifications shall be interpreted as requiring the City to pay for stored materials. The DEN Project Manager shall decide on a case-by-case basis whether stored materials shall be paid for. No payment will be made for stored materials that have not been submitted and accepted.
- C. The Contractor must, at all times, store permanent materials in accordance with manufacturer's recommendations. Any material not properly stored will not be paid for. Amounts will be deducted from payments for any stored permanent material previously paid for and subsequently found to be improperly stored or not present, based upon a physical inventory of stored permanent material.
- D. Only the neat line quantity of material needed for the finished product may be paid for.
- E. All requests for stored permanent material payment must be accompanied by paid invoices clearly showing the quantity of permanent material, the type of permanent material and discounts or rebates and the net amount paid to the supplier along with a certificate stating that the permanent material is free of any liens or judgments preventing its use by the City.
- F. If the permanent material is stored outside the Denver area the Contractor must pay for the City representative's transportation and lodging to see the stored material as needed. Acceptable lodgings must, as a minimum, have a Mobil Travel Guide Rating Criteria® rating of Two-Star or the American Automobile Association Lodging Listing Requirements & Diamond Rating Guidelines® rating of Two Diamonds. The minimum transportation shall be by regularly scheduled commercial air carrier at coach rates. The DEN Project Manager will determine if an overnight stay is required.
- G. All permanent material stored off site, for which payment is being requested, must be insured and stored in bonded, insured warehouses. The Contractor shall provide proof of insurance for all material stored off site, and specific address and storage conditions of storage location.
- H. Any permanent material on which payment is requested must be in such a form that it cannot be used on work other than this Contract, or stored in a manner acceptable to the DEN Project Manager to ensure that the permanent material cannot be used on work other than this Contract.

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3.4 ALLOWANCE AUTHORIZATION AND PAYMENT

- A. Contractor shall request written approval for expenditure of any Contract allowances PRIOR TO performing the Work involved. List work to be performed and estimated cost in the requesting correspondence.
- B. Original copies of all invoices and receipts must be submitted with the Allowance Authorization as part of the request for payment.
- C. Using the format provided by the City, the Contractor's request for payment of all Contract allowances shall be included in the Schedule of Values.

PART 4 - MEASUREMENT

4.1 METHOD OF MEASUREMENT

A. No separate measurement shall be made for work under this Section.

PART 5 - PAYMENT

5.1 METHOD OF PAYMENT

A. No separate payment will be made for work under this Section.

END OF SECTION 012910

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SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative provisions for coordinating construction operations and coordination with other stakeholders and adjacent Contractors on the Project including,
 - 1. Subcontractor's Acceptance Certification and Subcontractors List.
 - 2. General Coordination Procedures.
 - 3. Contract Administration Procedures.
 - 4. Current Project Management Information Systems (PMIS)
 - 5. Coordination drawings.
 - 6. Current DEN Asset Management Systems
 - 7. Requests for Information (RFIs).

B. Related Requirements:

- Section 011100, "Summary of Work" for a description of the division of work among separate contracts and responsibility for coordination activities not in this Section.
- 2. Section 011400 "Work Sequence and Constraints" for shutdown requests and coordinating with airport operational activities.
- 3. Section 011420 "Security Requirements and Sensitive Security Information (SSI)".
- 4. Section 013210 "Schedule" for preparing and submitting Contractor's Construction Schedule.
- 5. Section 013223 "Construction Layout, As-built and Quantity Surveys" for coordinating, survey activities and survey related record documents.
- 6. Section 013300 "Submittal Procedures."
- 7. Section 013325 "Shop and Working Drawings, Product Data and Samples".
- 8. Section 017720 "Contract Closeout" for coordinating closeout of the Contract.
- 9. Section 017419 "Construction Waste Management and Recycling".
- DEN Building Information Modeling (BIM) Design Standards Manual (DSM)

1.3 DEFINITIONS

A. RFI: Request from the DEN Contractor DEN Project Manager seeking information required by or clarifications of the Contract Documents.

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1.4 SUBMITTALS - SUBCONTRACTORS ACCEPTANCE CERTIFICATION AND SUBCONTRACTORS LIST

- A. To comply with Section 502.2 in the General Contract Conditions, 2011 Edition, the Contractor must complete and submit form CM-02 Subcontractor Acceptance Certification for each Subcontractor working on the project. Additionally, the Contractor must prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design.
- B. Provide emergency contacts list to the DEN Project Manager prior to any site activities. List must contain project name, number, location, company name and address, name and title of emergency contacts in order and time and assigned responsibilities. Keep list current and accurate at all times. Include any specific security arrangements or special projects requirements.
- C. Within two (2) days of Notice to Proceed, the Contractor shall submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identifying individuals and their duties and responsibilities listing addresses and telephone numbers, including home, office, and cellular telephone numbers and e-mail addresses. Providing names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.
 - 1. Post copies of the accepted list in project meeting room, in temporary field office, and by each temporary telephone. Keep list current at all times.

1.5 GENERAL COORDINATION PROCEDURES

- A. Coordination with other Contractors:
 - For details on coordinating with other Contractors, refer to Article 701
 Cooperation with Other Work Forces, Article 702 Coordination of the Work, and
 Article 703 Coordination of Public Contact in the General Contract Conditions,
 2011 Edition.
- B. Minimum cooperation requirements with other contractors include the following, unless directed by the DEN Project Manager in writing:
 - 1. Regular meetings, minimum weekly.
 - Construction schedule coordination.
 - 3. Staging area and access planning (to include employee shuttle routes).
 - Deliveries.
 - 5. Traffic control.
 - 6. When and where required or specified, the Contractor shall develop appropriate coordination drawings for use by interfacing adjacent parties using the Denver International Airport site.
- C. The following is a list that includes, but is not limited to, all of the contractors that will be working in the area of the project limits:

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- D. Coordination with DEN entities shall include but is not limited to the following:
 - 1. Coordinate with Owner Contracted Communication Contractor.
 - 2. Coordinate with Utility Companies for utilities that are single sole source.
 - 3. Coordinate with Airport Security and DEN Maintenance for all security related services.
 - 4. Coordinate with DEN Life Safety Team for all issues related to fire alarm, fire protection systems in addition to compliance with all regulatory agencies.
 - 5. Coordinate all shutdowns and system interruptions in accordance with section 011400 "Work Sequence and Constraints."

1.6 Contract Administration Procedures:

- A. This Project will be administered in part using the current Project Management Information System (PMIS). Any processes necessary to properly administer the Contract and not included in the list below shall be addressed as acceptable to the DEN Project Manager. DEN Project Manager may modify the list below in serialized correspondence without constituting a change to the Contract. Administrative tools and processes shall not in any form waive any contractual or legal requirements of the law or the Contract. The Contractor shall attend all coordination meetings with the DEN Project Manager and the DEN Project Control Administrators to arrange for staff training, and technical support to facilitate the execution of electronic data management and control.
- B. Project Management Information Systems (PMIS): Oracle Unifier Enterprise Project Portfolio Manager (EPPM), or the Oracle Primavera P6.
- C. All submittals, RFIs, Pay Applications, Correspondence, change requests, and pricing proposals and settlement agreements shall be recorded and submitted using the current PMIS:
 - 1. The Contractor shall follow the specified PMIS Access Request Procedure and adhere to all user license conditions.
 - 2. The Contractor shall sign the Information Technology Agreement (ITA) to comply with the DEN computer system security requirements and any contractual obligation to the software and service providers for the current PMIS software
 - 3. DEN will train the Contractor's staff on the use of the PMIS.
 - 4. At a minimum, the Contractor shall provide computer hardware and software to meet the following requirements and to run the following programs, as required for the project:
 - a. Internet connectivity that provides the necessary high-speed connection to perform all activities indicated in this Contract.
 - b. Internet Explorer version 8 or higher.
 - c. Based on the project, a specific Java JRE application may be required, which can be downloaded from the Internet. If needed, the revision and update number will be provided at NTP.
 - d. Other files capability pre-approved by the DEN Project Manager or as required by the DEN BIM Execution Plan

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e. Most current version of Revit, as per DEN requirements.

1.7 COORDINATION DRAWINGS

- A. Coordination Drawings, General: Prepare coordination drawings according to requirements in individual Sections, BIM Design Standards Manual and BIM Project Execution Plan (BPXP), and additionally where installation is not completely shown on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity. Coordination drawings will be the result of a Contractor driven Spatial Coordination effort as spelled out in the BPXP.
 - 1. Field verify all existing dimensions and any as-built dimensions, whether built by the Contractor or others, necessary to produce accurate coordination and working drawings.
 - 2. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:
 - a. Use applicable Models/Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
 - b. Coordinate the addition of trade-specific information to the coordination drawings by multiple contractors in a sequence that best provides for coordination of the information and resolution of conflicts between installed components before submitting for review.
 - c. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
 - d. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
 - e. Show location and size of access doors required for access to concealed dampers, valves, and other controls.
 - f. Indicate required installation sequences.
 - g. Indicate dimensions shown on the Models/Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to DEN Project Manager indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.
- B. Coordination Drawing Organization: Using software as in the BPXP, the Contractor shall coordinate these systems per floor or zone per BPXP, and as follows:
 - 1. Floor Plans and Reflected Ceiling Plans: Show architectural and structural elements, and mechanical, plumbing, fire-protection, fire alarm, and electrical Work. Show locations of visible ceiling-mounted devices relative to acoustical ceiling grid. Supplement plan drawings with section drawings where required to adequately represent the Work.
 - 2. Plenum Space: Indicate subframing for support of ceiling and wall systems,

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mechanical and electrical equipment, and related Work. Locate components within ceiling plenum to accommodate layout of light fixtures indicated on Drawings. Indicate areas of conflict between light fixtures and other components.

- 3. Mechanical Rooms: Provide coordination drawings for mechanical rooms showing plans and elevations of mechanical, plumbing, fire-protection, fire alarm, and electrical equipment.
- 4. Structural Penetrations: Indicate penetrations and openings required for all disciplines.
- 5. Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.
- 6. Mechanical and Plumbing Work: Show the following:
 - a. Sizes and bottom elevations of ductwork, piping, and conduit runs, including insulation, bracing, flanges, and support systems.
 - b. Dimensions of major components, such as dampers, valves, diffusers, access doors, cleanouts and electrical distribution equipment.
 - c. Fire-rated enclosures around ductwork.
- 7. Electrical Work: Show the following:
 - a. Runs of vertical and horizontal conduit.
 - b. Light fixture, exit light, emergency battery pack, smoke detector, and other fire-alarm locations.
 - c. Panel board, switchboard, switchgear, transformer, busway, generator, and motor control center locations.
 - d. Location of pull boxes and junction boxes dimensioned from column centerlines.
- 8. Fire-Protection System: Show the following:
 - a. Locations of standpipes, mains piping, branch lines, pipe drops, and sprinkler heads.
- 9. Review: DEN Project Manager will review coordination drawings to confirm that the Work is being coordinated, but not for the details of the coordination, which are Contractor's responsibility. If DEN Project Manager determines that coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, DEN Project Manager will so inform Contractor, who shall make changes as directed and resubmit.
- C. Coordination Digital Data Files: Prepare coordination digital data files according to the following requirements:
 - 1. File Preparation Format: Same digital data software program, version, and operating system as original Drawings, unless approved otherwise by DEN Project Manager.
 - 2. File Preparation Format: Provided in the Project BIM Execution Plan operating in Microsoft Windows operating system.

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- 3. File Submittal Format: Submit or post coordination drawing files as required in the Project BIM Execution Plan.
- 4. The submittal must be logged in accordance with the submittal procedure
- 5. For Fire Protection system; provide shop drawing and design calculations as approved by the building department. Submit as-built drawings in format as outline in BPXP.
- 6. For all projects, receiving official variance from the BIM requirements not utilizing BIM, coordination drawings must be submitted in acceptable digital format shall be in an industry recognized 3D AutoCAD model.
- 7. BIM File Incorporation: DEN Project Manager will incorporate Contractor's coordination drawing files into Building Information Model for Revit as established for Project.
 - a. Contractor shall lead three-dimensional component conflict analysis as part
 of preparation of coordination drawings. Resolve component conflicts prior
 to submittal. Indicate where conflict resolution requires modification of
 design requirements by Architect or other sub-consultants.
- 8. DEN Project Manager will furnish Contractor one (1) set of digital data files of Models and/or Drawings for use in preparing coordination digital data files.
 - a. The Design consultants and Contractors and Sub Contractors acknowledge and represent the following Right Of Reliance regarding Electronic Models and/or Drawing deliverables:
 - Models may be transferred for allowing the recipients to develop derivative models to develop the means and methods by which to construct the project.
 - 2) It must be clear that each party be able to rely on the fact that the model furnished by others "match the 2D Contract Documents or shop drawings in their equivalent state of development"
- 1.8 Coordination with DEN Asset Management System:
 - A. The full intent is to produce comprehensive record documents integrating existing data in the form of digital files and models, reconciled to actual field conditions, modifications or additions facilities or components of existing facilities according to new Contract Documents, and to produce record documents that could be incorporated into DEN asset management system.
 - B. Utilize the BIM to link all necessary data content to the model and follow the BPXP as collaboratively modified by the Contractor, Designer, and DEN BIM Administrators and approved by DEN Project Manager
 - C. Provide the following information through the execution of the Contract for all elements and element types that DEN has designated as assets. The information shall include but is not limited to:
 - 1. Project title, number, project manager contact information, contractor and

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- subcontractor contact information
- 2. Pertaining shop drawings
- 3. Operational Manuals and safety information, MSDS and cut sheets, and any pertinent technical information.
- 4. Details of all components' maintenance procedures and requirements.
- 5. Details of all applicable warranties including but not limited to; warranty providers, manufacturers information, warranty start and finish dates, contacts, bonding company name, consent of surety.
- 6. Equipment location (by room number and location description or grid location format acceptable to DEN Project Manager, for civil projects), equipment make, model, serial number, and other asset information as outlined in the DEN BIM DSM
- 7. List of all spare parts including but not limited to; equipment make and model, location, submittal number or link, and suppliers reordering information
- 8. Commissioning results, acceptance criteria, test reports, and Tab reports

1.9 REQUESTS FOR INFORMATION (RFIs)

- A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI through the PMIS
 - 1. DEN Project Manager will distribute the RFIs to the proper entities.
 - 2. DEN Project Manager will coordinate and submit RFIs in a prompt manner to avoid delays in Contractor's Work or work of subcontractors
- B. DEN Project Manager has the right to reject-RFIs or those that do not contain proper information and required data to properly evaluate the request and respond in a timely manner.
- C. RFIs: Use PMIS to generate RFIs.
 - Attachments shall be electronic files in Adobe Acrobat PDF format.
 - 2. Attachments include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
 - a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.
- D. For projects not using Unifier to create the RFI, the RFI must include a detailed, legible description of item needing information or interpretation and the following:
 - 1. Project name.
 - 2. Project number.
 - 3. Date.
 - 4. Name of Contractor.
 - 5. Name of DOR[and DEN Project Manager].
 - 6. RFI number, numbered sequentially.

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- 7. RFI subject.
- 8. Specification Section number and title and related paragraphs, as appropriate.
- 9. Drawing number and detail references, as appropriate.
- 10. Field dimensions and conditions, as appropriate.
- 11. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
- 12. Contractor's signature.
- 13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
- E. DEN Project Manager will review each RFI, determine action required, and respond. RFIs received by DEN Project Manager after 1:00 p.m. will be considered as received the following working day. Direct responses by any entity other than DEN Project Manager shall not be binding to the City and County of Denver. E-mails, and verbal conversations must be followed by an official RFI or proper contractual vehicle before it is considered for any additional compensation or time impact to the project terms and conditions.
 - 1. The following Contractor-generated RFIs will be returned without action:
 - Reguests for approval of submittals.
 - b. Requests for approval of substitutions.
 - c. Requests for approval of Contractor's means and methods.
 - d. Requests for coordination information already indicated in the Contract Documents.
 - e. Requests for adjustments in the Contract Time or the Contract Sum.
 - f. Requests for interpretation of DEN Project Manager's actions on submittals.
 - g. Incomplete RFIs or inaccurately prepared RFIs.
 - 2. DEN Project Manager's action may include a request for additional information, in which case DEN Project Manager's time for response will date from time of receipt of additional information.
 - DEN Project Manager's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Title 11 - Changes In the Work, Contract Price, or Contract Time in the General Contract Conditions, 2011 Edition as amended by Special Conditions.
 - a. If Contractor believes the RFI response warrants change in the Contract
 Time or the Contract Sum, notify DEN Project Manager in writing within five
 (5) days of receipt of the RFI response or the time required by Title 11 Changes In the Work, Contract Price, or Contract Time in the General
 Contract Conditions, 2011 Edition
- F. RFI Log: For projects not utilizing the PMIS application, prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly. The log shall include but not limited to the following data:
 - Project name.

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- 2. Name and address of Contractor.
- 3. Name and address of DEN Project Manager.
- 4. RFI number including RFIs that were returned without action or withdrawn.
- 5. RFI description.
- 6. Date the RFI was submitted.
- 7. Date DEN Project Manager's response was received.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

PART 4 - MEASUREMENT

4.1 METHOD OF MEASUREMENT:

A. No separate measurement shall be made for work under this Section.

PART 5 - PAYMENT

5.1 METHOD OF PAYMENT:

A. No additional Payment will be made for compliance with the requirements of this section.

END OF SECTION 013100

TECHNICAL SPECIFICATIONS 01 GENERAL REQUIREMENTS 013119 PROJECT MEETINGS DENVER INTERNATIONAL AIRPORT TUNNEL SEWER REPAIRS CONTRACT NO: 202056250

SECTION 013119 - PROJECT MEETINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. The Work specified in this Section requires the Contractor's Project Manager, Superintendent, and Quality Control representative to attend meetings scheduled by the DEN Project Manager for the collection and dissemination of information related to the subject Contract.
- B. The DEN Project Manager will prepare the minutes of each meeting and distribute them to each of the participants.

1.3 REFERENCE DOCUMENTS

- A. Form CM-01, Preconstruction Meeting Agenda
- B. Form CM-62, Construction Meeting Agenda/Minutes

1.4 OTHER MEETINGS

A. The Contractor shall attend all other project related meetings as directed by the DEN Project Manager.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PRECONSTRUCTION MEETING

A. A Preconstruction Meeting will be scheduled by the DEN Project Manager after the Contract has been signed by all parties. The purpose of this meeting is to introduce the City's Representatives to their counterparts in the Contractor's organization and to establish lines of communication between these representatives and outline some Contract requirements. The Contractor's key personnel shall attend this meeting.

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- B. The DEN Project Manager will distribute a notice of this meeting, along with an agenda of the subjects to be addressed. Refer to form CM-01, Preconstruction Meeting Agenda.
- C. The DEN Project Manager will explain and discuss the responsibilities and authorities of the City, the Designer of Record, and the DEN Project Manager's organization.
- D. The Contractor shall introduce the Contractor's key personnel, subcontractors, and representatives and briefly describe each person's responsibilities.
- E. Explanations provided by the DEN Project Manager will not amend, supersede, or alter the terms or meaning of any Contract document, and the Contractor shall not claim reliance on such explanations as a defense to any breach or failure by the Contractor to perform as specified in the Contract.

3.2 CONSTRUCTION PROGRESS MEETINGS

- A. Progress meetings will be scheduled weekly and more often as necessary by the DEN Project Manager to promote the competent and timely execution of the Contract.
- B. The meetings will be held at the work site or at a location selected by the DEN Project Manager. Meetings will be chaired by the DEN Project Manager or the DEN Project Manager's representative.
- C. The Contractor's key personnel shall attend unless otherwise agreed by the DEN Project Manager.
- At a minimum, and as directed by the DEN Project Manager, the items detailed in CM-62, Construction Meeting Agenda/Minutes shall be addressed at each meeting.
 The items addressed in the meeting do not waive notification or submittal requirements as required elsewhere in the Contract.
- E. The DEN Project Manager will be responsible for publishing minutes of the meetings. Refer to form CM-62, Construction Agenda/Meeting Minutes.

PART 4 - MEASUREMENT

4.1 METHOD OF MEASUREMENT

A. No separate measurement shall be made for work under this Section.

PART 5 - PAYMENT

5.1 METHOD OF PAYMENT

A. No separate payment shall be made for work under this Section.

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B. All payments for any Work done under this contract shall be in accordance with Title 9 - Compensation of the General Contract Conditions, 2011 Edition.

END OF SECTION 013119

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SECTION 013210 - SCHEDULE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. The Work specified in this Section describes the procedures and requirements for scheduling and documenting the progress of the project:
 - 1. Preliminary Construction Schedule.
 - Initial Project Construction Schedule (IPS).
 - 3. Monthly Progress Schedule update.
 - 4. As-built Schedule.
 - Three-Week Look-Ahead Schedule.
 - 6. Submittal Schedule.
 - 7. Fabrication Schedule.
 - 8. Material Delivery Schedules, cranes, special equipment and staging status.
 - 9. Daily Superintendent/Foreman Reports
 - 10. Daily Quality Control Reports
 - 11. Special reports:
 - a. Weather impacts and mitigations.
 - b. Recovery Schedule and alternatives.

B. Reference Documents

- 1. Article 1105 Time Extensions in the General Contract Conditions, 2011 Edition.
- Section 011100 "Summary of Work"
- 3. Section 011420 "Work Sequence and Constraints".
- 4. Section 012910 "Schedule of Values".
- 5. Section 013119 "Project Meetings"
- 6. Section 013300 "Submittal Procedures"

1.3 DEFINITIONS

- A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a Construction Schedule consume time and resources:
- B. Contract Time: Total number of days provided in the Contract Documents from the Notice to Proceed to the date of Final Completion of the Work. Substantial Completion

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shall occur prior to Final Completion. Contract Time may be further defined and divided into phases by the Technical Specifications or Special Conditions. The Contract Documents may require completion on or before a certain specified date.

- C. Cost Loading: The allocation of the total contract value spread across each appropriate activity. All project costs, including those for stored materials, allowances and indirect costs shall be loaded into the schedule and shall be balanced to where no activity is unfunded.
- D. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish dates. Any delay in the start or finish of a critical activity will cause a delay to the project finish.
- E. Critical Path Method (CPM): A method of planning and scheduling a construction project where activities are arranged based upon defined relationships. Defined relationships determine when activities can be performed and the critical path for completing the Work.
- F. Critical Path: The longest chain of interdependent activities through the network sequence that establishes the shortest duration for completing the work and contains no float. The critical path shall be calculated as total float equal to but not less than zero days. Activities on the critical path have a total float of zero.
- G. Data Date: The date on which the schedule status is determined. For initial schedules, it is the project Notice to Proceed date. For schedule updates, it is the reporting period cut-off date. Updated schedules depict the actual status of the work started, on-going and/or completed within the reporting period. The data date is used to start the scheduling calculations for forward and backward passes.
- H. Days: Consecutive calendar days unless specifically designated otherwise and includes weekends, holidays or days of normal inclement weather.
- I. Direct Man-hours: Man-hours related only to the physical construction of the Work, i.e., drywall, carpeting, electrical, masonry, mechanical, etc.
- J. Final Completion: Occurs following Substantial Completion and when the Project Manager confirms in writing that the Contractor has completed the work in accordance with the contract, including completion of all punch list items, cleanup work and delivery of all required guarantees, warranties, licenses, releases and other required deliverables.
- K. Free float: The amount of time an activity can be delayed without adversely affecting the early start of its successor activity.
- L. Indirect Man-hours: Man-hours related to support of the physical construction of the Work, i.e., mobilization, cleanup, traffic control, temporary activities, badging, supervision and overhead, etc.
- M. Lag: The delay of a successor activity and represents time that must pass before the second activity can begin. There are no resources associated with a lag.

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- N. Lead: The acceleration of a successor activity where it can begin in parallel with the predecessor activity. It compresses the total combined duration of both activities. The dependency must be discretionary and there is no physical limitation on completing Activity "A" before Activity "B" begins.
- O. Longest Path: The longest continuous path of activities through a project, which controls project early completion. It is possible for otherwise defined critical path activities to not be on the longest path and longest path activities to not show calculated critical float.
- P. Notice to Proceed: A notification letter from the Owner addressed to the contractor stating the date on which the contractor can begin project work. The NTP date marks the beginning of the Contract Time.
- Q. Predecessor Activity: An activity that comes before a dependent activity in the network sequence. It must either start or finish before a specified activity can begin.
- R. Resource Loading: A calculated value based on the actual worker's hours and costs, equipment and materials costs that are required to complete an activity. The value is allocated to the specific activities.
- S. Substantial Completion: The Work has progressed to the point that the City can beneficially occupy or utilize the Work for the purpose for which it is intended, and the Work complies with all applicable codes and regulations, including, if required, issuance of a certificate of occupancy, or certificate of suitability for use from the appropriate governmental agencies, as determined by the Manager in its sole discretion.
- T. Successor Activity: A dependent activity that logically comes after another activity in the network sequence.
- U. Total float: The amount of time that an activity in a network sequence can be delayed without causing a delay to subsequent activities and/or the completion date of the Work.
- V. Work Breakdown Structure (WBS): A hierarchical decomposition of the Work to be executed by the contractor. It shall allow for the roll-up and summarization to a predetermined level. The level of breakdown shall be agreed upon by the Contractor and the DEN Project Manager prior to the start of Work.

1.4 SUBMITTALS

- A. Submit for City acceptance the following in accordance with Section 01 33 00 Submittal Procedures:
 - 1. Project Scheduler Qualifications
 - 2. Preliminary Project Construction Schedule
 - 3. Initial Project Construction Schedule
 - 4. Monthly Progress Update Schedules

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- 5. Time Impact Analysis, when necessary
- 6. As-built Schedule

B. Scheduler/Scheduling Consultant Qualifications:

- A professional with a minimum of two (2) years of experience with scheduling construction projects similar in size and scope of work as this project using Oracle Primavera P6 software.
- 2. The scheduler shall have a comprehensive knowledge of Critical Path Method (CPM) scheduling principles and application.
- 3. The scheduler shall also have the ability to produce reports and diagrams within 24 hours of the DEN Project Manager's request and be able to perform the below tasks, including, but not limited to, the following:
 - a. Create, maintain and update the project construction schedule.
 - b. Prepare monthly progress schedule updates, submit for review and incorporate the City's review comments into the schedule, if any.
 - c. Coordinate the participation of qualified personnel to assist in the development of the initial construction schedule and updating of the monthly progress schedule.
 - d. Develop a WBS to the appropriate level and be able to discuss verbally and in writing the applicability of the WBS.
 - e. Incorporate delivery dates for Owner-furnished products.
 - f. Incorporate submittal requirements, procedures and time required for review of submittals and resubmittals.
 - g. Incorporate requirements for tests and inspections by independent testing and inspecting agencies.
 - h. Incorporate time required for Project closeout and Owner start-up procedures, including commissioning activities.

1.5 COORDINATION

- A. Pre-scheduling Conference: Schedule conference at Pre-Construction meeting to comply with requirements in Section 013100 "Project Management and Coordination." Review methods and procedures related to setting up the Preliminary Project Construction Schedule and Initial Project Construction Schedule, including, but not limited to, the following:
 - 1. Verify availability of qualified personnel needed to develop and update schedule.
 - 2. Review content and format for reports.
 - 3. Discuss constraints, including phasing, area separations, interim milestones, and partial Owner occupancy.
 - 4. Review delivery dates for Owner-furnished products.
 - 5. Review submittal requirements and procedures.
 - 6. Review time required for review of submittals and resubmittals.
 - 7. Review time required for Shutdown request and approval.
 - 8. Review requirements for tests and inspections by independent testing and inspecting agencies.
 - 9. Review time required for Project closeout and Owner startup procedures,

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- including commissioning activities.
- 10. Review procedures for updating schedule.
- 11. Review requirements for content and input of direct man-hour resources in activities.
- 12. Review requirements for cost loading of activities.
- B. Coordinate Initial Project Construction Schedule with the Schedule of Values.
- C. Work items in the Initial Construction Schedule shall be identified in a Work Breakdown Structure (WBS) format that corresponds with the areas, phasing or schedules of the project and the technical specifications.
- D. Secure time commitments for performing critical elements of the Work from entities involved.
- E. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 - PRODUCTS

2.1 SOFTWARE

- A. DEN Default Software:
 - 1. DEN shall use Oracle Primavera P6, Release 18.7 for all City scheduling needs.
- B. Contractor Software:
 - 1. Scheduling software used by the contractor shall be Oracle Primavera P6 Release 16 or higher.
 - 2. The software and any support agreements shall be purchased at the contractor's expense from a vendor of the contractor's choosing.
 - 3. The City will not provide training or support services for contractor purchased software.

C. Oracle Primavera P6:

- 1. The following settings are mandatory and required in all schedule submissions to the City:
 - a. Activity codes shall be Project Level, not Global or EPS level.
 - b. Calendars shall be Project Level, not Global or Resource level.
 - c. Activity Duration Types shall be set to "Fixed Duration & Units".
 - d. Percent Complete Types shall be set to "Physical".
 - e. Time Period Admin. Preferences shall remain the default "8.0 hour/day, 40 hour/week, 172 hour/month, 2000 hour/year". Set Calendar Work Hours/Day to 8.0-hour days.
 - f. Set Schedule Option for defining Critical Activities to "Total Float less than or equal to zero (0) hours/day".

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- g. Set Schedule Option for defining progressed activities to "Retained Logic".
- h. Set up cost loading using single lump sum resource. The Price/Unit shall be \$1/hour, Default Units/Time shall be 8h/d", and settings "Auto Compute Actuals" and "Calculate Cost from Units" selected.
- i. Activity ID's shall not exceed 10 characters.
- j. Activity Names shall have the most defining and detailed description within the first 30 characters.

PART 3 - EXECUTION

3.1 GENERAL REQUIREMENTS

- A. Prepare for acceptance all Project Schedules utilizing the Critical Path Method (CPM) of network calculation to generate all Project Schedules.
- B. Prepare each Project Schedule utilizing the Precedence Diagram Method (PDM).
- C. Show in the schedule, the proposed sequence to perform the work and dates contemplated for starting and completing the schedule activities.
- D. The scheduling of the entire project is required.
- E. Provide a schedule that is forward planning as well as a project monitoring tool
- F. Contractor management personnel shall actively participate in its development.
- G. Subcontractors and suppliers working on the project shall also contribute in developing and maintaining an accurate project schedule.
- H. The contractor shall keep the subcontractors and suppliers informed of the Project Construction Schedule to enable the subcontractors to plan and perform their work properly.

3.2 COST LOADING

- A. Activity cost loading shall be reasonable and without front-end loading.
- B. Provide additional documentation to demonstrate reasonableness, if requested by the City.

3.3 WITHHOLDINGS / PAYMENT REJECTION

- A. Failure to meet the requirements of this Section may result in the disapproval of the schedules or updates and subsequent rejection of payment requests until requirements are met.
- B. If the DEN Project Manager directs schedule revisions and those revisions have not

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been included in subsequent Project Schedule revisions or updates, the DEN Project Manager may withhold 10 percent of pay request amount for each payment period until such revisions to the project schedule have been made.

3.4 PROJECT SCHEDULE DETAIL REQUIREMENTS

A. Level of Detail Required

- 1. Develop the Project Schedule as a Level 4 execution schedule.
- 2. Level of detail to address major milestones and to allow for satisfactory project planning and execution.
- 3. Failure to develop the Project Schedule to an appropriate level of detail will result in its disapproval.
- 4. The DEN Project Manager will consider, but is not limited to, the following characteristics and requirements to determine appropriate level of detail

B. Activity Durations

- 1. Reasonable activity durations are those that allow the progress of ongoing activities to be accurately determined between update periods.
- 2. Less than 2 percent of all non-procurement activities shall have Original Durations (OD) greater than 20 work days or 30 calendar days.

C. Procurement Activities

- 1. Include activities associated with the critical submittals and their approvals, procurement, fabrication and delivery of long lead materials, equipment, fabricated assemblies and supplies.
- 2. Long lead procurement activities are those with an anticipated procurement sequence of over 30 calendar days.

D. Mandatory Tasks

- 1. Include the following tasks/activities in the preliminary and initial project schedules and all updates.
 - a. Notice to Proceed milestone activity.
 - b. Submission, review and acceptance of preconstruction submittals (individual activity for each).
 - c. Long procurement activities.
 - d. Submission and approval of testing activities, as needed by project.
 - e. Submission and approval of Operations & Maintenance (O&M) manuals.
 - f. Submission and approval of as-built drawings.
 - g. City Punch list walk-through.
 - h. Correction of Punch list items based on City Punch list walk-through.
 - i. Substantial Completion milestone activity.

E. Owner Activities

Show the City and other agency activities that could impact progress. These

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activities include, but are not limited to:

- a. Approvals
- b. Acceptance
- c. Building Department Permits
- d. Environmental Permit Approvals by State Regulators
- e. Inspections
- f. Utility Tie-Ins
- g. Owner Furnished Equipment
- h. NTP For Phasing Requirements.

F. Workers Per Day

- 1. Assign workers per day for the field construction and direct work activities, if directed by DEN Project Manager.
- 2. Workers per day shall be the average number of workers expected each day to perform the task for the duration of the activity.

G. Responsible Party Coding

- 1. Assign responsibility for activities to the Prime Contractor, subcontractors, DEN or other agencies responsible for performing the activity.
- 2. Activities cannot have more than one Responsibility Code.
- 3. Examples of acceptable activity code values are:
 - a. DOR (Designer of Record)
 - b. ELEC (electrical subcontractor)
 - c. MECH (mechanical subcontractor)
 - d. PAVE (paving subcontractor)
 - e. DEN (Denver International Airport)

H. Calendars

- 1. Schedule activities on a calendar to which the activity logically belongs.
- 2. Develop calendars to accommodate Contract-defined work periods, such as a 7-day calendar for City Acceptance activities, concrete cure times, etc.
- 3. Develop the default calendar to match the physical work plan with non-work periods identified including weekends and holidays.
- 4. Develop and assign seasonal calendars to seasonally affected activities.
- 5. If an activity is weather-sensitive, assign it to a calendar showing non-work days on a monthly basis, with the non-work days selected at random across the weeks of the calendar:
 - a. The assignment of the non-work days should be over a 7-day week since weather records are compiled on 7-day weeks, which will cause some of the weather related non-work days to fall on weekends.
 - b. Monthly average rain and snow measurements can be obtained from the National Climatic Data Center for the Denver Metropolitan Area or any similar trusted resource.

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I. Contract Milestones and Constraints

- 1. Milestone shall be used for significant project events including, but not limited to, project phasing, project start and end activities, and interim milestone and/or completion dates.
- 2. The use of artificial float constraints such as "zero free float" or "zero total float" are prohibited.
- 3. Mandatory constraints that ignore or affect network logic are prohibited.
- 4. No constrained dates are allowed in the schedule other than those specified herein. Submit additional constraints to DEN Project Manager for approval on a case-by-case basis.

J. Project Start Date Milestone

1. The first activity in the project schedule shall be a start milestone titled "NTP Issued" with a date equal to the date that NTP was issued to the contractor.

K. Project Finish Milestone

- 1. The last activity in the schedule shall be a finish milestone titled "Substantial Completion".
- 2. The project schedule shall be constrained to reflect the last day of the contract duration in such a way that if the schedule calculates an early finish, then the float calculation for "Substantial Completion" milestone reflects positive float.
- 3. If the project schedule calculates a late finish, then the "Substantial Completion" milestone float calculation reflects negative float.
- 4. The City is under no obligation to accelerate City activities to support a Contractor's early completion.

L. Interim Completion Dates and Constraints

1. Constrain contractually specified interim milestone completion dates to show negative float when the calculated last finish date of the last activity in that phase is later than the specified interim completion date.

M. Start Phase

- 1. Use a start milestone as the first activity for a project phase.
- 2. The start milestone shall be called "Start Phase X" where "X" refers to the phase of work.

N. End Phase

- 1. Use a finish milestone as the last activity for a project phase.
- 2. Call the finish milestone "End Phase X" where "X" refers to the phase of work.

O. Open Ended Logic

 Only two (2) open ended activities are allowed: the first activity "NTP Issued" shall have no predecessor logic, and the last activity "Substantial Completion" shall have no successor logic.

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P. Default Progress Data Disallowed

- 1. Actual Start and Finish dates shall not automatically update with default mechanisms included in the scheduling software.
- 2. Updating of the percent complete and the remaining duration of an activity shall be independent functions.
- 3. Disable program features that calculate one of these parameters from the other. Activity Actual Start (AS) and Actual Finish (AF) dates assigned during the updating process shall match those dates provided in the Contractor Quality Control Reports.
- 4. Failure to document the AS and AF dates in the Daily Quality Control report will result in disapproval of the Contractor's schedule.

Q. Out-of-Sequence Progress

- 1. Activities that have been progressed before the preceding logic has been satisfied (Out-of-Sequence Progress) will be allowed only on a case-by-case basis and subject to DEN Project Manager approval.
- 2. Propose logic corrections to eliminate Out-of-Sequence Progress.
- 3. Address Out-of-Sequence Progress and logic changes in the Narrative Report and in the periodic schedule update meetings.

R. Added and Deleted Activities

- 1. Do not delete activities from the project schedule or add new activities to the schedule without approval from the DEN Project Manager.
- 2. Activity ID and description changes are considered new activities and shall not be changed without approval from the City.

S. Original Durations

 Activity Original Durations (OD) shall be reasonable to perform the work item. OD changes are prohibited unless justification is provided to and approved by the DEN Project Manager.

T. Leads, Lags, and Start to Finish Relationships

- Lags shall be reasonable as determined by the DEN Project Controls and not used in place of realistic original durations, shall not be in place to artificially absorb float, or to replace proper schedule logic.
- 2. Leads (negative lags) and Start to Finish (SF) relationships are prohibited.

U. Retained Logic

- 1. Schedule calculations shall retain the logic between predecessors and successors ("retained logic" mode) even when the successor activity starts, and the predecessor activity has not finished (out-of-sequence progress).
- 2. Software features that, in effect, sever the tie between predecessor and successor activities when the successor has started, and the predecessor logic is not satisfied ("progress override") shall not be allowed.

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V. Percent Complete

- 1. Update the percent complete for each activity started, based on the realistic assessment of earned value.
- 2. Activities which are complete, but for remaining minor punch list work and which do not restrain the initiation of successor activities may be declared 100 percent complete to allow for proper schedule management.

W. Remaining Duration

- 1. Update the remaining duration for each activity based on the number of estimated work days necessary to complete the activity.
- 2. Remaining duration may not mathematically correlate with percentage found under Paragraph "Percent Complete", above.

X. Work Performed Under Adverse Weather Conditions

- In accordance with the 2011 Denver General Contract Conditions (GCC) Section 305 Work Performed Under Adverse Weather Conditions, adverse weather conditions are those that are not abnormal weather conditions but that can, depending on the Work to be performed, cause defective Work.
- 2. High and low temperatures, excessive moisture or unusual drying conditions are examples. Reflect the number of anticipated adverse weather days allocated to a weather-sensitive activity in the activity's calendar.
- These conditions must be recorded in the Contractor Daily QC Reports, notification of adverse weather shall be given within twenty-four (24) hours of occurrence to the DEN Project Manager for concurrence and the adverse weather day documented in order to be considered for a time extension adjustment.

Y. Time Extensions for Abnormal Weather Conditions

- In accordance with the 2011 Denver General Conditions (GCC) Section 1105
 Time Extensions, if abnormal weather conditions are the basis for a request to
 extend the Contract Time, such request will be documented by data
 substantiating that weather conditions were unusually severe for the period of
 time and could not have been reasonably anticipated.
- 2. To establish that the existence of abnormal weather, the Contractor must submit documentation that establishes that the weather conditions experienced fall outside of the extreme ranges of weather data published by the National Climatic Data Center for the Denver Metropolitan Area for the ten (10) year period immediately preceding the data of the Contract.
- 3. Regardless of actual weather conditions, any Day in which the Contractor is able to work eighty percent (80%) or more of its scheduled work force shall not be counted as an abnormal weather Day for purposes of calculating weather related time extensions.

Z. Early Completion Schedule and the Right to Finish Early

1. An Early Completion Schedule is an Initial Project Schedule that indicates the

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- scope of the required contract work will be completed before the contractually required completion date.
- 2. An Initial Project Schedule indicating an Early Completion will not be accepted without being fully resource-loaded (including crew sizes and manhours) and without the DEN Project Manager agreeing that the schedule is reasonable and achievable.
- 3. The City is under no obligation to accelerate its own work items to ensure that the early completion is met nor is it responsible to modify incremental funding (if applicable) for the project to meet the Contractor's accelerated work.

3.5 PROJECT SCHEDULE SUBMISSIONS

A. General

- 1. Submit the electronic data files (.xer), reports, and network diagrams required for each submission as described in Article 1.4 SUBMITTALS.
- 2. If the Contractor fails or refuses to furnish the information and schedule updates as set forth, the Contractor will be deemed unresponsive and payment may be withheld as described in Article 3.3 WITHOLDINGS / PAYMENT REJECTION.
- 3. Review comments made by DEN Project Controls on the schedules do not relieve the Contractor from compliance with the Contract.
- 4. Provide the submissions as described below.

B. Preliminary Project Construction Schedule Submission

- 1. Within ten (10) days after the issuance of Notice to Proceed (NTP), submit the Preliminary Project Construction Schedule:
 - a. If contract time is greater than 120 calendar days, submit the Schedule defining the planned operations detailed, at a minimum, for the first sixty (60) calendar days of the project for acceptance.
 - b. If contract time is shorter than 120 calendar days, submit the Schedule defining the planned operations detailed for the full contract term for acceptance.
 - c. It shall be early start and late finish constrained and logically tied as specified.
- 2. The Preliminary Project Construction Schedule shall form the basis for the Initial Project Construction Schedule specified herein and shall include all the required plan and program preparations, submissions and approvals identified in the contract. For example, Quality Control Plan, Site-specific Safety Plan, and Environmental Protection Plan, etc.
- 3. The DEN Project Manager will respond within 14 days to the Preliminary Schedule submittal with either acceptance or direction to revise and resubmit.
- 4. In lieu of the Preliminary Project Construction Schedule, the Contractor may, at the Contractor's own discretion, submit the Initial Project Construction Schedule at the Preconstruction Meeting.
 - a. If the Initial Project Construction Schedule is submitted in lieu of the

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Preliminary Project Construction Schedule, the DEN Project Manager will respond within thirty (30) days with acceptance or direction to revise and resubmit within ten (10) days.

5. Acceptance of Preliminary Project Construction Schedule will not constitute approval of Schedule of Values.

C. Gantt Chart Schedule

1. Submit a time-scaled network diagram printout of the Preliminary Project Construction Schedule at the pre-construction meeting.

2. Preparation

- Indicate each significant construction activity separately.
- b. Identify first workday of each week with a continuous vertical line.
- c. Outline significant construction activities for the contract duration.
- d. Include skeleton diagram for the remainder of the Work, when necessary.
- e. For a project with contract time greater than 120 calendar days, the Preliminary Schedule shall show all significant Work tasks that occur in the first sixty (60) days including, but not limited to planning, mobilization, shop drawings and technical submittals and approval time, procurement, fabrication and construction.
- f. For a project with contract time less than 120 calendar days, the Preliminary Schedule shall show all Work tasks that occurs during the contract time including, but not limited to planning, mobilization, shop drawings and technical submittals and approval time, procurement, fabrication and construction.
- g. It shall identify work items or milestones that affect or are affected by City, other Contractor's work, utilities, and other third parties and it shall list major submittals required by the Contract.

D. Narrative Report

- 1. For a project with contract time greater than 120 calendar days, the Preliminary Project Construction Schedule shall be accompanied by a narrative describing the Contractor's approach to mobilization, procurement, and construction during the first sixty (60) days.
- 2. For a project with contract time less than 120 calendar days, the Preliminary Project Construction Schedule shall be accompanied by a narrative describing the Contractor's approach to mobilization, procurement, and construction during the contract time.
- 3. The narrative shall elaborate based on durations, production rates, major equipment to be used, and shall identify all major assumptions used to develop the schedule.

3.6 Initial Project Construction Schedule Submission

A. General

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- 1. Submit the Initial Project Construction Schedule for acceptance within thirty (30) days after issuance of NTP.
- 2. The schedule shall demonstrate a reasonable and realistic sequence of activities which represent the Work through the entire contract performance period.
- 3. The DEN Project Manager will respond within 14 days with acceptance or direction to revise and resubmit.
- 4. The acceptance of the schedule is for general conformity to the Contract requirements and shall not constitute any relief of any Contract requirements.
- 5. Upon acceptance from the DEN Project Manager and DEN Project Controls, the Initial Project Construction Schedule shall become the Baseline Schedule for the duration of the project.
- 6. The Baseline Project Construction Schedule may be changed when one or more of the following events occur:
 - a. When a Change Order significantly affects the contract completion date or sequence of work.
 - b. When the Contractor elects to change the sequence or duration of work items affecting the critical path resulting in a major change that requires DEN PM approval.
 - c. When the City directs a change that affects a milestone dates specified in the Special Conditions or alters the length of a critical path.
- 7. Failure to include any work item required for performance of this Contract shall not excuse the Contractor from completing all Work within applicable completion dates, regardless of the City's acceptance of the schedule.
- 8. Failure of the contractor to have an Initial Project Construction Schedule accepted by DEN Project Manager will be considered cause for withholding progress payment.

B. Preparation:

1. Project Duration

- a. Extend schedule from NTP date to Substantial Completion.
- b. Contract completion date shall not be changed by submission of a schedule that shows an early or late completion date, unless specifically amended by Change Order.

2. Activities

- a. Treat each building floor or separate area as a separate numbered activity for each main element of the Work.
- b. Prepare a list of all activities required to complete the Work and indicate the estimated time duration, sequence requirements, and relationships of each activity in relation to the other activities.

3. Activity Duration:

a. Define activities so no construction activity is longer than twenty (20) days, unless specifically allowed by DEN Project Manager. Include estimated

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time frames for the following activities:

- 1) Preparation and processing of submittals.
- 2) Mobilization and demobilization.
- 3) Purchase of materials.
- 4) Delivery of materials.
- 5) Fabrication of materials
- 6) System shutdown request and approval
- 7) Utility/system interruptions
- 8) Installation of Work
- 9) Work by City, other contractors, utilities and other third parties that may affect or be affected by Contractor's activities.
- 10) Startup, Testing and Commissioning
- 11) Punch list and Final Completion.

Critical Path Activities:

- a. No more than twenty-five (25) percent of the activities may be on the critical path, unless approved IN WRITING by DEN Project Manager.
- b. Identify critical path activities, including those for interim completion dates.
- c. Scheduled start and completion dates shall be consistent with Contract milestone dates.

5. Procurement Activities:

- a. Include procurement activities for long lead items and major items as separate activities in schedule.
- b. Procurement cycle activities including, but are not limited to, submittals, approvals, purchasing, fabrication and delivery.
- c. May have a duration greater than twenty (20) calendar days and should represent the time to complete the procurement cycle as described above.

6. Submittal Review Time:

- Include review and re-submittal times indicated in Technical Specification 013300 "Submittal Procedures" in schedule unless time frame is reduced by approval of the DEN Project Manager.
- b. Coordinate submittal review times in Contractor's Construction Schedule with submittal schedule.

7. Substantial Completion:

a. Indicate date established for Substantial Completion.

8. Milestones:

a. Include milestone indicated in the Contract Documents, including, but not limited to, NTP, Phasing Milestones and Substantial Completion.

9. Constraints:

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- a. Include constraints and work restrictions indicated in the Contract Documents and show how the sequence of the Work is affected:
 - 1) Phasing:
 - a) Arrange activities in schedule in Work Breakdown Structure (WBS) by Area, Phase or Bid Schedule.
 - b) Coordinate phasing and constraints with those established in Technical Specification Section 011400 "Work Sequence and Constraints".
 - 2) Products Ordered in Advance:
 - a) Include separate activity for each product.
 - b) Include delivery date indicated in Technical Specification Section 011100 "Summary of Work".
 - c) Delivery dates indicated stipulate the earliest possible delivery data.
 - 3) Owner-furnished Products:
 - a) Include separate activity for each product.
 - b) Include delivery date indicated in Technical Specification Section 011100 "Summary of Work".
 - c) Delivery dates indicated stipulate the earliest possible delivery date.
- Resource Loading of Construction Schedule:
 - a. Coordinate with DEN Project Controls and DEN Project Manager for the requirements.
 - Activities shall be resource loaded with direct man-hours required to perform the physical construction of the project. Indirect man-hours shall not be included as resources to activities.
- C. Schedule Narrative Report
 - 1. The Initial Project Construction Schedule shall be accompanied by a narrative describing the Contractor's approach to mobilization, procurement, and construction for the project.
 - It shall elaborate on the original assumptions of estimated quantities and production rates, hours per shift, workdays per week, and types, number and capacities of major construction equipment to be used and whether the Contractor plans to work weekends.

3.7 MONTHLY PROGRESS CONSTRUCTION SCHEDULE UPDATES

A. The Contractor shall submit a monthly progress schedule at the end of each month following the issuance of NTP.

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- B. At the end of each month, the Contractor and DEN Project Manager shall agree on the progress of the work and the Contractor shall update the Construction Schedule accordingly.
- C. This review does not constitute an acceptance of the Monthly Progress Schedule update and shall not be used for the purpose of modifying the accepted Baseline Project Construction Schedule.
- D. Failure of the Contractor to have a Monthly Progress Construction Schedule accepted by the DEN Project Manager will be considered cause for withholding progress payment per Article 306 Working Hours and Schedules and Article 909 Additional Withholding of Progress Payments of the General Contract Conditions, 2011 Edition.
- E. The Contractor's monthly progress schedule shall include a written narrative describing the overall progress of the Work, provide a critical path analysis, explain the basis for determining construction logic, discuss significant problems with proposed corrective action, and how the status of major changes and any other changes are affecting the project schedule.
- F. Concurrent with making revision to the schedule, prepare a tabulated report showing the following and include in the narrative report:
 - 1. Identification of activities that have changed.
 - 2. Changes in early and late start dates.
 - 3. Changes in early and late finish dates.
 - 4. Changes in activity durations for remaining work activities only.
 - 5. Changes in critical path.
 - 6. Change in total float
 - 7. Changes in contract time.
- G. Minor revisions submitted at monthly progress review meeting are not considered as changes in this context.
- H. If after submitting a request for change to the Construction Schedule, the DEN Project Manager does not agree with the request, the DEN Project Manager will schedule a meeting with the Contractor to discuss the differences.
- If a settlement cannot be reached on the change in the Construction Schedule, or if the Contractor has failed to submit revisions to the network, the DEN Project Manager has the option of providing suggested logic or duration changes in all subsequent update schedules.
- J. The suggested logic and/or duration times will remain in effect until the change in the Construction Schedule is settled or until the logic and duration are superseded.

3.8 THREE WEEK LOOK-AHEAD SCHEDULE

A. The Contractor shall provide the DEN Project Manager an electronic copy prior to and a minimum of four (4) hard copies of the Contractor's Three (3) Week Look-Ahead

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Schedule for review at the DEN Project Manager's weekly progress meeting.

B. The schedule shall be generated from Primavera P6 in time-scaled network diagram bar chart format based on the approved accepted CPM Baseline Project Schedule and shall include dates of activities in progress, work to be completed within the period, percent complete of activities, and responsible subcontractor for the activities, testing activities, and anticipated dates of inspection by DEN and other agencies.

3.9 AS-BUILT CONSTRUCTION SCHEDULE:

- A. After all Contract Work items are complete, the contractor shall submit an as-built Project Construction Schedule that reflects the actual sequence of construction activities, includes all change order scope of work changes and shows actual start and finish dates for all work items and milestones for acceptance by the DEN Project Manager.
- B. The basis for the As-built Construction schedule will be the approved Monthly Progress Schedules.

3.10 RECOVERY SCHEDULE

- A. When a monthly progress schedule update indicates the Work is behind the current approved schedule, submit a separate Recovery Schedule indicating means by which Contractor intends to regain compliance with the schedule.
- B. No additional costs will be allowed if such expediting measures are necessary to meet the agreed completion date or dates except as provided elsewhere in the Contract Documents.
- C. If the early finish date for any work item or the substantial completion date does not fall within the Contract Duration, the sequence of work or duration shall be revised by the Contractor through concurrent operations, additional manpower, additional shifts or overtime, additional equipment, or alternative construction methods until the schedule produced indicates that all significant contract completion dates, occupancy dates and milestone dates will be met.
- D. Provide a narrative indicating changes to working hours, working days, crew sizes, and equipment required to achieve compliance, and date by which recovery will be accomplished.
- E. The narrative shall be submitted in accordance with Article 1105 Time Extensions in the General Contract Conditions, 2011 Edition.

3.11 REQUEST FOR TIME EXTENSION

A. General:

1. Provide a justification of delay to the DEN Project Manager, in accordance with

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- the Contract provisions and clauses, for approval within 10 days of a delay occurring.
- 2. Prepare a time impact analysis for each DEN Change Directive, Change Notice and Contractor's Change Request to justify time extensions.
- 3. Added work by the City does not necessarily entitle Contractor to a Time Extension, unless the Contractor can prove that this new added scope impacts the current critical path without manipulating any of the logic and relationships in the most recent and approved schedule.
- 4. The City may reject any Time Extension Request that does not include a detailed and a clear time impact analysis that shows direct impact to the most current critical path along with a detailed productivity rate calculation to justify the requested time to execute such added work.
- 5. If the Contractor is granted an extension of time for completion of any milestone or contract completion date under the provisions of the Contract, the determination of the total number of extended days will be based upon the current analysis of the schedule and upon all data relevant to the extension. Such data shall be incorporated into the next monthly update of the schedule.
- 6. The Contractor acknowledges and agrees that delays in work items that, according to schedule analysis, do not affect any milestone dates or the Contract completion date shown on the CPM Network Schedule at the time of the delay will not be the basis for a Contract extension.

B. Justification of Delay

- 1. Provide a description of the event(s) that caused the delay and/or impact to the work. As part of the description, identify the schedule activities impacted.
- 2. Show that the event that caused the delay/impact was the responsibility of the City.
- 3. Provide a time impact analysis that demonstrates the effects of the delay or impact on the project completion date or interim completion dates.
- 4. Multiple impacts shall be evaluated chronologically; each with its own justification of delay. With multiple impacts, consider concurrency of delay.
- 5. A time extension and the schedule fragment become part of the project schedule and future schedule updates upon approval by DEN Project Controls.

C. Time Impact Analysis (Prospective Analysis)

- 1. Prepare a time impact analysis for City approval based on industry standard AACE 52R-06. Use a copy of the last approved schedule prior to the first day of the impact or delay for the time impact analysis.
- 2. If DEN Project Controls determines the time frame between the last approved schedule and the first day of impact is too great, prepare an interim updated schedule to perform the time impact analysis.
- 3. Unless approved by the DEN Project Controls, no other changes will be incorporated into the schedule being used to justify the time impact.

D. Fragmentary Network (FragNet)

1. Prepare a proposed fragment for time impact analysis. The proposed fragment shall sequence new activities into the project schedule to demonstrate the

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- influence of the delay or impact to the project's contractual dates.
- 2. Clearly show how the proposed fragment shall be tied into the project schedule, including the predecessors and successors to the fragment activities.
- 3. Obtain City approval of the proposed fragment before incorporating it into the project schedule.

E. Time Extension

- 1. Time extensions will not be granted until after the City has approved the Justification of Delay, including the time impact analysis.
- 2. No time extension will be granted unless the delay consumes the available Project Float and extends the projected finish date ("Substantial Completion" milestone) beyond the Contract Duration.
- 3. The time extension will be in calendar days.
- 4. Actual delays that the City determines are caused by the Contractor's own actions and result in a calculated schedule delay will not be a cause for an extension to the performance period, completion date, or interim milestone date.

F. Impact to Early Completion Schedule

1. No extended overhead will be paid for delay prior to the original Contract Substantial Completion date.

3.12 FAILURE TO ACHIEVE PROGRESS

A. General:

- 1. If the progress falls behind the approved baseline project schedule for reasons other than those that are excusable within the terms of the Contract, the City may require submittal of a written recovery plan for approval.
- 2. The plan shall detail how progress shall be recovered, including which activities will be accelerated by adding additional crews, longer work hours, extra work days, etc.

B. Artificially Improving Progress

- 1. Artificially improving progress by means such as, but not limited to, revising the schedule logic, modifying or adding constraints, shortening activity durations, or changing calendars in the project schedule is prohibited.
- 2. Indicate assumptions made and the basis for logic, constraint, duration, and calendar changes used in the creation of the recovery plan.
- 3. Additional resources, manpower, and daily and weekly work hour changes proposed shall be evident at the work site and documented in the daily report along with the Schedule Narrative Report.

C. Failure to Perform

1. Failure to perform work and maintain progress in accordance with the supplemental recovery plan may result in an interim and final unsatisfactory

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performance rating and/or may result in Non-Conformance Report for corrective action directed by DEN Project Controls pursuant to other Contract provisions.

PART 4 - MEASUREMENT

4.1 METHOD OF MEASUREMENT

A. No separate measurement shall be made for work under this Section.

PART 5 - PAYMENT

5.1 METHOD OF PAYMENT

A. No separate payment will be made for work under this Section.

END OF SECTION 013210

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SECTION 013223.11 - CONSTRUCTION LAYOUT AND AS-BUILT SURVEYS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section covers Denver International Airport (DEN) procedures and accuracy requirements for survey services for construction layout, and as-built.
- B. Before commencing any field surveys on DEN property, the Contractor must coordinate a pre-survey preparation activities meeting. This meeting is to be arranged through the DEN Project Manager's Office with the attendance of the Contractor and the DEN Survey Section. The Contractor is responsible for obtaining DEN related survey guidance, Access to DEN survey network, Primary Control, projection parameters, and training materials from the DEN Survey at the pre-survey meeting and/or prior to beginning any survey work.
 - 1. Survey Project Checklist, provided as part of this Specification, must be reviewed at the pre-survey preparation activities meeting. (Refer to Article 1.11.)

1.3 REFERENCE DOCUMENTS:

- A. Section 013223.15 "Survey Information".
- B. Section 013300 "Submittal Procedures" and Section 013325 "Shop and Working Drawings, Product Data and Samples".
- C. Latest version of Federal Aviation Administration Advisory Circular 150/5300
- D. Latest Version of DEN BIM DSM (Design Standards Manual)
- E. Latest Version of Colorado Department of Transportation (CDOT) Survey Manual.
- F. Latest Version of Minimum Standard Detail Requirements for ALTA/ NSPS Land Title Survey

1.4 SUBMITTALS

A. Refer to Section 013300 "Submittal Procedures" and Section 013325 "Shop and Working Drawings, Product Data and Samples" for the submittal process.

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B. Survey Statement of Work (SSOW):

- The Contractor must develop a complete SSOW and submit it to the DEN Project Manager. The SSOW is the Contractor's written description of the Contractor's methodology for surveying services that must be provided as part of the Project, including specific features that must be surveyed, action items, timelines necessary airport resources and general information.
- 2. SSOW must be submitted by the Contractor prior to commencement of any survey or layout work on the site.
- 3. The SSOW will be accepted by the DEN Project Manager.
- 4. Under no circumstances must the Contractor begin work until the SSOW has been accepted.

C. Survey and Quality Control Plan (SQCP):

- 1. The Contractor must develop a complete SQCP and submit it to the DEN Project Manager. The SQCP is the Contractor's written description detailing the Contractor's methodologies for data collection, data safeguarding and quality assurance. Provide insight on how the Contractor must completely check all data to ensure it is complete, reliable, and accurate. Identify data safeguards used to protect the sensitive and safety critical data. Utilize a checklist based quality control process with definable and repeatable standards for each element ensuring consistency of work between different personnel within an organization. Submit the plan in a non-editable PDF.
- 2. SQCP must be submitted by the Contractor prior to commencement of any survey or layout work on the site.
- 3. The SQCP will be accepted by the DEN Project Manager.
- 4. Under no circumstances must the Contractor begin work until the SQCP has been accepted.

D. Weekly Project Status Report:

- Contractor must submit a project status report in compliance with FAA AC 150/5300-18B to the DEN Project Manager every Monday by 2:00 P.M. Mountain Time, from the date of the task order until the date of Substantial Completion
- 2. The Weekly Project Status Report must use format from AC 150/5300-18B

E. Final Project Survey Report:

- 1. The Final Project Survey Report, must use format from AC 150/5300-18B
- 2. Final Project Survey Report must be stamped and wet signed by a current Colorado Registered Professional Land Surveyor.

F. SURVEY DELIVERABLES:

- 1. Contractor must submit all of the following deliverables.
- 2. All raw files: GPS and Levels that is compatible with Trimble Business Center.
- 3. If combining x, y from GPS and z from Levels, provide field notes and data that shows where this data came from to verify values. The GPS point numbers must match to the Level descriptions.

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- 4. As-built or as-constructed survey submittals must need to be in both Portable Document Format (PDF) and in AutoCAD Civil 3D. Refer to current and criteria document for direction on PDF production.
- 5. All copies of original pages of field notes or electronic field notes must be in (PDF).
- 6. Scanned copies of all original field notebooks used for this Project must be submitted at the end of Contract.
- 7. All as-built points files must be in either CSV or TXT format.
- 8. All CAD drawings must be in current approved Autodesk Civil 3D format.
 - a. CAD layers are specified in DEN BIM Design Standards Manual
 - b. DEN must provide the Autodesk Civil 3D drawing template.
- 9. The as-built survey must follow the most recent Minimum Standard Detail Requirements for ALTA/ NSPS Land Title Survey for all sections, as far as they are applicable to the scope of work for the project and site in question.
- 10. Documentation in accordance with "Table A, Optional Survey Responsibilities and Specifications" (Refer to Article 1.11.) is filled out with the required content to be submitted.
- 11. Hard copy of all documentation stamped and wet signature by licensed PLS responsible for the work.

1.5 QUALITY REQUIREMENTS

- A. Contractor Company contracted to perform survey work under the direct supervision of a Colorado Registered Professional Land Surveyor with current FAA "Idle Certification"
- B. Subsurface Utilities Engineering (SUE): Refer to Section 011810 "Utilities Interface" for information related to underground utilities.
- C. Surveying accuracies and tolerances in control surveys, construction layouts: See CDOT Survey Manual for acceptable tolerances.

1.6 DEN SITE SURVEY REQUIREMENTS

- A. A site survey, construction survey, or construction as-built survey providing horizontal location and level information of surface features and both above and below ground services and utilities must be completed. This must also be annotated with information (where applicable) relating to the size, direction of and material type.
 - 1. When collecting utilities, Contractor must be responsible to have all exposed and installed utilities surveyed prior to being covered. If Contractor fails to survey utilities, DEN Project Manager can have the Contractor uncover the utilities so they can be surveyed.
 - 2. Any temporary works that remain at the completion of the project must also be surveyed.
 - 3. FAA and DEN Survey codes must be provided by The DEN Project Manager via

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DEN Survey or Designee and must be used throughout the project by Contractor for as surveyed features.

4. The most current DEN Civil 3D template must be provided by The DEN Project Manager via the DEN BIM team. All DEN BIM requirements must be met.

1.7 DEN ALIGNMENT MONUMENTATION

- A. Alignment monuments must be set at their corresponding coordinates as shown on the monumentation sheet of the Alignment Plans. When monumenting the Alignment, the Contractor must verify that the latest set of Alignment plans are being used. After the Alignment monument locations are staked in the field, any necessary utility locates should be called for prior to setting the monument.
- B. All Alignment monuments set must be established within the Minimum Horizontal Accuracy Tolerance as required in this chapter for a CDOT Class B Secondary survey.
- C. Alignment monuments must be set at the locations as shown on the Alignment Plans, which include the following locations:
 - 1. All angle points or changes of directions.
 - 2. 2. At the beginning and ending of curves.
 - 3. At the points of change of direction or changes of radius of any boundary defined by circular arcs.
 - 4. A. Not to exceed 1400 feet apart along any straight boundary line.
 - 5. Any other points as approved by the Survey Coordinator due to field conditions encountered during setting of the Alignment monumentation.
- D. Alignment monuments must have a witness post installed within 2 ft and facing the monument, or as accepted by DEN Survey. For setting easement monuments, the witness post requirement may be waived by DEN Survey.
- E. Use Orange Carsonite witness post:
- F. All Alignment monument caps set in the field must be stamped with the following:
 - 1. 1. DEN Project Code number
 - 2. 2. Point number as shown on the Right of Way Plans
 - 3. 3. Colorado PLS number setting the monument
- G. All Alignment monuments set in the field must be shown on the Final set of Alignment Plans in accordance with the CDOT Right of Way Manual, Chapter 2 ROW Plans. The Colorado PLS who is in responsible charge for setting the Alignment monuments must stamp her/his number on the monument cap, and must certify on the Alignment Plans to setting of the Alignment monuments in the field.
- H. The Contractor in responsible charge of the Alignment Plans and the Contractor in responsible charge of setting the Alignment monuments in the field might not be the same individual. Therefore, care must be taken to ensure any monuments set in the

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field at locations different than that shown on the Alignment Plans are communicated to the Alignment plans section, and the final Alignment Plans are corrected to show these new monument locations and descriptions prior to submitting the plans to DEN Survey.

I. Alignment monuments, witness posts, and monument box materials must be furnished by Contractor.

1.8 FEATURES TO BE RECORDED

- A. Surface and Above Ground Features: The survey of surface features must include, but is not limited to:
 - 1. Structures and Surfaces paths, driveways, retaining walls, slabs/paved areas, significant structural footings (plinths etc.), poles/ floodlighting.
 - 2. Drainage Structures headwalls, open drains, grated drains, culverts.
 - 3. Roads edge of pavement, curbs, shoulders, line-marking, bridges, road furniture (NOTE the top back and bottom face of curb, and all water channels must be surveyed and recorded).
 - 4. Buildings footprints, awnings, overhangs, columns, external fixtures (stairs, ramps, plant, etc.).
 - 5. Fences and Gates AOA, security, general fencing, gates and handrails.
 - 6. Aircraft Pavements and Movement Area Structures finished surfaces, pavement markings, airfield markers/signage/ navigational aids, PLB and other aeronautical infrastructure;
 - 7. Topographical Features general topography, embankments, earthworks platforms and surcharge.
 - 8. Vegetation gardens, significant trees (>0.2' trunk diameter, decorative shrubs), vegetation stands, riparian zones.
 - 9. Signage road, airfield, parking, advertising, other general signage.
 - 10. Survey Marks survey control points used, any settlement plates/ monitoring points placed during works.
 - 11. Airfield panel corner elevations must be derived from digital levels.
- B. Services and Utilities Prior to any backfilling or covering, information on all underground services must be obtained and documented according to DEN's modified ASCE-SUE Standards, including but not limited to:
 - 1. Electrical (LV and HV) top of conduit every fifty feet including horizontal and vertical bends, cables and conduits, pits/ manholes and chambers, HV cable joints, earth points and earth mats, substations/ transformers and surrounding pad, pillars, cabinets and switchboards, top of conduits.
 - 2. Fuel Control top of conduit every fifty feet including horizontal and vertical bends, cables and conduits, pits/ manholes and chambers, cabinets, emergency shut-off points.
 - 3. Communications top of conduit every fifty feet including horizontal and vertical bends, fiber optic, microducts, comms cables and conduits, pits/ manholes and chambers, top of conduit casing/housing.
 - 4. Drainage top of pipes at fifty-foot intervals and at every vertical and horizontal

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- bend, inspection openings, pits/ manholes and chambers, roof water drainage (downpipes, small pits/ grates).
- 5. Fuel top of pipes every fifty feet including horizontal and vertical bends, all weld points with weld numbers documented in the point description and in the field notes, pits/ manholes and chambers, valves, hydrants, earth points, test points.
- 6. Sewer (note whether gravity or force main) top of pipes every fifty feet including horizontal and vertical bends, pipes, pipe inverts, pipe outflows, inspection openings, pits/ manholes and chambers, vent pipes, pump stations and associated components.
- 7. Water (differentiate between potable and recycled) top of pipes every fifty feet including horizontal and vertical bends, pits/ manholes and chambers, valves (and type), meters, taps, hydrants, tanks, pumps, irrigation control.
- 8. Compressed Air top of pipes every fifty feet including horizontal and vertical bends, hoses and other fixtures.
- 9. Natural Gas / Petroleum– top of pipes every fifty feet including horizontal and vertical bends, valves, tanks, meters.
- C. Sufficient points must be recorded to ensure that the extremities of all surface features, structures and footings are clearly defined and all bends, intersections, and changes of gradient are accurately recorded. The distance between points of location should generally be about 50 feet and must not exceed 100 feet. All curves must be accurately defined using a minimum of three points (two tangent points and one midpoint).
- D. Where actual positions of linear features deviate from a straight line, sufficient additional points of location must be provided to define the deviation horizontal and/or vertical change in directions.
- E. For systems, utilities, and features not identified herein, refer to PM for direction on capture requirements

1.9 SURVEY METHODOLOGY – SERVICES AND UNDERGROUND FEATURES

- A. Sufficient points must be recorded to ensure that the extremities of all pits, manholes, and any other features related to the service are clearly defined and all bends, joints, intersections, changes of gradient, and fittings on or along the service, pipe or conduit are accurately recorded. All curves must be accurately defined using a minimum of three points (two tangent points and one midpoint). Where actual positions of linear features deviate from a straight line, sufficient additional points of location must be provided to define the deviation horizontal and/or vertical change of directions.
- B. The maximum distance between points of location along services must not exceed 50 feet. Horizontal and vertical locations must be surveyed on the top of the utility and must be labeled as "top". Inverts measurements must also be taken in manholes and must be labeled.
- C. The Contractor must record and annotate all services and utilities with information relating to the size, direction of and material type. The Contractor must record and clearly differentiate between the communication service providers and DEN and/or

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FAA communications infrastructure.

D. The Contractor must record the size and orientation of all grates, pits and manholes. Grates and pits must be recorded using a minimum of three corner or edge points. Pit/manhole chambers only need to be located and where the extents of the chamber extend past the extremities of the pit at surface level. In all instances, any thrust blocks or concrete cover/ protection over services must be located, showing depth.

1.10 EXISTING FEATURES AND SERVICES

- A. Existing Services: where the existence of services and other features on the site of the Work and the Work exposes or interacts with these existing services, the Contractor must locate and record the details of all such features and services.
- B. Tunnel Boring: The Contractor must provide records (logs, profiles etc.) relating to all tunnel boring undertaken as part of the Project. Where appropriate this information must be incorporated into the as-built site survey. Where the contract drawings do not show the existence of certain utilities and features and the Work exposes or interacts with the utilities and features, these must be located and recorded by the Contractor.
- C. Services Alteration/ Abandonment / Demolition: Where existing infrastructure, building services and/or utilities are demolished or services realigned or abandoned this information must be reflected within the as-built site survey. A distinction must be made between services (or part services) which have been abandoned (but left in the ground) and those that have been physically removed.

ISSUED FOR: CONFORMED DOCUMENTS 12/22/20

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1.11 SURVEY CHECK LIST

	Yes	No	N/A	Project Kickoff Phase
1				Did Contractor meet with DEN PM obtain the data standards and general requirements for data gathering?
2				Did Contractor meet with Airport Survey Office to obtain airport survey control points, projection parameters, and airport survey training materials?
3				Did Contractor provide Survey Statement of Work to DEN PM?
4				Did Contractor provide Geodetic Verification Survey to DEN PM?
5				Did Contractor provide Survey Control Plan to DEN PM?
6				Did Contractor provide Imagery Plan to DEN PM? (Only required if collecting aerial imagery)?
7				Did the FAA accept survey plans?
	Yes	No	N/A	Construction Phase (As-Builts)
8				Did Contractor perform field survey of project site to collect accurate as-built data?
9				Did the Contractor provide DEN PM with subsurface utility data?
10				Each week, did the Contractor provide DEN PM with Project Status Reports?
11				Did the Contractor provide DEN PM with 25% as-built data in both CADD and GIS formats including all attribute information and metadata?
12a				Did DEN PM report 25% QA findings via email to Contractor?
12b				If required, did the Contractor provide DEN PM with 50% as-built data in both CADD and GIS formats including all attribute information and metadata?
12c				If applicable, did DEN PM report 50% QA findings via email to Contractor?
12d				If required, did the Contractor provide the DEN PM with 75% as-built data in both CADD and GIS formats including all attribute information and metadata?
12e				If applicable, did DEN PM report 75% QA findings via email to Contractor?
13				Did the Contractor provide DEN PM with 100% as-built data in both CADD and GIS formats including all attribute information and metadata?
14				Did Contractor provide DEN PM with a completed Final Survey Report?
15				Did DEN PM report QA findings via email to Contractor?

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PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 CONSTRUCTION LINES AND GRADES

- A. The Contractor must make surveys and layouts as necessary to delineate the Work. The Contractor must make the surveys for the proper performance of the Work. As a part of such surveys, the Contractor must furnish, establish, and maintain in good order survey control points that may be required for the completion of the Work subject to the approval of the DEN Project Manager as to their location, sufficiency and adequacy. However, such approval by the DEN Project Manager must not relieve the Contractor of responsibility for the accuracy of the Contractor's survey work.
- B. The DEN Project Manager must have the right to check surveys and layouts made by the Contractor prior to approving any of the Work. The Contractor must give advance notice of not less than forty-eight (48) hours to the DEN Project Manager to enable such checking prior to placing any work. The Contractor must furnish assistance as may be required for checking purposes when so requested by the DEN Project Manager.
- C. The Contractor must furnish skilled labor, instrument platforms, ladders and such other temporary structures as may be necessary for making and maintaining points and lines in connection with the surveys required.
- D. The DEN Project Manager may draw the Contractor's attention to errors or omissions in lines or grades, but the failure to point out such errors or omissions must not give the Contractor any right or claim nor must in any way relieve the Contractor of obligations according to the terms of this Contract.
- E. The Contractor's instruments and other survey equipment must have current certification from manufacturer's representative Surveys must be performed under the direct supervision of a current Colorado Registered Licensed Land Contractor.

F. Field Notes:

- 1. The Contractor must record surveys in field notebooks or as electronic field notes, whichever is more appropriate to the type of survey work.
- 2. If the DEN Project Manager finds errors in the field notes DEN must have the Contractor correct and resubmit the notes. This review does not relieve the Contractor from the responsibility of maintaining accurate survey data. Whichever method of note-taking the Contractor starts with, the Contractor must use the same method throughout the Contract duration.
- G. The DEN Project Manager may at any time use line and grade points and markers established by the Contractor. The Contractor's surveys are a part of the Work and may be checked by the DEN Project Manager or the DEN Project Manager's representatives at any time.

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PART 4 - MEASUREMENT

4.1 METHOD OF MEASUREMENT

A. No separate measurement shall be made for work under this Section.

PART 5 - PAYMENT

5.1 METHOD OF PAYMENT

A. No separate payment must be made for work under this Section. The cost of the work described in this Section must be included in the applicable contract value, work order or lump sum bid item.

END OF SECTION 013223.11

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SECTION 013233 - PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for the following:
 - 1. Preconstruction photographs.
 - 2. Periodic construction photographs.
 - 3. Final Completion construction photographs.
 - 4. Preconstruction video recordings.
 - 5. Periodic construction video recordings.
 - 6. Web-based construction photographic documentation.

1.3 REFERENCE DOCUMENTS:

- A. Section 013300 "Submittal Procedures"
- B. Section 017720 "Contract Closeout"
- C. Section 017900 "Demonstration and Training"
- D. Section 024119 "Selective Demolition"

1.4 ALTERNATES

A. Refer to Section 012300 "Alternates"

1.5 INFORMATIONAL SUBMITTALS

- A. Digital Photographs: Submit image files within **three (3)**< days of taking photographs.
 - 1. Digital Camera: Minimum sensor resolution of **10** megapixels.
 - 2. File Format: Minimum 3200 BY 2400 pixels, in unaltered .RAW original files, with same aspect ratio as the sensor, uncropped, date and time stamped, in folder named by date of photograph, accompanied by key plan file.
 - 3. Identification: Provide the following information with each image description in file metadata tag:

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- a. Project title and Project number.
- b. Name and contact information for photographer.
- c. Name of DEN Project Manager.
- d. Name of Contractor.
- e. Date photograph was taken.
- f. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
- g. Unique sequential identifier keyed to accompanying key plan.
- h. Photograph number.

1.6 USAGE RIGHTS

A. Obtain and transfer copyright usage rights from photographer to City and County of Denver for unlimited reproduction of photographic documentation.

PART 2 - PRODUCTS

2.1 PHOTOGRAPHIC MEDIA

- A. Digital Images: Provide images in JPG format, produced by a digital camera with minimum sensor size of **10**megapixels, and at an image resolution of not less than **3200 by 2400** > pixels.
- B. Digital Video Recordings: Provide high-resolution [720p] [1080p][4k][8k] with a minimum framerate of 60Hz in electronic format acceptable to DEN Project Manager.

2.2 WEB-BASED PHOTOGRAPHIC DOCUMENTATION

- A. Project Camera: Provide fixed exterior camera installation, mounted to provide unobstructed view of construction site from location approved by DEN Project Manager.
 - 1. Provide **one**fixed-location camera(s), with the following characteristics:
 - a. Static view
 - b. Provide power supply, active high-speed data connection to service provider's network, and static public IP address for each camera.

PART 3 - EXECUTION

3.1 CONSTRUCTION PHOTOGRAPHS

A. Photographer: Engage a qualified photographer to take construction photographs.

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- B. General: Take photographs using the maximum range of depth of field, and that are in focus, to show clearly the Work. Photographs with blurry or out-of-focus areas will not be accepted.
 - 1. Maintain key plan with each set of construction photographs that identifies each photographic location.
- C. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software. Provide commercial quality, digital color photographs in PDF format. PDF file shall be security-free, bookmarked by date with all photos rotated to the correct orientation. Identify the following information on each photograph on the lower right corner.
 - 1. Subject description (include work order number or change order number if applicable)
 - 2. Station point of camera and direction of view. Include letter size diagram of project indicating Station point
 - 3. Date and time each photo was taken
 - 4. Name of Contractor.
 - 5. Photograph number
 - 6. Field Office Images: Maintain one set of images accessible in the field office at Project site, available at all times for reference. Identify images in the same manner as those submitted to DEN Project Manager.
- D. Preconstruction Photographs: Before **starting construction**, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by DEN Project Manager.
 - 1. Flag **construction limits** before taking construction photographs.
 - 2. Take **20** photographs to show existing conditions adjacent to property before starting the Work.
 - 3. Take **20** photographs of existing buildings either on or adjoining property to accurately record physical conditions at start of construction.
 - 4. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.
 - 5. Haul route, laydown yard, and other locations as directed by DEN Project Manager.
- E. Periodic Construction Photographs: Take **20** photographs **monthly**, **coinciding**with the cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last photographs were taken.
- F. DEN Project Manager-Directed Construction Photographs: From time to time, DEN Project Manager will instruct photographer about number and frequency of photographs and general directions on vantage points. Select actual vantage points and take photographs to show the status of construction and progress since last photographs were taken.
- G. Time-Lapse Sequence Construction Photographs: Take 20photographs as indicated,

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to show status of construction and progress since last photographs were taken.

- 1. Frequency: Take photographs **monthly, coinciding**with the cutoff date associated with each Application for Payment.
- 2. Vantage Points: Following suggestions by DEN Project Manager and Contractor, photographer to select vantage points. During each of the following construction phases, take not less than **two**of the required shots from same vantage point each time to create a time-lapse sequence as follows:
 - a. Commencement of the Work, through completion of subgrade construction.
 - b. Above-grade structural framing.
 - c. Exterior building enclosure.
 - d. Interior Work, through date of Substantial Completion.
- H. Final Completion Construction Photographs: Take **20**color photographs after date of Substantial Completion for submission as project record documents. DEN Project Manager will inform photographer of desired vantage points.
 - 1. Do not include date stamp.
- I. Additional Photographs: DEN Project Manager may request photographs in addition to periodic photographs specified. Additional photographs shall be paid for by Change Order and are not included in the Contract Sum.
 - 1. Three days' notice shall be given, where feasible.
 - 2. In emergency situations, take additional photographs within 24 hours of request.
 - 3. Circumstances that could require additional photographs include, but are not limited to, the following:
 - a. Special events planned at Project site.
 - b. Immediate follow-up when on-site events result in construction damage or losses.
 - c. Photographs to be taken at fabrication locations away from Project site. These photographs are not subject to unit prices or unit-cost allowances.
 - d. Substantial Completion of a major phase or component of the Work.
 - e. Extra record photographs at time of final acceptance.
 - f. DEN's request for special publicity photographs.

PART 4 - MEASUREMENT

4.1 METHOD OF MEASUREMENT

A. No separate measurement shall be made for work under this Section.

ISSUED FOR: CONFORMED DOCUMENTS 12/22/20

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PART 5 - PAYMENT

5.1 METHOD OF PAYMENT

A. No separate payment will be made for work under this Section.

END OF SECTION 013233

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ISSUED FOR: CONFORMED DOCUMENTS 12/22/20

RS&H, INC. 013233-6 REVISION NO 00

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SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. The Work specified in this Section summarizes the requirements for the submittal of documents to the DEN Project Manager that are defined in these Specifications. It also describes the procedures for "supplemental" submittals.
- B. The Contractor must follow all the requirements of the procedures and the product details and keep all the submittals current and approved prior to any placement of work.

1.3 SUBMITTAL SCHEDULE

- A. The Contractor shall provide a submittal schedule within 14 days after Notice to Proceed. The Submittal Schedule shall be directly related to the CPM schedule, shall identify all the submittals, and shall include the following information for each submittal item
 - 1. Specification section, Contract article, or special condition.
 - 2. Specification Subparagraph.
 - 3. Item description.
 - 4. Date the submittal shall be submitted.
 - 5. Name of subcontractor or supplier.
- B. The submittal schedule shall be kept current by the Contractor and submitted with the progress payment requests.
- C. For large files that cannot be loaded or e-mailed through the electronic Project Manager application (Unifier), submit the files on a CD, DVD, or USB flash drive media.

1.4 ELECTRONIC SUBMITTALS

A. Before the initiation of the submittal process, coordinate and insure that all submittals comply and follow the requirements of the DEN Building Information Modeling (BIM) Design Standards Manual (DSM) and the DEN BIM PXP.

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- B. Submit request for progress payment applications utilizing TEXTURA software as instructed by DEN Project Manager.
- C. Submit Subcontractor's Contract information required by the City and County of Denver Small Business Office as instructed by DEN Project Manager.
- D. Submit original electronic copies of all City and County of Denver Development Department/ Building Inspection Department Approved drawings including all approvals of Deferred Submittals; including but not limited to shoring plans, Fire Protection distribution plans, and structural shop drawings to DEN Project Manager as Informational Submittals. The lack of approval of the Denver Development Services on any document shall be basis for rejection of Work and non-compliance.
 - 1. NOTE: Only original copies shall be accepted. Scans will not be accepted.
- E. Submit electronically scanned copies of all documents required by Chapter 17 "Special Inspection and Testing" of the International Building Code 2009 as amended by City and County of Denver 2011. Keep scale and clarify dimension where electronic copies are not as originally scaled and dimensioned.
- F. All submittals shall be delivered to the DEN Project Manager utilizing the Primavera Construction Manager program (PCM) as attachments and as separate file when files are too large to attach or of an electronic media that is not supported by PCM or Utilizing the EPPM Unifier software uploaded to the share drive Unifier's project site when directed by DEN Project Manager.
 - 1. Acceptable electronic formats
 - a. Print document format (pdf) shall have no security and bookmark every applicable submittal. All pages shall be completely legible and oriented to correct reading view.
 - 2. Formats are acceptable only with written permission of the DEN Project Manager or required by the BIM PXP. For files in any of the following formats, the corresponding stringency will apply:
 - a. Microsoft Office 2007 or newer. All files shall be fully compatible with Microsoft Office 2007.
 - 1) AutoCAD files shall be self-contained with no external x-references.
 - b. BIM files shall conform to the standards and formats outlined in the BIM PXP and DEN BIM DSM.
 - c. Other files pre-approved by the DEN Project Manager.

1.5 INITIAL SUBMITTAL

- A. Each submittal document shall include a title block showing the following information:
 - Date of submittal and revision dates.

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- 2. Contract title and number.
- 3. The names of Contractor, subcontractor, supplier, manufacturer and when applicable, the seal and signature of an Engineer registered in the State of Colorado, for the involved discipline.
- 4. Identification of product by either description, model number, style number or lot number.
- 5. Subject identification by Contract Drawing or specification reference.
- B. On each submitted drawing, include a blank space on each sheet, three inches by four inches, in the lower right corner, just above the title block, in which the DEN Project Manager or the Designer of Record may indicate the action taken.
- C. Make submissions sufficiently in advance so that the DEN Project Manager Review may be completed not less than 30 days before Work represented by those submittals is scheduled to be performed.
- D. Allow a minimum cycle of 30 days for review of each submittal by the DEN Project Manager.
- E. Accompany submittal documents with DEN transmittal form CM-30, Submittal, which shall contain the following information:
 - 1. Contractor's name, address and telephone number.
 - 2. Submittal number and date.
 - 3. Contract title and number.
 - 4. Supplier's, manufacturer's, or subcontractor's name, address and telephone number.
 - 5. Identification of variations from Contract Documents.
 - 6. Contractor's stamp and signature certifying the Contractor's review.
 - 7. Identification of submittal:
 - a. If the submittal is being made on a General Condition or Special Condition, reference the General or Special Condition number the first two digits of the specification section shall be 00XXXX.
 - b. If the submittal is being made under a specification section, reference the specification number, paragraph number, and subparagraph number.
 - c. If the submittal is being made under a drawing, reference the drawing(s) number and sub-number.
- F. The Contractor shall describe, at the time of submission, variations from the Contract documents in writing, separate from the submittal document. If the DEN Project Manager approves any such variations, an appropriate Contract change order shall be issued, except that if the variation is minor and does not involve a change in price or in time of performance, a modification need not be issued. If a submission contains variations and the variation column is not marked on the transmittal form, it will not be considered for review and acceptance. Along with marking the transmittal as a variation, a description must be included which outlines all the differences including maintenance and utility services along with any cost savings from an item not containing the variation.

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- G. Changes in accepted submittal documents will not be permitted unless those changes have been accepted, in writing, by the DEN Project Manager.
- H. The form and quality of submittal documents shall comply with Section 013325 "Shop and Working Drawings, Product Data, and Samples."

1.6 SUPPLEMENTAL SUBMITTALS

A. Supplemental submittal documents initiated by the Contractor for consideration of corrective procedures shall contain sufficient data for review. Make supplemental submittals in the same manner as initial submittals with the appropriate primary transmittal referenced.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

- A. The Contractor shall review all submittal documents, stamp, and sign as reviewed and approved as complying with Contract Documents prior to submission to the DEN Project Manager. Submittal documents that are submitted to the DEN Project Manager THAT HAVE NOT BEEN REVIEWED BY THE CONTRACTOR will not be reviewed and will be returned to the Contractor. Contractor is responsible for any delays in the Project due to improperly reviewed, stamped, and signed submittals.
- B. The Owner review period will be limited to ten (10) business days from the time complete submittal documents have been submitted.
- C. The Contractor is responsible to obtain all approvals for all deferred submittals, shop drawings, and significant changes from the CCD Development Service Department.
- All submittals must delineate any deviation from the intended design and must submit request for substitution to address any significant variation. Refer to Title 4, Article 405 Shop Drawings, Product Data, and Samples, and Article 406 Substitution of Materials and Equipment of the General Contract Conditions, 2011 Edition.

3.2 REVIEW BY DEN PROJECT MANAGER

A. Submittal documents will be reviewed by the DEN Project Manager, the DEN Project Manager Team, and/or the DOR for conformance to requirements of the Contract Documents. Review of a separate item will not constitute review of an assembly in which the item functions. The DEN Project Manager will withhold approval of submittals that depend on other submittals not yet submitted. Review and acceptance will not relieve the Contractor from the Contractor's responsibility for accuracy of submittals, for conformity of submittal document to requirements of Contract Drawings

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and specifications, for compatibility of described product with contiguous products and the rest of the system, or for protection and completion of the Contract in accordance with the Contract Drawings and specifications.

- B. The City, the DOR, and/or the DEN Project Manager will review the submittal documents for general conformance with the Contract Documents and mark the Action Code, sign, and date the transmittal.
- C. The Action Codes have the following meanings:
 - 1. Accepted (ACC)
 - a. The submittal conforms to the respective requirements of the contract documents.
 - 2. Accepted as Noted (AAN)
 - a. The submittal conforms to the respective requirements of the Contract Documents after changes are made in accordance with reviewer's comments. AAN submittals do not need to be resubmitted.
 - 3. Revise and Resubmit (R&R)
 - a. The submittal is unacceptable and must be revised and resubmitted.
 - 4. Rejected (REJ)
 - a. The submittal is not approved and a new submittal in accordance with the Contract Documents must be prepared and submitted.
 - 5. For Information Only (FIO)
 - a. An item is received by the DEN Project Manager but is not reviewed.

3.3 CONTRACTOR'S RESPONSIBILITIES

- A. Coordinate each submittal document with the requirements of the Work. Place particular emphasis upon ensuring that each submittal of one trade is compatible with other submittals of that trade and submittals of other trades including producing as needed drawings showing the relationship of the Work of different trades.
- B. Contractor's responsibility for errors and omissions in submittal documents and associated calculations is not relieved by the DEN Project Manager's review, correction, and acceptance of submittals.
- C. Contractor's liability to the City, in case of variations in the submittal document from the requirements of the Contract Documents, is not relieved by the DEN Project Manager's review and acceptance of submittals containing variations unless the DEN Project Manager expressly approves the deviation in writing, in which the DEN Project Manager describes the variation.

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- D. The Contractor shall maintain a file of all approved submittal documents at the work site. The complete file of approved submittal documents shall be turned over to the DEN Project Manager with the as-built documents at the end of the job.
- E. Schedule impact due to resubmittal requirements is the responsibility of the Contractor.

PART 4 - MEASUREMENT

- 4.1 METHOD OF MEASUREMENT
 - A. No separate measurement shall be made for work under this Section.

PART 5 - PAYMENT

- 5.1 METHOD OF PAYMENT
 - A. No separate payment will be made for work under this Section.

END OF SECTION 013300

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SECTION 013325 - SHOP AND WORKING DRAWINGS, PRODUCT DATA, AND SAMPLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. The Work specified in this Section consists of preparing and submitting shop and working drawings, product data, samples, and record documents required by other specifications Sections.
 - 1. The Contractor shall submit all shop drawings, working drawings, product data, and samples, as defined in the General Conditions, to the DEN Project Manager in accordance with the requirements in the technical specifications. The DEN Project Manager will return one (1) copy of the shop drawings, working drawings and product data to the Contractor with a written transmittal.
- B. The Contractor shall not submit as shop drawings, copies or reproductions of drawings issued to the Contractor by DEN.
- C. Related Requirements
 - 1. Section 013300 "Submittal Procedures
 - 2. Section 012510 "Substitutions"
 - 3. Section 017720 "Contract Closeout"

1.3 SUBMITTALS

- A. All submittals shall be delivered to the DEN Project Manager in electronic format. All submittals must be of a consistent format (all PDF). No combination of electronic file types will be allowed unless required by a specific specification section.
 - Acceptable electronic formats: Comply with the electronic file formats approved by DEN Building Information Modeling (BIM) Design Standards Manual If any of the files are in any of the formats listed below then the version of the software shall be no less than identified below:
 - a. Adobe Acrobat 8.0 or newer. All files shall be fully compatible with Adobe Acrobat 8.0.
 - b. Microsoft Office 2007 or newer. All files shall be fully compatible with Microsoft Office 2007.

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- c. AutoDesk AutoCAD 2007 or newer. All files shall be fully compatible with AutoDesk AutoCAD 2007.
- d. AutoCAD files shall be self-contained with no external x-references.
- e. BIM format outlined in the BIM Project Execution Plan (PXP)
- f. Other files pre-approved by the DEN Project Manager.

2. Adobe Acrobat Requirements:

- a. Drawings shall have security set to "No Security." Commenting, printing, adding photos, form fields and document signing must be allowed.
- b. PDF submittals shall be one continuous file or Portfolio. No external links are allowed.
- c. All individual components of submittals shall be bookmarked inside the PDF file
- d. All original documents shall be directly converted from the original electronic format to PDF. Scanning of files shall only be allowed by the DEN Project Manager when the original electronic information is not obtainable.
- e. Failure to comply with these requirements will result in a return of file to the Contractor for immediate revision.
- 3. Electronic files submitted shall correspond with DEN File Control Numbering System available from the DEN Project Manager.

B. Quantities

- 1. One (1) electronic submittal in Unifier containing electronic files of each shop or working drawing.
- 2. One (1) electronic submittal in Unifier containing electronic files of manufacturer's standard schematic drawings.
- 3. One (1) electronic submittal in Unifier containing electronic files of manufacturer's calculations and manufacturer's standard data.
- 4. One (1) electronic submittal in Unifier containing electronic files of manufacturer's printed installation, erection, application, and placing instructions.
- 5. Nine (9) samples of each item specified in the various specification sections, unless otherwise specified.
- 6. One electronic submittal in Unifier containing electronic files of inspection, test reports, and certificates of compliance.
- 7. Note: If manufacturer's printed information is in color, all copies of submittals must be in color.

C. Review:

- 1. Submittal review comments by the DEN Project Manager will be in electronic form and incorporated into the electronic submittal file.
- 2. Resubmittals of electronic documents shall modify the original electronic file with new information and include the DEN Project Manager's comments with appropriate responses and additional information.

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1.4 CHANGES

A. Changes in products for which shop or working drawings, product data or samples have been submitted will not be permitted unless those changes have been accepted and approved in writing by the Deputy Manager of Aviation as provided in Section 012510 "Substitutions."

1.5 QUALITY CONTROL

- A. Shop drawings and record documents shall be prepared to the standards of quality outlined in the specifications, DSM and BIM PXP, prepared and printed from Revit and checked in the spatial coordination format specified in the BIM PXP.
- B. Refer to DEN BIM DSM for other requirements that may be applicable to this Article.

PART 2 - PRODUCTS.

2.1 SHOP AND WORKING DRAWINGS

- A. Prepare shop and working drawings in an electronic format that is current and approved by DEN to a scale large enough to easily depict and annotate each of the various items.
- B. Comply per other BIM requirements for Shop and Working Drawings as established in the DEN BIM DSM.
- C. Include the following as they apply to the subject:
 - 1. Contract title, work order, and number.
 - Respective Contract drawing numbers.
 - 3. Applicable specification section numbers.
 - 4. Relation to adjacent structure or materials.
 - 5. Field dimensions clearly identified as such.
 - 6. Applicable standards such as ASTM or Federal Specification number, FAA, AASHTO, and pertinent authority specifications or standards.
 - 7. Identification of deviations from the Contract Drawings and specifications.
 - 8. Drawing name, number, and revision.
 - 9. Contractor's stamp, initialed or signed, certifying:
 - a. Verification of field measurements.
 - b. Review of submittals for compliance with Contract requirements.
 - c. Compatibility of the Work shown thereon with that of affected trades.
 - Blank space on each sheet per Technical Specifications Section 013300
 "Submittal Procedures."
- D. Drawings of equipment and other items that contain multiple parts shall include

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exploded views showing the relationship of parts and the description of the parts into the smallest units that may be purchased or serviced.

E. Comply with all submittal requirements of Section 013300 "Submittal Procedures."

2.2 PRODUCT DATA

- A. Modify manufacturer's standard and/or schematic drawings to delete information that is not applicable to the Contract. Supplement standard information with additional information applicable to this Contract.
- B. Modify manufacturer's standard(s), diagrams, schedules, performance charts, illustrations, calculations, and other descriptive data to delete information that is not applicable to the Contract. Indicate dimensions, clearances, performance characteristics, and capacities. Include with the submittal electrical, plumbing, HVAC, and any other diagrams, as applicable.
- C. Modify erection, application, and placing instructions to delete information that is not applicable to the Contract or work order.
- D. Include the following:
 - 1. Contract title, work order, and number.
 - 2. Respective Contract drawing numbers.
 - 3. Applicable Contract technical specification section numbers.
 - 4. Applicable standards such as ASTM or Federal Specification number, FAA, AASHTO and pertinent authority specifications or standards.
 - 5. Identification of deviations from the Contract Drawings and specifications.
 - 6. Contractor's stamp, initialed or signed, certifying:
 - a. Dimensional compatibility of the product with the space in which it is intended to be used.
 - b. Review of submittals for compliance with Contract requirements.
 - Compatibility of the product with other products with which it is to perform or which will be next to it.
 - d. The products electrical, plumbing, control and HVAC requirements conform to Contract Documents and the necessary utilities are provided for in the Contract Documents.
- E. Comply with all submittal requirements of Section 013300 "Submittal Procedures."

2.3 SAMPLES

- A. Submit samples of sizes and quantities to clearly illustrate full color range and functional characteristics of products and materials including attachment devices.
- B. Erect field samples and mockups at the work site as specified in specification Sections and at locations acceptable to the DEN Project Manager. All field samples shall be

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erected in a location that will be readily visible throughout the life of the Contract to allow comparison of the Work as it progresses to the field sample. Field samples and mockups may be incorporated into the Work at Contractor's risk if approved by DEN Project Manager.

- C. The Contractor shall verify, through appropriate inspections and tests, that the samples submitted meet the specifications and shall provide inspection and test data with the samples. The review and comments on the sample shall not relieve the Contractor of the Contractor's responsibility for completion of the Contract.
- D. Show the following information:
 - 1. Contract title and number.
 - 2. Respective Contract drawing numbers.
 - 3. Applicable technical specification section numbers.
 - 4. Applicable standards such as ASTM or Federal Specification number.
 - 5. Identification of deviations from the Contract Drawings and specifications
 - 6. Contractor's stamp, initialed or signed, certifying:
 - a. Dimensional compatibility of the product with the space in which it is intended to be used
 - b. Review of submittals for compliance with Contract requirements
 - Compatibility of the product with other products with which it is to perform or which will be next to it
 - 7. If multiple samples are submitted and the DEN Project Manager is requested to make a choice, each sample shall have a unique identification number attached to it so the returned transmittal can state the identification number of the accepted sample and the Contractor will know which one it is.
- E. Comply with all submittal requirements of Section 013300 "Submittal Procedures."

PART 3 - EXECUTION

3.1 CONTRACTOR RESPONSIBILITIES

- A. Verify field measurements, catalog numbers, and similar data.
- B. The Contractor shall not start work for which submittals are required until a transmittal has been received by the Contractor marked with the Action Code ACCEPTED or ACCEPTED AS NOTED by the DEN Project Manager.
- C. Before making submittals, ensure that the products will be available in the quantities and at the times required by the Contract.
- D. Submit final, corrected, electronic copies of Contract and shop and working drawings showing the Work as actually installed, placed, erected, and applied. Refer to Section 017720 "Contract Closeout."

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3.2 REVIEW BY THE DEN PROJECT MANAGER

- A. One (1) electronic copy of the marked-up shop and working drawing and one (1) electronic copy of the product data will be returned to the Contractor by the DEN Project Manager. Only the transmittal form appropriately marked with the Action Code and comments, if any, will be returned on sample submittals.
- B. Contractor's responsibility for errors and omissions in submittals for compatibility will not be reduced, waived or otherwise limited by the review and acceptance of submittals by the DEN Project Manager.

PART 4 - MEASUREMENT

- 4.1 METHOD OF MEASUREMENT
 - A. No separate measurement shall be made for work under this Section.

PART 5 - PAYMENT

- 5.1 METHOD OF PAYMENT
 - A. No separate payment will be made for work under this Section. .

END OF SECTION 013325

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SECTION 013510 - CONSTRUCTION SAFETY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Work specified in this Section includes construction safety precautions and programs by the Contractor and the basis for reviews by the DEN Project Manager.
- B. For projects enrolled under DEN Rolling Owner Controlled Insurance Program (ROCIP) reference the Contract Special Conditions for all safety requirements.
- C. For projects enrolled under DEN Owner Controlled Insurance Program (OCIP) reference the Contract Special Conditions for all safety requirements.

1.3 RESPONSIBILITY

- A. The Contractor is responsible for the health and safety of the Contractor's personnel, agents, subcontractors and their personnel, and other persons on the worksite, for the protection and preservation of the Work and all materials and equipment to be incorporated therein, and for the worksite and the area surrounding the worksite. The Contractor shall take all necessary and reasonable precautions and actions to protect all such persons and property.
- B. This Section shall be interpreted in its broadest sense for the protection of persons and property by the Contractor and no action or omission by the DEN Project Manager or the DEN Project Manager's authorized representatives shall relieve the Contractor of any of its obligations and duties hereunder.

1.4 SUBMITTALS

- A. Refer to Section 013300 "Submittal Procedures" and Section 013325 "Shop and Working Drawings, Product Data and Samples" for the submittal process. The Contractor's Site Specific Safety Plan shall be submitted and approved under the general Contract prior to commencing any Work. If a Task Order or Change Order is issued where the Work is not covered by the approved Contractor's Site Specific Safety Plan, then a revision to the Safety Plan specific for the Work in the Task Order shall be resubmitted for approval.
 - 1. No progress payment shall be approved until the Contractor's Site Specific

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Safety Plan has been accepted by the DEN Project Manager.

- B. The Contractor shall provide six (6) copies of the Contractor's Site Specific Safety Plan to the DEN Project Manager for review at least ten (10) calendar days before on-site construction begins. The Contractor's program must meet, as a minimum, all applicable federal, state and local government requirements, and the following:
 - 1. The Contractor shall provide the following information for acceptance by the DEN Project Manager prior to the commencement of construction activities. The Site Specific Safety Plan must address all aspects listed below. If an item is not applicable, then this must be noted in the plan.
 - a. Name of the Contractor's safety representative.
 - b. If the Contractor is running multiple shifts or working more than (40) hours per week, the name of an assistant safety representative who can act in the absence of the site safety representative.
 - c. Twenty-four (24) hours per day emergency phone numbers of Contractor site management to be used in case of injury or accident. Provide at least four contacts.
 - d. Means of protecting employees working in trenches and excavations, including sloping and shielding.
 - 1) Soil classification will be considered as Type C when designing protective systems, unless the Contractor can prove to the satisfaction of DEN that the soil classification is otherwise. Soil classification change request shall be provided to the DEN Project Manager in writing. The decision of the DEN Project Manager will be provided to the Contractor in writing.
 - e. The Contractor shall show how material shall be stored beside the excavation. Stored material shall include the excavated and backfilled material
 - f. Injury and accident handling, including samples of the reporting form.
 - g. How personnel will be handled who are unable to safely perform their duties, including how the Contractor will determine whether personnel are unable to safely perform duties. This may include the Contractor's disciplinary process and employee's physical capabilities to perform the work safely.
 - h. How and when equipment will be checked to see that it is safe, that all safety guards are in place, and that the equipment is being used for its designed purpose and within its rated capacity.
 - How and when all electric devices will be checked for proper grounding and insulation. Describe the methods that will be used to lock out electric systems that should not be energized.
 - j. How trash and human organic waste will be disposed of.
 - k. How snow and ice will be removed by the Contractor in the project area.
 - How concrete forms will be anchored to ensure their stability, including calculations showing that the forms will safely hold the maximum construction loads.
 - m. How flammable materials will be stored and handled, and how any spills will

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be cleaned up and removed for disposal.

- n. What system will be used to prevent fires and, if fires do occur, who will be trained to fight them. In addition, what firefighting equipment will the Contractor have available and how will this equipment's condition be monitored.
- o. How materials will be received, unloaded, stored, moved, and disposed of.
- p. How personnel working above ground level will be protected from falling.
- q. How people working beneath the construction work will be protected.
- r. What will be done to protect personnel in case of severe weather.
- s. How adequate lighting will be provided and monitored.
- t. How air quality will be monitored to ensure that chemical exposures are below current, established OSHA Permissible Exposure Limits. How personnel will be protected if these limits are exceeded.
- u. How the safety of work platforms, man lifts, material lifts, ladders, shoring, scaffolding, etc., will be ensured relating to load capacity and the protection of personnel using or working around them.
- v. The type of personal protective equipment that will be used to protect personnel from hazards.
- w. The type of safety training that will be provided to personnel to inform them of safe work procedures.
- x. How daily audits and inspections will be performed to ensure compliance with the Contractor's Site Specific Safety Plan and current, applicable OSHA regulations.
- y. Procedures to ensure that welding and other hot work is performed safely.
 - A hot work permit from the Denver Fire Department (DFD) will be required for all welding, soldering, cutting, and brazing and or other processes required by DFD on the project. Contractor will comply with all of the provisions in the permit.
- z. How compressed gases will be safely stored, handled, and used.
- aa. Methods to ensure that personnel safely enter, work in, and exit confined spaces.
 - All confined spaces on DEN property are considered permit required.
 A permit must be obtained from the DFD before Contractor personnel may enter a confined space. Contractors will comply with all provisions and requirements of this permit.
- bb. How the hazards of chemicals will be communicated to personnel, including the use of material safety data sheets and chemical labels.
- cc. Methods to ensure that forklifts and other powered industrial trucks are operated in a safe manner.
- dd. How an effective hearing conservation program will be used to protect personnel from high noise levels and prevent hearing loss.
- ee. How personnel will be protected from the effects of jet blast.
- ff. How hazards will be identified and corrected when reported.

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1.5 DEN PROJECT MANAGER'S REVIEW

A. Prior to the start of any work by contractor or subcontractor personnel, the Contractor shall provide the DEN Project Manager with a list of its personnel, subcontractor's personnel and other personnel the Contractor has requested to work at Denver International Airport, who have signified in writing that they have been briefed on, or have read and understand, the Contractor's Site Specific Safety Plan.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 IMPLEMENT CONTRACTOR'S OPERATIONAL SAFETY PLAN

- A. Implement the approved Contractor's Operational Safety Plan as described in Article 1 of this Section and in Section 011100 "Summary of Work."
- B. If the Contractor experiences lost time or an injury rate greater than 75 percent of the national average for all construction, the Contractor shall notify the DEN Project Manager and audit its safety procedures and submit a plan to reduce its rates.
- C. If at any time the lost time or injury rates experienced by the Contractor are 150 percent or more of the national average for construction, the Contractor shall notify the DEN Project Manager and immediately hire an independent safety professional who shall audit the Contractor's procedures and operations and make a report of changes that the Contractor should implement to reduce the rate including changing personnel.
 - 1. The report shall be submitted to the DEN Project Manager.
 - 2. The Contractor shall immediately begin implementing the recommendations of the independent safety professional.
 - 3. A weekly report shall be submitted by the Contractor to the DEN Project Manager on the status of the implementation of the recommendations.
 - 4. Failure to comply with these requirements is a basis to withhold a portion of progress payments.

3.2 ROLLING OWNER CONTROLLED INSURANCE PROGRAM (ROCIP)

A. Implement Rolling Owner Controlled Insurance Program (ROCIP) as provided in the Project Manual issued for bid or proposal

3.3 OWNER CONTROLLED INSURANCE PROGRAM (OCIP)

A. Implement Owner Controlled Insurance Program (OCIP) as provided in the Project Manual issued for bid or proposal

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PART 4 - MEASUREMENT

4.1 METHOD OF MEASUREMENT

A. No separate measurement shall be made for work under this Section.

PART 5 - PAYMENT

5.1 METHOD OF PAYMENT

A. No separate payment will be made for work under this Section.

END OF SECTION 013510

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SECTION 013516 - ALTERATION PROJECT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes special procedures for alteration work.

1.3 DEFINITIONS

- A. Alteration Work: This term includes remodeling, renovation, repair, and maintenance work performed within existing spaces or on existing surfaces as part of the Project.
- B. Consolidate: To strengthen loose or deteriorated materials in place.
- C. Design Reference Sample: A sample that represents the DOR's prebid selection of work to be matched; it may be existing work or work specially produced for the Project.
- D. Dismantle: To remove by disassembling or detaching an item from a surface, using gentle methods and equipment to prevent damage to the item and surfaces; disposing of items unless indicated to be salvaged or reinstalled.
- E. Match: To blend with adjacent construction and manifest no apparent difference in material type, species, cut, form, detail, color, grain, texture, or finish; as approved by DOR.
- F. Refinish: To remove existing finishes to base material and apply new finish to match original or as otherwise indicated.
- G. Repair: To correct damage and defects, retaining existing materials, features, and finishes. This includes patching, piecing-in, splicing, consolidating, or otherwise reinforcing or upgrading materials.
- H. Replace: To remove, duplicate, and reinstall entire item with new material. The original item is the pattern for creating duplicates unless otherwise indicated.
- I. Replicate: To reproduce in exact detail, materials, and finish unless otherwise indicated.
- J. Reproduce: To fabricate a new item, accurate in detail to the original, and from either the same or a similar material as the original, unless otherwise indicated.

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- K. Retain: To keep existing items that are not to be removed or dismantled.
- L. Strip: To remove existing finish down to base material unless otherwise indicated.

1.4 COORDINATION

- A. Alteration Work Subschedule: A construction schedule coordinating the sequencing and scheduling of alteration work for entire Project, including each activity to be performed, and based on Contractor's Construction Schedule. Secure time commitments for performing critical construction activities from separate entities responsible for alteration work.
 - Schedule construction operations in sequence required to obtain best Work results
 - 2. Coordinate sequence of alteration work activities to accommodate the following:
 - a. Owner's continuing occupancy of portions of existing building.
 - b. Owner's partial occupancy of completed Work.
 - c. Other known work in progress.
 - d. Tests and inspections.
 - 3. Detail sequence of alteration work, with start and end dates.
 - 4. Utility Services: Indicate how long utility services will be interrupted. Coordinate shutoff, capping, and continuation of utility services.
 - 5. Use of elevator and stairs.
 - 6. Equipment Data: List gross loaded weight, axle-load distribution, and wheelbase dimension data for mobile and heavy equipment proposed for use in existing structure. Do not use such equipment without certification from Contractor's professional engineer that the structure can support the imposed loadings without damage.
- B. Pedestrian and Vehicular Circulation: Coordinate alteration work with circulation patterns within Project buildings and site. Some work is near circulation patterns [and adjacent to restricted areas] <Insert item of concern>. Circulation patterns cannot be closed off entirely and in places can be only temporarily redirected around small areas of work.[Access to restricted areas may not be obstructed.] Plan and execute the Work accordingly.

1.5 PROJECT MEETINGS FOR ALTERATION WORK

- A. Preliminary Meeting for Alteration Work: Before starting alteration work, [conduct] [DOR will conduct] [DEN Project Manager] will conduct] meeting at [Project site] <Insert location>.
 - Attendees: In addition to representatives of City,[DEN Project Manager,] DOR, and Contractor, testing service representative, and specialists shall be represented at the meeting.
 - 2. Agenda: Discuss items of significance that could affect progress of alteration

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work, including review of the following:

- Alteration Work Subschedule: Discuss and finalize; verify availability of materials, specialists' personnel, equipment, and facilities needed to make progress and avoid delays.
- b. Fire-prevention plan.
- c. Governing regulations.
- d. Areas where existing construction is to remain and the required protection.
- e. Hauling routes.
- f. Sequence of alteration work operations.
- g. Storage, protection, and accounting for salvaged and specially fabricated items.
- h. Existing conditions, staging, and structural loading limitations of areas where materials are stored.
- i. Qualifications of personnel assigned to alteration work and assigned duties.
- j. Requirements for extent and quality of work, tolerances, and required clearances.
- k. Embedded work such as flashings and lintels, special details, collection of waste, protection of occupants and the public, and condition of other construction that affects the Work or will affect the work.
- 3. Reporting: [Record] [DOR will record] [DEN Project Manager will record] meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from meeting.
- B. Coordination Meetings: Conduct coordination meetings specifically for alteration work at [weekly] [monthly] <Insert interval> intervals. Coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and preinstallation meeting.
 - 1. Attendees: In addition to representatives of the City, [DEN Project Manager,] DOR, and Contractor, each specialist, supplier, installer, and other entity concerned with progress or involved in planning, coordination, or performance of alteration work activities shall be represented at these meetings. All participants at meeting shall be familiar with Project and authorized to conclude matters relating to alteration work.
 - Agenda: Review and correct or approve minutes of previous coordination meeting. Review other items of significance that could affect progress of alteration work. Include topics for discussion as appropriate to status of Project.
 - a. Alteration Work Subschedule: Review progress since last coordination meeting. Determine whether each schedule item is on time, ahead of schedule, or behind schedule. Determine how construction behind schedule will be expedited with retention of quality; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities are completed within the Contract Time.
 - Schedule Updating: Revise Contractor's Alteration Work Subschedule after each coordination meeting where revisions to schedule have been made or recognized. Issue revised schedule concurrently with report of each

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meeting.

- c. Review present and future needs of each entity present, including review items listed in the "Preliminary Meeting for Alteration Work" Paragraph in this article and the following:
 - 1) Interface requirements of alteration work with other Project Work.
 - 2) Status of submittals for alteration work.
 - 3) Access to alteration work locations.
 - 4) Effectiveness of fire-prevention plan.
 - 5) Quality and work standards of alteration work.
 - 6) Change Orders for alteration work.
- 3. Reporting: Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

1.6 MATERIALS OWNERSHIP

- A. Historic items, relics, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, antiques, and other items of interest or value to City that may be encountered or uncovered during the Work, regardless of whether they were previously documented, remain the City's property.
 - 1. Carefully dismantle and salvage each item or object in a manner to prevent damage and protect it from damage, then promptly deliver it to where directed[at Project site] <Insert location>.

1.7 INFORMATIONAL SUBMITTALS

- A. Alteration Work Subschedule:
 - Submit alteration work subschedule within [seven] [30] <Insert number> days of date established for[commencement of alteration work] <Insert requirement>.
- B. Preconstruction Documentation: Show preexisting conditions of adjoining construction and site improvements that are to remain, including finish surfaces, that might be misconstrued as damage caused by Contractor's alteration work operations.
- C. Alteration Work Program: Submit [30 days] <Insert time> before work begins.
- D. Fire-Prevention Plan: Submit [30 days] <Insert time> before work begins.

1.8 QUALITY ASSURANCE

A. Specialist Qualifications: An experienced firm regularly engaged in specialty work similar in nature, materials, design, and extent to alteration work as specified in each Section and that has completed a minimum of [five] <Insert number> recent projects

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with a record of successful in-service performance that demonstrates the firm's qualifications to perform this work.

- Field Supervisor Qualifications: Full-time supervisors experienced in specialty work similar in nature, material, design, and extent to that indicated for this Project. Supervisors shall be on-site when specialty work begins and during its progress. Supervisors shall not be changed during Project except for causes beyond the control of the specialist firm.
 - Construct new mockups of required work whenever a supervisor is replaced.
- B. Title X Requirement: Each firm conducting activities that disturb painted surfaces shall be a "Lead-Safe Certified Firm" according to 40 CFR 745, Subpart E, and use only workers that are trained in lead-safe work practices.
- C. Alteration Work Program: Prepare a written plan for alteration work for whole Project, including each phase or process and protection of surrounding materials during operations. Show compliance with indicated methods and procedures specified in this and other Sections. Coordinate this whole-Project alteration work program with specific requirements of programs required in other alteration work Sections.
 - 1. Dust and Noise Control: Include locations of proposed temporary dust- and noise-control partitions and means of egress from occupied areas coordinated with continuing on-site operations and other known work in progress.
 - 2. Debris Hauling: Include plans clearly marked to show debris hauling routes, turning radii, and locations and details of temporary protective barriers.
- D. Fire-Prevention Plan: Prepare a written plan for preventing fires during the Work, including placement of fire extinguishers, fire blankets, rag buckets, and other fire-control devices during each phase or process. Coordinate plan with City's fire-protection equipment and requirements. Include fire-watch personnel's training, duties, and authority to enforce fire safety.
- E. Safety and Health Standard: Comply with the current version of the ANSI/ASSE Safety and Health Program Requirements for Demolition Operations

1.9 STORAGE AND HANDLING OF SALVAGED MATERIALS

- A. Salvaged Materials:
 - 1. Clean loose dirt and debris from salvaged items unless more extensive cleaning is indicated.
 - 2. Pack or crate items after cleaning; cushion against damage during handling. Label contents of containers.
 - 3. Store items in a secure area until delivery to specified location.
 - 4. Transport items to the designated storage area [on-site] [off-site] [indicated on Drawings].
 - 5. Protect items from damage during transport and storage.

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- B. Salvaged Materials for Reinstallation:
 - 1. Repair and clean items for reuse as indicated.
 - 2. Pack or crate items after cleaning and repairing; cushion against damage during handling. Label contents of containers.
 - 3. Protect items from damage during transport and storage.
 - 4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment unless otherwise indicated. Provide connections, supports, and miscellaneous materials to make items functional for use indicated.
- C. Existing Materials to Remain: Protect construction indicated to remain against damage and soiling from construction work. Where permitted by DOR, items may be dismantled and taken to an approved, suitable, protected storage location during construction work and reinstalled in their original locations after alteration and other construction work in the vicinity is complete.
- D. Storage: Catalog and store items within a weathertight enclosure where they are protected from moisture, weather, condensation, and freezing temperatures.
 - 1. Identify each item for reinstallation with a nonpermanent mark to document its original location. Indicate original locations on plans, elevations, sections, or photographs by annotating the identifying marks.
 - 2. Secure stored materials to protect from theft.
 - 3. Control humidity so that it does not exceed 85 percent. Maintain temperatures 5°F or more above the dew point.

E. Storage Space:

- DEN Project Manager will arrange for limited on-site locations for free storage of salvaged material. This storage space [includes] [does not include] security[and climate control] for stored material.
- 2. Arrange for off-site locations for storage and protection of salvaged material that cannot be stored and protected on-site.

1.10 FIELD CONDITIONS

- A. Survey of Existing Conditions: Record existing conditions that affect the Work by use of [measured drawings] [preconstruction photographs] [and] [preconstruction videotapes] <Insert requirement>.
 - 1. Comply with requirements specified in Section 013233 "Photographic Documentation."
- B. Discrepancies: Notify DEN Project Manager of discrepancies between existing conditions and Drawings before proceeding with removal and dismantling work.
- C. DEN's Removals: Before beginning alteration work, verify in correspondence with DEN Project Manager that the following items have been removed:
 - Insert items to be removed by DEN>.

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D. Size Limitations in Existing Spaces: Materials, products, and equipment used for performing the Work and for transporting debris, materials, and products shall be of sizes that clear surfaces within existing spaces, areas, rooms, and openings, including temporary protection, by [12 inches] <Insert dimension> or more.

PART 2 - PRODUCTS - (Not Used)

PART 3 - EXECUTION

3.1 PROTECTION

- A. Protect persons, motor vehicles, surrounding surfaces of building, building site, plants, and surrounding buildings from harm resulting from alteration work.
 - 1. Use only proven protection methods, appropriate to each area and surface being protected.
 - 2. Provide temporary barricades, barriers, and directional signage to exclude the public from areas where alteration work is being performed.
 - 3. Erect temporary barriers to form and maintain fire-egress routes.
 - 4. Erect temporary protective covers over walkways and at points of pedestrian and vehicular entrance and exit that must remain in service during alteration work.
 - 5. Contain dust and debris generated by alteration work, and prevent it from reaching the public or adjacent surfaces.
 - 6. Provide shoring, bracing, and supports as necessary. Do not overload structural elements.
 - 7. Protect floors and other surfaces along hauling routes from damage, wear, and staining.
 - 8. Provide supplemental sound-control treatment to isolate demolition work from other areas of the building.
- B. Temporary Protection of Materials to Remain:
 - 1. Protect existing materials with temporary protections and construction. Do not remove existing materials unless otherwise indicated.
 - 2. Do not attach temporary protection to existing surfaces except as indicated as part of the alteration work program.
- C. Comply with each product manufacturer's written instructions for protections and precautions. Protect against adverse effects of products and procedures on people and adjacent materials, components, and vegetation.
- D. Utility and Communications Services:
 - 1. Notify DEN Project Manager, authorities having jurisdiction, and entities owning or controlling wires, conduits, pipes, and other services affected by alteration work before commencing operations.
 - 2. Disconnect and cap pipes and services as required by authorities having jurisdiction, as required for alteration work.

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- 3. Maintain existing services unless otherwise indicated; keep in service, and protect against damage during operations. Provide temporary services during interruptions to existing utilities.
- E. Existing Drains: Prior to the start of work in an area, test drainage system to ensure that it is functioning properly. Notify DEN Project Manager immediately of inadequate drainage or blockage. Do not begin work in an area until the drainage system is functioning properly.
 - 1. Prevent solids such as adhesive or mortar residue or other debris from entering the drainage system. Clean out drains and drain lines that become sluggish or blocked by sand or other materials resulting from alteration work.
 - 2. Protect drains from pollutants. Block drains or filter out sediments, allowing only clean water to pass.
- F. Existing Roofing: Prior to the start of work in an area, install roofing protection[**as indicated on Drawings**].

3.2 PROTECTION FROM FIRE

- A. General: Follow fire-prevention plan and the following:
 - 1. Comply with NFPA 241, Standard for Safeguarding Construction, Alteration, and Demolition Operations requirements unless otherwise indicated.[Perform duties titled "City's Responsibility for Fire Protection."]
 - 2. Remove and keep area free of combustibles, including rubbish, paper, waste, and chemicals, unless necessary for the immediate work.
 - a. If combustible material cannot be removed, provide fire blankets to cover such materials.
- B. Heat-Generating Equipment and Combustible Materials: Comply with the following procedures while performing work with heat-generating equipment or combustible materials, including welding, torch-cutting, soldering, brazing, removing paint with heat, or other operations where open flames or implements using high heat or combustible solvents and chemicals are anticipated:
 - Obtain City's approval for operations involving use of [open-flame or] welding or other high-heat equipment. [Use of open-flame equipment is not permitted.] Notify DEN Project Manager [at least 72 hours] <Insert requirement> before each occurrence, indicating location of such work.
 - 2. As far as practicable, restrict heat-generating equipment to shop areas or outside the building.
 - 3. Do not perform work with heat-generating equipment in or near rooms or in areas where flammable liquids or explosive vapors are present or thought to be present. Use a combustible gas indicator test to ensure that the area is safe.
 - 4. Use fireproof baffles to prevent flames, sparks, hot gases, or other high-temperature material from reaching surrounding combustible material.
 - 5. Prevent the spread of sparks and particles of hot metal through open windows,

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- doors, holes, and cracks in floors, walls, ceilings, roofs, and other openings.
- 6. Fire Watch: Before working with heat-generating equipment or combustible materials, station personnel to serve as a fire watch at each location where such work is performed. Fire-watch personnel shall have the authority to enforce fire safety. Station fire watch according to NFPA 51B, NFPA 241, and as follows:
 - a. Train each fire watch in the proper operation of fire-control equipment and alarms.
 - b. Prohibit fire-watch personnel from other work that would be a distraction from fire-watch duties.
 - c. Cease work with heat-generating equipment whenever fire-watch personnel are not present.
 - d. Have fire-watch personnel perform final fire-safety inspection each day beginning no sooner than [30 minutes] <Insert time> after conclusion of work[in each area] to detect hidden or smoldering fires and to ensure that proper fire prevention is maintained.
 - e. Maintain fire-watch personnel at [each area of] Project site until [60 minutes] [two hours] <Insert time> after conclusion of daily work.
- C. Fire-Control Devices: Provide and maintain fire extinguishers, fire blankets, and rag buckets for disposal of rags with combustible liquids. Maintain each as suitable for the type of fire risk in each work area. Ensure that nearby personnel and the fire-watch personnel are trained in fire extinguisher and blanket use.
- D. Sprinklers: Where sprinkler protection exists and is functional, maintain it without interruption while operations are being performed. If operations are performed close to sprinklers, shield them temporarily with guards.
 - 1. Remove temporary guards at the end of work shifts, whenever operations are paused, and when nearby work is complete.

3.3 PROTECTION DURING APPLICATION OF CHEMICALS

- A. Protect motor vehicles, surrounding surfaces of building, building site, plants, and surrounding buildings from harm or spillage resulting from applications of chemicals and adhesives.
- B. Cover adjacent surfaces with protective materials that are proven to resist chemicals selected for Project unless chemicals being used will not damage adjacent surfaces as indicated in alteration work program. Use covering materials and masking agents that are waterproof and UV resistant and that will not stain or leave residue on surfaces to which they are applied. Apply protective materials according to manufacturer's written instructions. Do not apply liquid masking agents or adhesives to painted or porous surfaces. When no longer needed, promptly remove protective materials.
- C. Do not apply chemicals during winds of sufficient force to spread them to unprotected surfaces.
- D. Neutralize alkaline and acid wastes and legally dispose of off City's property.

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E. Collect and dispose of runoff from chemical operations by legal means and in a manner that prevents soil contamination, soil erosion, undermining of paving and foundations, damage to landscaping, or water penetration into building interior.

3.4 GENERAL ALTERATION WORK

- A. Have specialty work performed only by qualified specialists.
- B. Ensure that supervisory personnel are present when work begins and during its progress.
- C. Record existing work before each procedure (preconstruction), and record progress during the work. Use digital preconstruction documentation [photographs] [or] [video recordings]. Comply with requirements in Section 013233 "Photographic Documentation."
- Perform surveys of Project site as the Work progresses to detect hazards resulting from alterations.
- E. Notify DEN Project Manager of visible changes in the integrity of material or components whether from environmental causes including biological attack, UV degradation, freezing, or thawing or from structural defects including cracks, movement, or distortion.
 - 1. Do not proceed with the work in question until directed by DEN Project Manager.

END OF SECTION 013516

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SECTION 013520 - CONSTRUCTION SAFETY - AIRSIDE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Work specified in this Section includes construction safety precautions and programs by the Contractor for airside, and the basis for reviews by the DEN Project Manager.
- B. Related Specification Sections:
 - 1. Section 011420 "Security Requirements and Sensitive Security Information".
 - 2. Section 011430 "Vehicle and Equipment Permitting".
 - 3. Section 011810 "Utilities Interface".
 - 4. Section 013510 "Construction Safety".
- C. For projects enrolled under DEN Rolling Owner Controlled Insurance Program (ROCIP) reference the Contract Special Conditions for all safety requirements.
- D. For projects enrolled under DEN Owner Controlled Insurance Program (OCIP) reference the Contract Special Conditions for all safety requirements.

1.3 RESPONSIBILITY

- A. The Contractor is responsible for the health and safety of the Contractor's personnel, agents, subcontractors and their personnel, and other persons on the worksite, for the protection and preservation of the Work and all materials and equipment to be incorporated therein, and for the worksite and the area surrounding the worksite. The Contractor shall take all necessary and reasonable precautions and actions to protect all such persons and property.
- B. This Section shall be interpreted in its broadest sense for the protection of persons and property by the Contractor and no action or omission by the DEN Project Manager or the DEN Project Manager's authorized representatives shall relieve the Contractor of any of its obligations and duties hereunder.

1.4 SUBMITTALS

A. Refer to Section 013300 "Submittal Procedures" and Section 013325 "Shop and Working Drawings, Product Data and Samples" for the submittal process. The

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Contractor's Operational Safety Plan shall be submitted and approved under the general Contract prior to commencing any Work. If a Task Order or Change Order is issued where the Work is not covered by the approved Contractor's Operational Safety Plan, then a revision to the Safety Plan specific for the Work in the Task Order shall be resubmitted for approval.

- 1. No progress payment shall be approved until the Contractor's Operational Safety Plan has been accepted by the DEN Project Manager.
- B. Scope: The Contractor's Operational Safety Plan shall be developed and submitted by the contractor for the DEN Project Manager's review and approval. The Operational Safety Plan shall be developed according to the guidelines and requirements provided in FAA AC No. 150/5370-2F "Operational Safety on Airports During Construction" and will describe how the Contractor will comply with the requirements of the Construction Safety and Phasing Plan (CSPP). The Operational Safety Plan shall cover the actions of not only the construction personnel and equipment, but the actions of inspection personnel and airport staff for the duration of construction activities.

C. Definitions:

- 1. Approach Surface: A surface longitudinally centered on the extended runway centerline and extending outward and upward from either a runway threshold or 200 feet behind a threshold. This surface is needed to define where unobstructed airspace above the runway begins.
- Notice To Airmen (NOTAM): A notice to the flying public (airmen) through FAA's NOTAM system. Normally initiated by message to the nearest FAA Flight Service Station. Issuance of the NOTAM will be coordinated through the DEN Project Manager and DEN Operations.
- 3. Object Free Area: A two-dimensional ground area surrounding runways, taxiways, and taxi lanes that is clear of objects, except for objects whose location is fixed by function.
- 4. Safety Area (see AC 150/5300-13A): A defined surface adjacent to runways, taxiways and taxi lanes prepared or suitable for reducing the risk of damage to aircraft in the event of an undershoot, overshoot or excursion from the paved surface. Each safety area must be cleared and graded and have no potentially hazardous ruts, humps, depressions or other surface variations. Each safety area must be drained by grading or storm sewers to prevent water accumulation. East safety area must be capable under dry conditions of supporting snow removal and aircraft rescue and firefighting equipment and or supporting the occasional passage of aircraft without causing any damage to the aircraft. No objects may be located in any safety area, except for objects that need to be located in a safety area because of their function. These objects must be constructed, to the extent practical, on frangibly mounted structures of the lowest practical height, with the frangible point no higher than three (3) inches above grade.
- D. Policy: Aviation safety is a primary consideration during airport construction. These activities shall be planned and scheduled to minimize disruption of normal aircraft activities. If the clearances and restrictions described in this plan cannot be maintained while construction is underway, action will be taken by the Contractor to perform Work

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at night or during periods of minimal aircraft activity.

- E. Safety Impacts: The Contractor shall take all necessary steps and precautions to mitigate the impact of hazardous conditions as they may relate to the Work. Potentially hazardous conditions which may occur during airport construction include, but are not limited to, the following:
 - 1. Trenches, holes, or excavations on or adjacent to any active runway, taxiway, taxi lane, apron, or related safety areas.
 - 2. Unmarked/unlighted holes or excavations on or adjacent to any active runway, taxiway, taxi lane, apron, or related safety areas.
 - 3. Mounds or piles of earth, construction material, temporary structures, or other objects on or in the vicinity of any active runway, taxiway, taxi lane, apron or related safety, approach, or departure areas.
 - 4. Pavement drop-offs that would cause, if crossed at normal operating speeds, damage to aircraft that normally use the airport. The maximum drop-off is 3 inches per FAA AC 150/5300-13A.
 - 5. Vehicles or equipment (whether operating or idle) on any active runway, taxiway, taxi lane, apron or related safety, approach, or departure areas.
 - 6. Vehicles, equipment, excavations, stockpiles, or other materials that could impinge upon NAVAID-critical areas and degrade or otherwise interfere with electronic NAVAIDS or interfere with visual NAVAIDS facilities.
 - 7. Unmarked utility, NAVAIDS, weather service, runway lighting, underground power, or signal cables that could be damaged during construction.
 - 8. Objects or activities anywhere on or in the vicinity of an airport which would be distracting, confusing, or alarming to pilots during aircraft operations.
 - 9. Unflagged/unlighted low visibility items such as tall cranes, backhoes, scrapers, dump trucks, rollers, compactors, dozers and the ilk, in the vicinity of an active runway, taxiway, taxi lane, apron or related safety, approach, or departure areas.
 - Dirt, debris, or other transient accumulations that temporarily obscure pavement markings or pavement edges, or derogate the visibility of runway or taxiway markings or lighting or of construction and maintenance areas.
 - 11. Trash or other materials with foreign object damage (FOD) potential, whether on runways, taxiways, taxi lanes, aprons or in related safety areas.
 - 12. Failure to control vehicle, human and large animal access to, and nonessential nonaeronautical activities on, open aircraft movement areas.
 - 13. Failure to maintain radio communication between construction vehicles and air traffic control or other on-field communications facilities.
 - 14. Construction activities or material which could hamper Aircraft Rescue and Fire Fighting (ARFF) vehicle access from ARFF stations to all parts of the runway/taxiway system, runway approach and departure areas, or aircraft parking locations.
 - 15. Inadequate fencing or other marking to separate construction areas from open aircraft operating areas.
 - 16. Bird attractions such as edibles (food scraps, etc.), trees, brush, other trash, grass/crop seeding, or ponded water on or near the airport.
- F. Safety Requirements:
 - 1. General:

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- a. During performance of this Contract, the airport runways, taxiways, taxi lanes, and aircraft parking aprons shall remain in use by aircraft to the maximum extent possible, consistent with continual safety. Aircraft use of areas near the Contractor's Work will be controlled to minimize disturbance to the Contractor's operation. However, AIRCRAFT HAVE THE RIGHT OF WAY AT ALL TIMES. The Contractor shall not allow employees, subcontractors, suppliers, or any unauthorized persons to enter or remain in any airport area that would be hazardous to persons or to aircraft operations.
- b. Contractor personnel, airport staff and field inspectors directly involved in on-airport construction shall:
 - Be aware of the types of conditions, safety problems, and/or hazards identified each day at the airport. To insure that all personnel are aware, daily meetings between management and supervisory personnel and their employees shall be scheduled prior to any work commencing on the shift.
 - 2) Inspect daily all work and/or storage areas for which the Contractor is responsible to be aware of current conditions.
 - 3) Promptly take all steps needed to remedy any unsafe or potentially unsafe condition. Coordinate with the DEN Project Manager to insure immediate corrective action is undertaken
- c. Before commencement of construction activity the Contractor, through coordination with the DEN Project Manager and DEN Operations, shall give notice using the NOTAM system of construction on the airfield. In addition, a NOTAM shall be issued for the completion of construction on the airfield.
- 2. Construction Area Marking: Temporary lighting, barricades, flagging, and flashers are required as shown on the plans and per FAA AC 150/5370-2F Chapter 2 Section 220.b.(1)(2) Flag lines, traffic cones, flashers, edge lights, and/or signs shall be used as necessary:
 - a. To clearly separate all construction from other parts of an air operations area
 - b. To identify isolated hazards, such as open manholes, excavations, areas under repair, stockpiled material, waste areas, etc.
 - c. Vehicle and pedestrian access routes used for airport construction shall be controlled to prevent any unauthorized entry of persons, vehicles, or animals.
 - d. Vehicle parking areas for Contractor employees shall be designated in advance to minimize traffic in open/active aircraft movement areas.

3. Cables and Utilities:

- a. Special attention shall be given to preventing unscheduled interruption of utility services and facilities. The location of all cables and utilities shall be identified prior to construction activities.
- b. There shall be coordination among the Contractor, the DEN Project Manager, DEN Operations, the FAA, the National Weather Service, utility

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- companies, and any other appropriate entity or organization. NAVAIDS, weather service facilities, electric cables, and other utilities must be fully protected during the entire construction time.
- c. Power, communication, and control cables leading to and from any FAA NAVAIDS, weather service, and other facilities will be marked in the field by the appropriate individuals as identified in Section 011810 "Utilities Interface" for the information of the Contractor before any work in their general vicinity is started. Thereafter, through the entire duration of construction, utilities shall be protected from any possible damage.
- d. At the intersection of expansion joints and centerline lighting circuits on taxiways and runways, the electrical conduit may be within the 21" portion of the Portland cement concrete pavement. Coordination with the DEN Project Manager's representative and the DEN Electrical Department is of utmost importance for both the scheduling of an outage and the removal of conductors while cutting the joint.

4. Vehicle and Employee Identification:

- a. Contractor vehicles and equipment shall be flagged for high daytime visibility and if appropriate, lighted for nighttime operations. Vehicles that are not marked and lighted shall be escorted by a vehicle that is equipped with appropriate marking and lighting devices. Marking and lighting shall be in conformance with FAA AC 150/5210-5D, current edition, or as outlined in Section 011430 "Vehicle and Equipment Permitting" of the Contract Documents.
- b. The Contractor will be required to conform to the specific requirements as outlined in Section 011420 "Security Requirements and Sensitive Security Information (SSI)" of the Contract documents.

5. Radio Communications:

a. The Contractor's construction superintendent and flag personnel shall be required to coordinate directly with the DEN Project Manager or designated Representative. Only the DEN Project Manager or designated Representative shall monitor transceiver radios tuned to the frequency for communications with DEN Operations and B Tower Control. Radios shall be used to obtain the proper clearance concerning the movement of equipment, trucks, etc., on the airfield. Further, any unusual occurrences in the flight pattern of approaching or departing aircraft shall be acknowledged by all concerned so that operation of the airport and the construction work can be safely carried on at all times.

6. Haul Routes Crossing Active Aircraft Operation Areas:

a. The Contractor shall provide a minimum of one (1) broom truck to continuously clean the surface of the active taxiway, taxi lane or apron of any foreign object damage (FOD) or other objectionable debris that may result from hauling activities. Additional broom trucks may be required to expedite the cleanup process. Opening the taxiway, taxi lane, or apron to aircraft operations shall only be approved after a visual inspection of the

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pavement surface by the DEN Airfield Operations Manager.

- b. The Contractor shall not work within the minimum of the following: 160 ft. of the centerline of an active taxiway, 310 ft. of the centerline of an active runway, or the minimum requirements of the FOD or Safety Zone unless otherwise noted in the Contract Documents and as approved in writing by the DEN Project Manager.
- c. All construction equipment and vehicles shall be flagged for high daytime visibility and if appropriate, lighted for nighttime operations. Vehicles that are not marked and lighted shall be escorted by a vehicle that is equipped with appropriate marking and lighting devices. Marking and lighting shall be in conformance with FAA AC 150/5210-5D, current edition.
- d. All Contractor and Subcontractor employees must be aware of the types of safety problems and hazards associated with aircraft operations and construction activities.

PART 2 - PRODUCTS

2.1 Contractor's Operational Safety Plan

- A. The Contractor shall provide six (6) copies of the Contractor's Operational Safety Plan to the DEN Project Manager for review at least ten (10) calendar days before on-site construction begins. The Contractor's program must meet, as a minimum, all applicable federal, state and local government requirements, and the following:
 - The Contractor shall provide the following information for acceptance by the DEN Project Manager prior to the commencement of construction activities. The Operational Safety Plan must address all aspects listed below. If an item is not applicable, then this must be noted in the plan.
 - a. Name of the Contractor's safety representative.
 - b. If the Contractor is running multiple shifts or working more than (40) hours per week, the name of an assistant safety representative who can act in the absence of the site safety representative.
 - c. Twenty-four (24) hours per day emergency phone numbers of Contractor site management to be used in case of injury or accident. Provide at least four contacts.
 - d. Means of protecting employees working in trenches and excavations, including sloping and shielding.
 - Soil classification will be considered as Type C when designing protective systems, unless the Contractor can prove to the satisfaction of DEN that the soil classification is otherwise. Soil classification change request shall be provided to the DEN Project Manager in writing. The decision of the DEN Project Manager will be provided to the Contractor in writing.
 - e. The Contractor shall show how material shall be stored beside the excavation. Stored material shall include the excavated and backfilled

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material

- f. Injury and accident handling, including samples of the reporting form.
- g. How personnel will be handled who are unable to safely perform their duties, including how the Contractor will determine whether personnel are unable to safely perform duties. This may include the Contractor's disciplinary process and employee's physical capabilities to perform the work safely.
- h. How and when equipment will be checked to see that it is safe, that all safety guards are in place, and that the equipment is being used for its designed purpose and within its rated capacity.
- i. How and when all electric devices will be checked for proper grounding and insulation. Describe the methods that will be used to lock out electric systems that should not be energized.
- j. How trash and human organic waste will be disposed of.
- k. How snow and ice will be removed by the Contractor in the project area.
- I. How concrete forms will be anchored to ensure their stability, including calculations showing that the forms will safely hold the maximum construction loads.
- m. How flammable materials will be stored and handled, and how any spills will be cleaned up and removed for disposal.
- n. What system will be used to prevent fires and, if fires do occur, who will be trained to fight them. In addition, what firefighting equipment will the Contractor have available and how will this equipment's condition be monitored.
- o. How materials will be received, unloaded, stored, moved, and disposed of.
- p. How personnel working above ground level will be protected from falling.
- q. How people working beneath the construction work will be protected.
- r. What will be done to protect personnel in case of severe weather.
- s. How adequate lighting will be provided and monitored.
- t. How air quality will be monitored to ensure that chemical exposures are below current, established OSHA Permissible Exposure Limits. How personnel will be protected if these limits are exceeded.
- u. How the safety of work platforms, man lifts, material lifts, ladders, shoring, scaffolding, etc., will be ensured relating to load capacity and the protection of personnel using or working around them.
- v. The type of personal protective equipment that will be used to protect personnel from hazards.
- w. The type of safety training that will be provided to personnel to inform them of safe work procedures.
- x. How daily audits and inspections will be performed to ensure compliance with the Contractor's Operational Safety Plan and current, applicable OSHA regulations.
- y. Procedures to ensure that welding and other hot work is performed safely.
 - A hot work permit from the Denver Fire Department (DFD) will be required for all welding, soldering, cutting, and brazing and or other processes required by DFD on the project. Contractor will comply with all of the provisions in the permit.
- z. How compressed gases will be safely stored, handled, and used.

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- aa. Methods to ensure that personnel safely enter, work in, and exit confined spaces.
 - All confined spaces on DEN property are considered permit required.
 A permit must be obtained from the DFD before Contractor personnel may enter a confined space. Contractors will comply with all provisions and requirements of this permit.
- bb. How the hazards of chemicals will be communicated to personnel, including the use of material safety data sheets and chemical labels.
- cc. Methods to ensure that forklifts and other powered industrial trucks are operated in a safe manner.
- dd. How an effective hearing conservation program will be used to protect personnel from high noise levels and prevent hearing loss.
- ee. How personnel will be protected from the effects of jet blast.
- ff. How hazards will be identified and corrected when reported.

2.2 DEN PROJECT MANAGER'S REVIEW

A. Prior to the start of any work by contractor or subcontractor personnel, the Contractor shall provide the DEN Project Manager with a list of its personnel, subcontractor's personnel and other personnel the Contractor has requested to work at Denver International Airport, who have signified in writing that they have been briefed on, or have read and understand, the Contractor's Operational Safety Plan.

PART 3 - EXECUTION

3.1 IMPLEMENT CONTRACTOR'S OPERATIONAL SAFETY PLAN

- A. Implement the approved Contractor's Operational Safety Plan as described in Part 1 and Part 2 of this Section and in Section 011100 "Summary of Work."
- B. If the Contractor experiences lost time or an injury rate greater than 75 percent of the national average for all construction, the Contractor shall notify the DEN Project Manager, audit its safety procedures, and submit a plan to reduce its rates.
- C. If at any time the lost time or injury rates experienced by the Contractor are 150 percent or more of the national average for construction, the Contractor shall notify the DEN Project Manager and immediately hire an independent safety professional who shall audit the Contractor's procedures and operations and make a report of changes that the Contractor should implement to reduce the rate including changing personnel.
 - 1. The report shall be submitted to the DEN Project Manager.
 - 2. The Contractor shall immediately begin implementing the recommendations of the independent safety professional.
 - 3. A weekly report shall be submitted by the Contractor to the DEN Project Manager on the status of the implementation of the recommendations.
 - 4. Failure to comply with these requirements is a basis to withhold a portion of

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progress payments.

- 3.2 ROLLING OWNER CONTROLLED INSURANCE PROGRAM (ROCIP)
 - A. Implement Rolling Owner Controlled Insurance Program (ROCIP) as provided in the Project Manual issued for bid or proposal
- 3.3 OWNER CONTROLLED INSURANCE PROGRAM (OCIP)
 - A. Implement Owner Controlled Insurance Program (OCIP) as provided in the Project Manual issued for bid or proposal

PART 4 - MEASUREMENT

- 4.1 METHOD OF MEASUREMENT
 - A. No separate measurement shall be made for work under this Section.

PART 5 - PAYMENT

- 5.1 METHOD OF PAYMENT
 - A. No separate payment will be made for work under this Section.

END OF SECTION 013520

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SECTION 014100 - REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section identifies primary compliance with the State, City and County of Denver's regulatory requirements including:
 - 1. City and County of Denver / Department of Aviation.
 - 2. Colorado Department of Public Health and Environment.
 - 3. City and County of Denver Development Services, including the Department of Public Works and Division of Wastewater Management.
 - 4. The standards that govern design and construction projects at Denver International Airport.
- B. Construction shall be based on the latest edition of the referenced codes including additions and revisions thereto that are in effect at the time of Project bidding or Task Order pricing or GMP established whichever is latest, and as specifically related.

1.3 RELATED SECTIONS

A. Section 015719 "Temporary Environmental Controls" for environmental and related permitting requirements.

1.4 BUILDING CODE

- A. All design and construction work shall be governed by the Building Code for the City and County of Denver, latest edition. This is based upon the International Building Code of the International Code Council with Denver Amendments to this code. Appendix N of the Denver Amendments addresses Construction of Airport Buildings and Structures.
 - 1. This Contract shall be based on the most current published version of the ICC series as Amended by The City and County of Denver.

1.5 DENVER BUILDING DEPARTMENT

A. For review and approval of all construction documents for compliance to the Denver

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building code:

1.6 DENVER FIRE DEPARTMENT

A. For review and approval of plans for compliance with the Denver Fire Department's requirements as they apply to the Denver International Airport:

Denver Fire Department 745 West Colfax Avenue Denver, Colorado 80204 Telephone 720-913-3474

- B. The Contractor is advised that the Denver Fire Department Fire Prevention Bureau requires permitting for the following activities as they apply to the scope of work. The Contractor is responsible for obtaining the appropriate permits necessary to complete the work. All costs associated with this permitting and policy compliance shall be the responsibility of the Contractor. The policies all reference the International Fire Code (IFC).
 - 1. "?Hot work", which is defined as the operation of any equipment or tool that creates sparks, hot slag, or radiant or convective heat as a result of the work. This includes, but is not limited to, welding, cutting, brazing, or soldering.
 - 2. Use and storage of compressed gas for both temporary storage and permanent facility installation. This includes, but is not limited to, flammable gas (excluding propane-LPG), oxidizer (including oxygen), and inert and/or simple asphyxiates.
 - 3. Tank installation, which includes aboveground storage tanks (AST) and underground storage tanks (UST) for both temporary tanks and permanent facility installations.
- C. In addition to the above permits, the Denver Fire Department may require other permits that are associated with the specific work in the Contract Documents. Policies provided by the Denver Fire Department are meant to provide basic information for the most common conditions and situations. In any given occupancy, many other Uniform Fire Code requirements may be enforced. These should be addressed with the Denver Fire Department before construction begins and during construction with premise inspection(s).
 - 1. The Fire Prevention Bureau web site is denfpb@denvergov.org

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PERMITS AND CERTIFICATIONS

A. The Contractor shall maintain records on site of all permits acquired by federal, state, and local agencies. Posting of permits shall conform to requirements of the respective agencies.

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- B. At the completion of any inspection by other agencies, the Contractor shall forward copies of the status of the inspection and copies of any approved or "signed-off" inspections by the respective agencies to the DEN Project Manager.
- C. At the time of request for Substantial Completion, the Contractor shall forward to the DEN Project Manager all permits approved by the respective agencies.

PART 4 - MEASUREMENT

- 4.1 METHOD OF MEASUREMENT
 - A. No separate measurement shall be made for work under this Section.

PART 5 - PAYMENT

- 5.1 METHOD OF PAYMENT
 - A. No separate payment will be made for work under this Section.

END OF SECTION 014100

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SECTION 014210 - REFERENCED MATERIAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 REFERENCED MATERIAL

- A. City and County of Denver, Department of Aviation, Standard Specification for Construction, General Contract Conditions
- B. The following documents may be available for examination at the Owner's offices unless otherwise noted. The referenced material and documents are not part of the Contract Documents unless otherwise specified.
 - 1. Environmental Impact Statement (EIS).
 - 2. Geotechnical Reports:
 - a. Borings, other field and laboratory explorations, and investigations have been made to indicate subsurface materials at particular locations.
 Explorations and investigations conducted by designers and their subconsultants are solely for the purpose of study and design.
 - b. The subsurface exploration and investigation information is presented or made available to indicate some of the conditions that may be encountered during construction and is offered as supplementary information only. Geotechnical information presented in the referenced material represents the opinion of soils consultants as to the character of the materials encountered. Subsurface information was directly obtained only at the specified location and necessarily indicates subsurface conditions only at the respective plan location, depths penetrated and only at the time of the exploration.
 - c. Neither the City nor the Designers assume any responsibility whatever in respect to the sufficiency or accuracy of borings made, or of the logs of test borings, or of other investigations, or of the interpretations made thereof, and there is no warranty or guarantee, either expressed or implied, that the conditions indicated by such investigations are representative of those existing throughout such area, or any part thereof, or that unforeseen developments may not occur. It is expressly understood that the making of deductions, interpretations, and conclusions from all of the accessible factual information, including the nature of the materials to be excavated, the difficulties of doing other work affected by the geology, groundwater elevations and other subsurface conditions at the site of the Work are the Contractor's sole responsibility.

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- d. Information derived from inspection of logs of borings, topographic maps, technical memorandum, reports, or plans showing information of the subsurface of site conditions will not relieve the Contractor from any risk or from properly examining the site and making such additional investigations as the Contractor may elect or from properly fulfilling all the terms of the Contract Documents.
- 3. Available Conceptual Utility and Drainage Reports.
- 4. DEN Building Information Modeling (BIM) Design Standards Manual (DSM)
- 5. Woolpert, Inc. Report "A Low Distortion Projection for Denver International Airport (DEN)", dated 12/10/2010.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

PART 4 - MEASUREMENT

- 4.1 METHOD OF MEASUREMENT
 - A. No separate measurement shall be made for work under this Section.

PART 5 - PAYMENT

- 5.1 METHOD OF PAYMENT
 - A. No separate payment will be made for work under this Section.

END OF SECTION 014210

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SECTION 014220 - ABBREVIATIONS AND SYMBOLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 REFERENCE LIST

- A. Documents published by the following agencies may be referenced within these Contract Documents to define the quality of materials, equipment, workmanship, and other features of Work. Unless otherwise stated, the reference documents shall be of the latest edition as of the date of the Advertisement for Bids.
- B. Wherever used in the Contract Documents, the following abbreviations will have the meanings listed:

Abbreviation	Definition
AALA	American Association of Laboratory Accreditation
AAN	American Association of Nurserymen
AAO	Affirmative Action Officer
AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
ADA	Americans with Disabilities Act
AFI	Air-Filter Institute
AGTS	Automated Ground Transportation System
AIA	American Institute of Architects
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
AMCA	Air Moving and Conditioning Association
ANSI	American National Standards Institute, Inc.
APA	American Plywood Association
APEN	Air Pollution Emission Notes
APWA	American Public Works Association
ARI	Air Conditioning and Refrigeration Institute
ASCE	American Society of Civil Engineers

Abbreviation	Definition
ASHRAE	American Society of Heating, Refrigeration, and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASNT	American Society for Non-Destructive Testing
ASPE	American Society of Plumbing Engineers
ASSE	American Society of Sanitary Engineering
ASTM	American Society for Testing and Materials
AWPA	American Wood Preserver's Association
AWS	American Welding Society
AWWA	American Water Works Association
BID	Building Inspection Division, Department of Public Works
BIM	Building Information Modeling
CAR	Corrective Action Report
CCD	City and County of Denver
CCR	Contractor Change Request
CCRL	Cement Concrete Reference Laboratory
CD	Change Directive
CDOH	Colorado Department of Highways or Colorado Department of Health
CDOT	Colorado Department of Transportation
CMEC	Concrete Materials Engineering Council
CN	Change Notice
СО	Change Order
COE	Corps of Engineers
СРМ	Critical Path Method
CR	Change Request
CRSI	Concrete Reinforcing Steel Institute
CSI	Construction Specifications Institute
DEN	Denver International Airport
DFD	Denver Fire Department
DOT	United States Department of Transportation
DOR	Designer of Record
DWB	Denver Water Board
EEO	Equal Employment Officer or Equal Employment Opportunity
EIA	Electronics Industry Association
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration

Abbreviation	Definition
FCC	Federal Communications Commission
FHWA	Federal Highway Administration
FM	Factory Mutual Association
FS	Federal Specifications (U.S. General Services Administration)
GCC	General Contract Conditions
GIS	Geographic Information Systems
GMP -	Guaranteed Maximum Price
IAPMO	International Association of Plumbing and Mechanical Officials
IBC	International Building Code (published by ICC)
IBR	Institute of Boiler and Radiator Manufacturer's
ICBO	International Conference of Building Officials
ICC	International Code Council
ICEA	Insulated Cable Engineers Association
IEEE	Institute of Electrical and Electronic Engineers
IES	Illuminating Engineering Society
IMC	International Mechanical Code (published by ICBO)
IPC	International Plumbing Code (published by ICBO)
ISA	Instrument Society of America
ITA	Independent Testing Agency
MIL	Military Specifications (Naval Publications and Forms Center)
MSS	Manufacturers Standardization Society of the Valve and Fittings Industry
MUTCD	Manual of Uniform Traffic Control Devices
NAAB	National Association of Air Balance
NACE	National Association of Corrosion Engineers
NBS	National Bureau of Standards (now called National Institute of Standards and Technology)
NEC	National Electric Code (NFPA 70)
NECA	National Electric Contractors Association
NEMA	National Electrical Manufacturer's Association
NESC	National Electrical Safety Code
NFC	National Fire Code (as published by NFPA)
NFPA	National Fire Protection Association
NICET	National Institute for the Certification of Engineering Technologies
NIST	National Institute of Standards and Technology
NGS	National Geological Survey
NLMA	National Lumber Manufacturers Association
NOAA	National Oceanic and Atmospheric Administration

Abbreviation	Definition
NRMCA	National Ready Mix Concrete Association
NTP	Notice to Proceed
NVLAP	National Voluntary Laboratory Accreditation Program
OSHA	Occupational Safety and Health Administration
PCA	Portland Cement Association
PCI	Prestressed Concrete Institute
PDM	Precedent Diagram Method
PS	Product Standard of NIST (U.S. Department of Commerce)
PM	Project Manager
PMT	Project Management Team
PXP	Project Execution Plan
QA	Quality Assurance
QC	Quality Control
RFI	Request for Information
RTD	Regional Transportation District
SC	Special Contract Condition
SDI	Steel Door Institute
SMACNA	Sheet Metal and Air Conditioning Contractor's National Association
SSPWC	Standard Specifications for Public Works Construction
TCP	Traffic Control Plan
TSA	Transportation Security Administration
UL	Underwriters Laboratories, Inc.
USC	United States Code
WBS	Work Breakdown Schedule

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

PART 4 - MEASUREMENT

4.1 METHOD OF MEASUREMENT

A. No separate measurement shall be made for work under this Section.

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PART 5 - PAYMENT

5.1 METHOD OF PAYMENT

A. No separate payment will be made for work under this Section.

END OF SECTION 014220

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SECTION 014225 - REFERENCE STANDARDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section contains a summary of industry-accepted and recognized standards published by trade associations, government, and institutional organizations that are referred to in the various Sections of these specifications or elsewhere in the Contract Documents.
- B. Standards listed herein are included in the Contract Documents by this reference and become a part of the Contract Documents to the same extent as though included in their entirety unless specific limitations are noted in the individual specifications Sections.
- C. Listings of reference standards include name and address of the organization publishing the standard, and the full name and designator of each of the standards referenced herein.
- D. If a publication date or edition number is listed with the reference standard, that publication date or edition number shall apply. Otherwise, the publication date or edition number in effect at the Contract date shall apply.
- E. Inclusion of reference standards herein does not make the DEN Project Manager an agent of the publishing agency, nor does it obligate the DEN Project Manager to perform inspections required by or to enforce rules or regulations contained in the reference standards.

1.3 SCHEDULE OF REFERENCE STANDARDS

- A. American Association of State Highway and Transportation Officials (AASHTO), 444 North Capitol Street, NW, Suite 249, Washington, DC 20090:
 - 1. AASHTO M 36–Corrugated Steel Pipe, Metallic-Coated for Sewers and Drains.
 - 2. AASHTO M216–Standard Specification for Lime for Soil Stabilization.
 - 3. AASHTO T26-Standard Method of Test for Water to be Used in Concrete.
 - 4. AASHTO T84-Specific Gravity and Absorption of Fine Aggregate.
 - 5. AASHTO T85–Specific Gravity and Absorption of Coarse Aggregate.
 - 6. AASHTO T103–Soundness of Aggregates by Freezing and Thawing
 - 7. AASHTO T219–Standard Methods of Testing Lime for Chemical Constituents

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and Particle Sizes.

- B. American Concrete Institute (ACI) 38800 Country Club Drive, Farmington Hills, MI 48331
 - 1. ACI 211.1–Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete.
 - 2. ACI 301–Specifications for Structural Concrete for Buildings.
 - 3. ACI 304–Recommended Practices for Measuring, Mixing, Transporting and Placing Concrete.
 - 4. ACI 304.2R-Placing Concrete by Pumping Methods.
 - 5. ACI 305R–Hot Weather Concreting.
 - 6. ACI 306R–Cold Weather Concreting.
 - 7. ACI 318–Building Codes Requirements for Structural Concrete
 - a. Reference to ACI 318 may be limited to more stringent requirements of local building code.
- C. American Society for Testing and Materials (ASTM), International 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428:
 - 1. ASTM A 27–Mild to Medium Strength Carbon Steel Casting for General Application.
 - 2. ASTM A 36-Structural Steel.
 - 3. ASTM A 47–Malleable Iron Castings.
 - 4. ASTM A 82—Specification for Steel Wire, Plain, for Concrete Reinforcement: Replaced by A1064
 - 5. ASTM A 123–Hot-dip Galvanizing.
 - 6. ASTMA 184–Specification for Fabricated Deformed Steel Bar Mats for Concrete Reinforcement.
 - ASTM A 185—Specifications for Steel Welded Wire, Fabric, Plain, for Concrete Reinforcement: Replaced by A1064
 - 8. ASTM A 283–Low and Intermediate Tensile Strength Carbon Steel Plates, Shapes and Bars.
 - 9. ASTM A 615–Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
 - 10. ASTM A 706–Specification for Low-Alloy Steel Deformed Bars for Concrete Reinforcement.
 - 11. ASTM C 25–Method for Chemical Analysis of Limestone, Quicklime, and Hydrated Lime.
 - 12. ASTM C29–Unit Weight and Voids in Aggregate
 - 13. ASTM C 31–Methods of Making and Curing Concrete Test Specimens in the Field.
 - 14. ASTM C 33–Specification for Concrete Aggregates.
 - 15. ASTM C 39–Test Method for Compressive Strength of Cylindrical Concrete Specimens.
 - 16. ASTM C 42–Method of Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.
 - 17. ASTM C 76-Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe.
 - 18. ASTM C 88–Soundness of Aggregates by Use of Sodium Sulfate or Magnesium

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Sulfate.

- 19. ASTM C 94–Specification for Ready Mixed Concrete.
- 20. ASTM C 109-Compressive Strength of Hydraulic Cement Mortars
- 21. ASTM C 110–Methods for Physical Testing of Quicklime, Hydrated Lime, and Limestone.
- 22. ASTM C 117–Materials Finer than 75 mm (No. 200) Sieve in Mineral Aggregates by Washing.
- 23. ASTM C 131–Resistance of Abrasions of Small Size Coarse Aggregate by Use of the Los Angeles Machine.
- 24. ASTM C 136-Method for Sieve Analysis of Fine and Coarse Aggregates.
- 25. ASTM C 138–Unit Weight, Yield, and Air Content of Concrete.
- 26. ASTM C 143–Test Method for Slump of Hydraulic Cement Concrete
- 27. ASTM C 150-Specification for Portland Cement
- 28. ASTM C 171–Specification for Sheet Material for Curing Concrete.
- 29. ASTM C 172-Method of Sampling Fresh Concrete.
- ASTM C 173–Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.
- 31. ASTM C 231–Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
- 32. ASTM C 260–Specification for Air Entraining Admixture for Concrete.
- 33. ASTM C 309–Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
- 34. ASTM C 443–Joints for Concrete Pipe and Manholes, using Rubber Gasket
- 35. ASTM C 494–Specification for Chemical Admixtures for Concrete.
- 36. ASTM C 595–Blend Hydraulic Cements.
- 37. ASTM C 618–Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for use in Concrete
- 38. ASTM C 655–Reinforced Concrete D Load Culvert, Storm Drain, and Sewer Pipe.
- 39. ASTM C 789—Precast Reinforced Concrete Box Sections for Culverts, Storm Drains and Sewers: Replaced by C1433
- 40. ASTM C 803-Test Method for Penetration Resistance of Hardened Concrete.
- 41. ASTM C 805-Test Method for Rebound Number of Hardened Concrete.
- 42. ASTM C 977–Specification for Quicklime and Hydrated Lime for Soil Stabilization.
- ASTM D 75–Sampling Aggregate.
- 44. ASTM D 422–Test Method for Particle Size Analysis of Soils.
- 45. ASTM D 516-88-Standard Test Method for Sulfate Ions in Water.
- 46. ASTM D 693—Crushed Stone, Crushed Slag and Crushed Gravel for Dryer Water-Bound Macadam Base Courses and Bituminous Macadam Base and Surface Courses of Pavements: Withdrawn
- 47. ASTM D 698–Laboratory Compaction Characteristics of Soil using Standard Effort
- 48. ASTM D 751-Test Method for Coated Fabrics
- 49. ASTM D 1556–Test Method for Density of Soil in Place by the Sand-Cone Method.
- 50. ASTM D 1557–Laboratory Compaction Characteristics of Soil using Modified Effort
- 51. ASTM D 1682—Ultraviolet Resistance Grab Tensile Strength Grab Tensile Elongation Toughness: Replaced by D5034 and D5035

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- 52. ASTM D 1751–Specification for Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction.
- 53. ASTM D 1752–Specification for Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction.
- 54. ASTM D 2167–Test Method for Density of Soil in Place by the Rubber-Balloon Method.
- 55. ASTM D 2216–Method for Laboratory Determination of Water (Moisture) Content of Soil, Rock and Soil Aggregate Mixtures.
- 56. ASTM D -79 (2011) Hydroxypropyl Methylcellulose
- 57. ASTM D 2419-Sand Equivalent Value of Soils and Fine Aggregate.
- 58. ASTM D 2487–Test Method for Classification of Soils for Engineering Purposes.
- 59. ASTM D 2922—Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Method: Replaced by D6938
- 60. ASTM D 3017—Test Method for Moisture Content of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth): Replaced by D6938
- 61. ASTM D 3665–Random Sampling of Paving Materials.
- 62. ASTM D 4253–Test Method for Maximum Index Density of Soils Using Vibratory Table.
- 63. ASTM D 4318–Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
- 64. ASTM D 4397–Specification for Polyethylene Sheeting for Construction, Industrial and Agricultural Applications.
- 65. ASTM D 4546–Test Method for One-Dimensional Swell or Settlement Potential of Cohesive Soils.
- 66. ASTM E 329–Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection
- 67. ASTM F 477-Elastomeric Seals (Gaskets) for Joining Plastic Pipe.
- 68. ASTM F 758—Smooth-Wall Poly (Vinyl Chloride) (PVC) Plastic Underdrain Systems for Highway, Airport and Similar Drainage.
- D. American Welding Society (AWS), 550 NW LeJeune Road, Miami, FL 33135 AWS Code for Welding in Building Construction (Structural Welding Code).
- E. Concrete Reinforcing Steel Institute (CRSI) 933 N. Plum Grove Road, Schaumburg, IL 60195, (312) 490-1700:
 - 1. Manual of Standard Practice.
- F. Colorado Department of Transportation (CDOT) Division of Administration, Office of Bid Plans, 4201 E. Arkansas Avenue, Denver, CO 80222:
 - 1. Standard Specifications for Road and Bridge Construction (latest edition) Colorado Standard Plans, M&S Standards.
- G. Federal Highway Administration (FHWA) Superintendent of Documents, US Government Printing Office, Washington DC, 20402:
 - 1. Manual of Uniform Traffic Control Devices (latest edition).

TECHNICAL SPECIFICATIONS 01 GENERAL REQUIREMENTS 014225 REFERENCE STANDARDS DENVER INTERNATIONAL AIRPORT TUNNEL SEWER REPAIRS CONTRACT NO. 202056250

PART 2 - PRODUCTS (Not used)

PART 3 - EXECUTION (Not used)

PART 4 - MEASUREMENT

4.1 METHOD OF MEASUREMENT

A. No separate measurement shall be made for work under this Section.

PART 5 - PAYMENT

5.1 METHOD OF PAYMENT

A. No separate payment will be made for work under this Section.

END OF SECTION 014225

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SECTION 014230 - DEFINITIONS AND CONVENTIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section contains a list of definitions of words or phrases and grammatical or contextual conventions commonly used in these Contract Documents.

1.3 DEFINITIONS

- A. General: Basic Contract definitions are included in the Conditions of the Contract.
- B. Alphabetical Listing of Definitions:
 - 1. **As indicated**: Shown on the drawings by graphic indication, notes, or schedules, or written in the specifications or elsewhere in the Contract Documents.
 - 2. **As directed, as approved, as requested**: Unless otherwise indicated, these terms imply "by the DEN Project Manager" and require that an instruction be obtained by the Contractor from the DEN Project Manager.
 - 3. **Concealed**: Embedded in masonry, concrete, or other construction; installed in furred spaces; within double partitions or hung ceilings; in trenches; in crawl spaces or in enclosures.
 - 4. **Ensure**: To make certain in a way that eliminates the possibility of error.
 - 5. **Exposed**: Not installed underground or "concealed" as defined above.
 - 6. **Furnish or Provide**: To supply, install and connect complete and ready for safe and regular operation of particular work unless specifically otherwise noted.
 - 7. **Indicated, Shown, or Noted**: As depicted on drawings or specifications.
 - 8. Install: To erect, mount and connect complete with related accessories.
 - 9. **Or equal, or approved equal**: Refers to products which, in the opinion of the DEN Project Manager, are similar in all respects to products specified by proprietary brand name. Refer to Section 012510 "Substitutions" for procedures for submittal of proposed substitutions.
 - 10. **Rework**: To repair existing items or work required to be removed and replaced in order to accomplish the Work in accordance with the Contract Documents.
 - 11. **Related Work**: Includes, but not necessarily limited to, mentioned work associated with, or affected by, the Work specified.
 - 12. **Reviewed, Satisfactory, Accepted, or Directed**: Assumes by or to the DEN Project Manager.
 - 13. **Similar, or Equal**: Same in materials, weight, size, design, construction, capacity, performance, and efficiency of specified product.

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- 14. **Supply**: To purchase, procure, acquire and deliver complete with related accessories.
- 15. **Unless Otherwise Indicated and Unless Otherwise Noted**: General note to perform work as indicated or shown on drawings or in specifications unless specifically directed otherwise elsewhere in the Contract Documents; may be abbreviated "U.O.N.", "U.O.I.", or "U.N.O.".

C. BIM Model Definitions:

- 1. **Building Information Model (BIM)**: BIM is a digital representation of the physical and functional characteristics of the Project and is referred as a Model(s), which term may be used to describe a Model Element, a single Model or technology used to create the Model.
- 2. **Design Model**: A Model that has reached the stage of completion that would customarily be expressed by an architect or engineer in two-dimensional Construction Documents.
- 3. **Construction Model**: The equivalent of shop drawing and other information useful to construction. A model that consists of data imported from a "Design Model or", if none exist, from a designer's "Construction Document".
- 4. **Federated Model**: Distinct component models "linked" together in such a manner that the linked data sources so not lose the indent or integrity by being so linked.
- 5. **Level of Development (LOD)**: LoD describes the level of completeness to which a Model Element is developed.
- 6. **Model Element**: Is a portion of the BIM representing a component system or assembly within a building or building site.
- 7. **Model Element Author**: The party responsible for developing the content of a specific Model Element to the LoD for a particular phase of the Project.

1.4 BIM REFERENCE STANDARDS

A. Refer to the DEN BIM Design Standard Manual (DSM) for the proposed minimum requirements of the BIM Execution Plan. The execution plan shall be further developed jointly with DEN and the Contractor to specifically address the administrative steps necessary to provide comprehensive BIM system before during and after construction.

1.5 CONVENTIONS

A. Specifications Format:

- 1. In order to standardize the location of information in the Contract Documents, the specifications generally are organized in one or more of the following formats:
 - a. The "MASTERFORMAT" 2011 Edition published by the Construction Specifications Institute.
 - b. The Standard Specifications for Road and Bridge Construction published by CDOT.
 - c. The alphanumeric system as published by the FAA.

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B. Organization of Drawings and Specifications:

- Organization of the specifications into divisions and sections, and arrangement or numbering of drawings is intended solely for the convenience of the Contractor in the Contractor's responsibilities to divide the Work among subcontractors or to establish the extent of work to be performed by any trade.
- Neither the City nor the DEN Project Manager assume any liability arising out of jurisdictional issues or claims advanced by trade organizations or other interested parties based on the arrangement or organization of drawings or specifications.

C. Gender and Number:

 For convenience and uniformity, parties to the Contract, including the City, Contractor, and DEN Project Manager, and their subcontractors, suppliers, installers, consultants or other interested parties are referred to throughout the Contract Documents as if masculine in gender and singular in number. Such reference is not intended to limit the meaning of the Contract Documents to the masculine gender or singular number.

D. Singular vs. Plural:

1. Materials, products, equipment, or other items of work referred to in the singular shall be construed as plural where applicable by the intent of the Contract Documents and shall not limit quantities to be provided by the Contractor.

E. Imperative Mood:

1. Specifications and notes on the drawings or elsewhere in the Contract Documents are generally written in the imperative mood as instructions to the Contractor, whether the Contractor is specifically addressed or not.

F. References to Subcontractors or Trades

References to subcontractors, trades or other entities, which are not parties to
the Contract, shall be construed as meaning the Contractor whose responsibility
it shall be to divide the Work among subcontractors or trades. Such references
are used as a matter of convention, and are not intended to preclude or direct the
Contractor's responsibility to divide the Work.

G. Abbreviations

- A list of abbreviations used in the Contract Documents is included in Technical Specifications Section 014220 "Abbreviations and Symbols"; an abridged list of abbreviations used on the drawings is included with the drawings.
- 2. Abbreviations are believed to be those in general use in the construction industry. Contact the DEN Project Manager for clarification of abbreviations for which the meaning is not clear.

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PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

PART 4 - MEASUREMENT

4.1 METHOD OF MEASUREMENT

A. No separate measurement shall be made for work under this Section.

PART 5 - PAYMENT

5.1 METHOD OF PAYMENT

A. No separate payment will be made for work under this Section.

END OF SECTION 014230

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SECTION 014510 - CONTRACTOR QUALITY CONTROL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section identifies the Quality Control activities to be performed during all phases of the Contract by the Contractor.
- B. The Contractor shall have in place a Quality Control Program as necessary to ensure that all materials and work are completed in compliance with Contract Documents. The Contractor is solely responsible for Quality Control and shall provide the necessary quality control personnel to assure that all materials, workmanship, and tests are in conformance with the Project documents with the exception of those tests and/or audits that may be conducted by the City as defined in the contract documents.
- C. Test schedules and/or testing requirements for materials used on this project are included in the technical specifications. Laboratory and field-testing identified in the specifications shall be conducted by a Testing Agency retained by the Contractor; hereafter is referred to as the Contractor Testing Agency (CTA).
- D. The City or its consultant working as the City agent will employ a testing agency to perform all the required Quality Assurance and Special Inspection Testing of material and Inspection of workmanship required by the Contract Documents and the Building Official to fulfill the code and the regulatory authority's requirements. The Contractor must schedule these tests and provide access to the City agents' inspectors and testers to perform these tests and inspections. The performance of the tests by the City does not relieve the Contractor of the responsibility to deliver a fully functional building meeting all the requirements of the Contract Documents and their intent. The Contractor must develop its own testing program for processing, acceptance from the subcontractor or suppliers at a frequency defined by the contractor for its own process control and to assure delivery of the intended acceptable workmanship. All time impacts of testing and retesting shall be accounted for in the updated schedule and any mitigation of time impacts shall be the responsibility of the Contractor.

1.3 SUBMITTALS

- A. Refer to Section 013300 "Submittals" and Section 013325 "Submittal Procedures" for submittal requirements.
- B. Quality Control Plan: Within ten (10) days after Notice to Proceed, the Contractor shall

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submit a Quality Control Plan for review and acceptance. The Quality Control Plan shall be accepted by the DEN Project Manager prior to any Work or materials being incorporated into the Project. Acceptance by the DEN Project Manager does not relieve the Contractor of its responsibility to comply with the Contract Requirements. The Contractor Quality Control Plan shall address the following as a minimum:

- 1. A general description of Quality Control monitoring to be performed until final acceptance by DEN. Include monitoring activities of Work and the work site during times that no construction activity is scheduled to take place.
 - a. No work requiring QC inspection and testing shall take place without QC inspection and testing staff on site.
- 2. An individual designated by the Contractor and approved in writing by the DEN Project Manager whose [sole] responsibility is Quality Control Management. This individual shall be highly qualified in all phases of construction as it relates to this Project and shall have the authority to direct work changes required to bring the Work into conformance with Contract requirements, including stopping non-conforming work in progress. A detailed resume of the proposed Quality Control Manager including applicable education, experience, and certifications shall be included in the Quality Control Plan.
 - a. At the discretion of the DEN Project Manager, for Small Projects, Early Work Packages and Task Orders all of value less than \$1,000,000 or a duration which is less than three (3) months, the Contractor may assign one of the Contractor's staff, i.e. Contractor's Superintendent, Office Engineer, Field Engineer, or Contractor's Project Manager as Quality Control Manager. The assigned person must be on site while work requiring QC inspection and testing is being completed and available to discuss quality issues, manage all aspects of the Project Quality Control Plan, coordinate all required Special Inspection and Quality Assurance testing, and provide proposed solutions on all quality issues at any time as to not cause any delay to the project. Any delays caused in part or in all due to defective or no conforming work shall be borne by the Contractor.
- 3. Quality Control inspection staff as needed to assist the Quality Control Manager with implementation of the Quality Control Program. Duties of the Quality Control Inspectors shall be limited strictly to inspection of the ongoing work. Sampling and testing of materials shall be performed by Quality Control personnel other than Quality Control Inspectors. Quality Control Inspectors shall inspect only those work elements for which they are qualified. Resumes of the proposed Quality Control Inspectors including applicable education, experience and certifications shall be included in the Quality Control Plan.
- 4. An Organization Chart identifying all Quality Control staff by name and function. The chart shall indicate the total staff required to implement all elements of the Quality Control Program, including inspection and testing for each item of work including tests performed by the CTA or DTA. If necessary, different Quality Control staff can be utilized for specific inspection and testing functions for different items of work. The chart shall show that the Quality Control Manager, Quality Control Inspectors, and Quality Control testing personnel are outside of

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the production staff with clear lines of authority for Quality Control.

- 5. The City and/or the City Program Management Team acting as the City agent will employ a DTA. The Contractor's testing and inspection shall be performed for the processing, preparation and to request City's inspection and as necessary to produce the required product as specified in the Contract Documents. The Contractor shall meet the minimum inspection and testing frequencies specified in the contract documents. When the contract documents do not specify minimum inspection and testing frequencies the Contractor shall propose in writing to the DEN Project Manager a QC inspection and testing frequencies that meet or exceed industry standards for the material and work being placed or conducted.
- 6. Any test performed by any agency on the Project shall be recorded and show a passing re-test of all failing tests.
 - All test results shall be made available for inspection by the DEN Project Manager. This includes tests that are above the QC testing frequency required.
- 7. Any tests submitted by the Contractor for basis of acceptance, or payment reduction when performed by the Contractor's agency, must meet all standards and must be certified to have followed approved procedure, processed in a certified lab by properly certified or licensed personnel by properly certified testers and on calibrated and certified equipment. Authentications of tests must be preapproved and cannot be selectively submitted. All tests shall be recorded in the field witnessed by DEN inspector to be accepted as a record test of the material in question. Any failing tests could be the sole basis for rejecting the material.
- 8. Each technical specification division's requirements for quality control identifying each item requiring submittal and approval/acceptance prior to installation of work, all inspections to be performed during work and prior to acceptance of work, each item of work requiring testing by the independent testing agency or the City provided testing agency, and the testing frequency.
- 9. The plan shall address all elements of special inspection required by the statement of special inspection as approved by the Building Official. All special inspections and tests will be performed by agencies employed by the City.
- 10. The Contractor is responsible for the complete record of inspection file including but not limited to all manufacturer certificates, certificates of material compliance, Certificates of Material Testing Record, successful re-inspection of all deficiency items, proper deposition of design related Non-Conformance reports (NCR), Structural Engineers' observation reports, certification letters from the DTA, Building Inspectors' records of approvals, permit cards, fire suppression and fire-alarm tests records as witnessed by the authorities of jurisdiction and any record necessary to achieve a certificate of occupancy.
- 11. The Contractor must keep track of all logs of discrepancies and submit periodic updates, as required by the DEN Project Manager, of all open issues and track the closure of open items in a timely manner.
- 12. Establish controls and documentation format to ensure that items or materials that have been accepted through receiving inspection are used or installed. Identification and traceability shall be provided throughout all inspections, test activities, and records. For stored items, provisions shall be made for the control

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- of item/material identification, consistent with the expected duration and type of storage.
- 13. A methodology of monitoring, testing, and exercising of all equipment, valves, and/or assemblies to ensure the Work installed is in proper working order.
- 14. A list of suppliers and subcontractors. This list shall include items to be supplied by each supplier and/or subcontractor and shall identify work to be performed by each subcontractor. The list shall be updated and resubmitted as required.
- 15. All approvals related to Special Inspection are subject to the acceptance or approval of the Building Official.
- 16. Emergency contact information including name, company, title, work phone number, home phone number, and other means of contact. The Emergency Contact list shall include at least four individuals. The Emergency Contact list shall be maintained on a daily basis. In the event there is any change in any of the information, the Contractor shall forward the updated list to the DEN Project Manager and to DEN Maintenance Control (303-342-2800). The Emergency Contact list shall include the project number, project title, and date of issue.
- C. The Contractor shall transmit the following daily reports to the DEN Project Manager electronically PRIOR TO THE CLOSE OF BUSINESS ON the following work day:
 - 1. CM-13 Contractors Daily Construction Report. The Foreman may add sheets of information to this form as needed.
 - 2. CM-07 Daily Quality Control Inspection Report and all CTA test results performed that day.
 - 3. CM-08 Daily DEN Time and Materials Report
- D. Deficiency List: The Quality Control Manager shall establish a deficiency list including the minimum information for each deficiency item; description, date, location, drawings reference, detail reference, specification reference, and superseding document NCR, date of expected solution date repaired date inspected by City representative and accepted.

1.4 DOCUMENTATION

- A. The Contractor shall not change or alter approved submittals, procedures, specifications, drawings/MODELS, or other pertinent documentation without the DEN Project Manager's written authorization.
- B. All records and documents that are quality related shall be prepared, identified and maintained by the Contractor and shall be made available to DEN upon request. Records shall be protected from damage, deterioration, or loss. A copy of the records and documents shall be maintained at the Work site at all times unless the DEN Project Manager has approved other locations in writing. Retention time for all quality records shall be not less than three (3) years from date of Final Acceptance of the Contract.
- C. The Contractor is responsible for the complete record of inspection file including but not limited to all manufacturer certificates, certificates of material compliance, Certificates of Material Testing Record, successful re-inspection of all deficiency items,

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proper deposition of design related NCRs, Structural Engineers' observation reports, certification letters from the DTAs, Building Inspectors' records of approvals, permit cards, fire suppression and fire-alarm tests records as witnessed by the authorities of jurisdiction and any record necessary to achieve a Certificate of Occupancy.

- D. The Contractor shall maintain records at the actual worksite and at Contractor's office to show the inspection status of materials and items installed in order to ensure that the required inspections and tests have been performed in a timely and correct manner.
- E. The Contractor must keep a record of all deficiency issues and show positive evidence of closure (passing re-inspection or re-test) to every issue.

1.5 INSPECTIONS AND TESTS

- A. Inspections, tests and system shut down requests, conducted by persons or agencies other than the Contractor, shall not in any way relieve the Contractor of the responsibility and obligation to meet all specifications and the referenced standards. The Contractor's designated Quality Control Representative shall inspect the work and shall ensure the Work complies with the Contract requirements prior to any requests for inspection or testing.
- B. When the specifications, laws, ordinances, rules, regulations or orders of any public agency having jurisdiction require the DEN Project Manager's surveillance of inspections or tests, the Contractor shall notify the DEN Project Manager, in writing, of the place, date and time 48 hours prior to the inspection and/or test. The Contractor shall be responsible for notifying and requesting inspection by other agencies including but not limited to the Denver Building Inspection Division, Denver Fire Department, and Denver Water Department. Prior to request for other agency inspections, the Contractor shall meet and plan inspection times with the DEN Project Manager.
- C. Special inspections or tests may be required by the technical specifications, City, State and/or Federal Agencies in addition to those tests already performed. The Contractor shall notify the DEN Project Manager, in writing, at least 48 hours in advance of the additional inspections or tests.
- D. Quantities will be verified as defined in the Pre-Work Meetings.

1.6 INSPECTION PLAN

- A. The Contractor shall utilize the following six-point inspection plan to ensure the conformance of the Work performed by the Contractor meets the requirements of the Contract Drawings and specifications, the referenced codes and standards and the approved submittals:
 - 1. Prework Coordination: Prior to the start of construction work on the Contract and prior to the start of Work under each separate specification section and prior to the start of Work where a change in a construction operation is contemplated by

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the Contractor, and prior to a new subcontractor starting work, a coordination meeting to ensure that the Contractor's personnel have no misunderstandings regarding their safety and quality procedures as well as the technical requirements of the Contract will be held with the Contractor's superintendent, Quality Control and Safety representatives, and DEN Project Manager. Supervisory, Safety and Quality Control, representatives of all applicable subcontractors will also attend. Prior to the meeting, the Contractor's Quality Control Manager shall provide the DEN Project Manager with a meeting agenda for review. The Contractor's Quality Control Manager shall conduct the meeting and distribute the approved agenda. The Quality Control Manager shall develop and electronically distribute finalized meeting minutes within one business day upon completion of the meeting. The following items shall be presented and reviewed by the Contractor:

- a. Contract requirements and specifications.
- b. Shop drawings, certifications, submittals, models, and as-built drawings.
- c. Testing and inspection program and procedures.
- d. Contractor's Quality Control program.
- e. Familiarity and proficiency of the Contractor's and subcontractor's workforce to perform the operation to required workmanship standards including certifications of installers.
- f. Safety, security, and environmental precautions to be observed.
- g. Any other preparatory steps dependent upon the particular operation.
- h. The Contractor's means and methods for performing the Work.
- 2. Initial Inspection: Upon completion of a representative sample of a given feature of the Work and no later than two weeks after the start of a new or changed operation, the DEN Project Manager and/or the DEN Project Manager's designated representatives will meet with the Contractor's Quality Control representative and applicable subcontractor's supervisor and their Quality Control representatives to check the following items, as a minimum:
 - a. Workmanship to established quality standards.
 - b. Conformance to Contract Drawings, specifications and the accepted shop drawings.
 - c. Adequacy of materials and articles utilized.
 - d. Results of inspection and testing methods.
 - e. Adequacy of as-built drawings/MODELS maintained daily.
 - f. Once accepted, the representative sample will become the physical baseline by which ongoing work is compared for quality and acceptability. To the maximum practical extent, approved representative samples of work elements shall remain visible until all work in the appropriate category is complete. Acceptance of a sample does not waive or alter any Contract requirements or show acceptance of any deviation from the Contract not approved in writing by the DEN Project Manager.
- 3. Follow-up Inspection: The Contractor's Quality Control representative will monitor the Work to review the continuing conformance of the Work to the workmanship standards established during the preparatory and initial inspections.
- 4. Completion Inspection: Forty-eight (48) hours prior to the completion of an item

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or segment of work and prior to covering up any work, the Contractor shall notify the DEN Project Manager, in writing, who will verify that the segment of work is substantially complete, all inspections and tests have been completed and the results are acceptable. The purpose of this inspection is to allow further corrective work upon, or integral to, the completed segment of work. THIS IS NOT AN ACCEPTANCE INSPECTION. If any items are determined to be deficient, need correction or are non-conforming, a Deficiency List will be prepared and issued to the respective Contractor for correction, repair, or replacement of any deficient or non-conforming items. The DEN Project Manager and Contractor's Quality Control representative will verify the correction of the deficient and/or non-conforming items prior to the start of the next operation.

- 5. Pre-Final Acceptance Inspection: Prior to requesting a Pre-Final Acceptance Inspection by DEN, all work and operational systems to be inspected shall be satisfactorily completed and tested by the Contractor. The Contractor's written request for this inspection shall be made seventy-two (72) hours in advance. With the request shall come a list of any known deficiencies and when they will be corrected. If the list is too large or contains too many significant items, in the opinion of the DEN Project Manager, no inspection will be held because of the incompleteness of the Work.
- 6. The DEN Project Manager will schedule the Pre-Final Acceptance Inspection and will prepare a list of deficient items (punch list) discovered during the inspection. If during the inspection, the list becomes too large or too many significant items are on the list, the inspection will be canceled by the DEN Project Manager. After the inspection is completed, the Deficiency List will be transmitted to the Contractor for correction of the deficient items.
- 7. Final Acceptance Inspection: After the Contractor has completed all items on the Deficiency List (generated from the Pre-Final Acceptance Inspection), he shall request a Final Acceptance Inspection. The request shall be made in writing at least seventy-two (72) hours in advance of the inspection. All areas must be cleaned and ready for turnover prior to this inspection. The DEN Project Manager, the design consultant, a representative of the funding agency (if applicable) and other interested parties will inspect the subject Work to ensure that all deficiencies have been satisfactorily attended to and that no new deficiencies have appeared and that all systems are completely functional. Any outstanding or additional deficient items will be noted and handled per the requirements of the Pre-Final Acceptance Inspection noted above until the Work is acceptable to the DEN Project Manager.

1.7 CONTRACTOR SUBMITTAL OF PROPOSED CONTRACTOR'S TESTING AGENCIES

A. Refer to Section 014525 - Material Testing Agency

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PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 REQUIREMENTS

- A. All materials required for the Contract shall be new except where specified otherwise. The DEN Project Manager may elect to perform additional inspections and/or tests at the place of the manufacture, the shipping point or at the destination to verify conformance to applicable specifications. Inspections and tests performed by DEN shall not relieve the Contractor from the responsibility to meet the specifications, nor shall such inspections/tests be considered a guarantee for acceptance of materials that will be delivered at a later time.
- B. Materials accepted based on a Certificate of Compliance may be sampled and inspected/tested by DEN or its designer at any time. The fact that the materials were accepted based on such certification shall not relieve the Contractor of the responsibility to use materials that conform to the specifications.
- C. The Contractor shall impose upon suppliers the same quality control requirements, including inspection and test procedures, as imposed upon him by the specifications and referenced standards. The Contractor shall apply appropriate controls, designed to ensure that all materials supplied meet the requirements and specifications.

PART 4 - MEASUREMENT

4.1 METHOD OF MEASUREMENT

A. No separate measurement shall be made for work under this Section.

PART 5 - PAYMENT

5.1 METHOD OF PAYMENT

- A. No separate payment will be made for work under this Section.
- B. Refer to Article 1706 Removal of Defective Materials and Work in the General Contract Conditions, 2011 Edition.

END OF SECTION 014510

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SECTION 014525 - MATERIAL TESTING AGENCY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. The Contractor shall employ the services of a Material Testing Agency; hereafter referred to as the Contractor Testing Agency (CTA). This Section identifies the requirements for the Contractor to employ a Material Testing Agency and identifies the required activities of the Material Testing Agency.
- B. Laboratory and field-testing requirements to be conducted by the CTA for materials and construction methods used on this project are included in the appropriate technical specifications. Where the Specifications reference the CDOT Standard Specifications for Road and Bridge Construction, the references shall also mean CDOT Field Materials Manual for schedule of tests unless otherwise stated. As a minimum, the CTA described in this Section shall perform all applicable tests listed in the manual including the independent assurance sampling and testing. In the event of such a conflict between the schedule and a specification in these technical provisions, the more comprehensive testing shall govern unless otherwise noted.
- C. Inspections and tests conducted by the CTA shall not in any way relieve the Contractor of the Contractor's responsibility and obligation to meet all specifications and referenced standards. Employment of the CTA does not relieve the Contractor of providing the required Quality Control program.
- D. When inspections or tests by the CTA prove that the item or material does not meet all applicable specifications and requirements, the cost incurred for the re-testing or re-inspection shall be borne by the Contractor as per this Section.
- E. Samples will only be considered if taken at random. The Contractor shall permit representatives of the City to witness the selection of samples. Inspection or tests of items or materials that fail shall be sufficient cause to terminate further inspections/tests of the same brand, make or source of that product.
- F. The Contractor is obligated to correct any item deemed deficient at no additional cost to DEN.

1.3 SUBMITTALS

A. All submittals shall comply with requirements of Sections 013300 "Submittal

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Procedures" and 013325 "Shop and Working Drawings, Product Data and Samples" for submittal requirements.

1.4 CONTRACTOR SUBMITTAL OF PROPOSED TESTING AGENCIES

- A. The Contractor shall employ the services of a CTA that has been accredited by AASHTO or CCRL or an approved equal to perform the tests required in the Contract. The CTA may also provide technicians to perform the required inspections. However, inspection and testing cannot be performed simultaneously by the same technician. The Contractor shall receive written acceptance from the DEN Project Manager of the CTA prior to any permanent work being installed or tested.
- B. The Contractor shall not submit for acceptance to the DEN Project Manager any testing agency or laboratory utilized in the design or construction document preparation or presently employed by DEN as part of DEN Quality Assurance, Material Testing, or special inspection agencies.
- C. For consideration of acceptance, the Contractor shall submit to the DEN Project Manager the following items received from the CTA:
 - 1. Affidavit of current accreditation from a national certification and/or accreditation programs.
 - 2. Evidence that the CTA Laboratory is accredited to perform the testing required in the Contract Documents.
 - 3. Resumes and evidence of professional engineer registration and licensing in the State of Colorado for the personnel reviewing and signing test reports.
 - 4. Resumes and current certifications verifying that CTA management and supervisory personnel, laboratory staff, field testing technicians, and inspecting technicians are qualified in accordance with ASTM C 1077, D 3666, D 3740, and E 329 requirements to perform the Work. NICET, ACI, WAQTC, LabCAT, CDOT, NRMCA, PCA, AWS, ASNT certifications or a degree in a related engineering field with construction field experience that can demonstrate qualifications. A list summarizing all management, supervisory, laboratory, field testing, and inspection personnel assigned to the Project including the testing and/or inspection each individual will be performing, certifications held by each individual, and the expiration date of each certification.
 - 5. A matrix indicating each technical specification section, paragraph, quantity and type of sampling and/or testing required.
 - 6. Copies of all laboratory, field testing, and inspection report forms.

1.5 SUBMITTAL OF REPORTS

- A. Test results shall be submitted by the Contractor to the DEN Project Manager after completion of inspections/tests by the CTA and prior to incorporation of the items into the Work unless the test or inspection must be done during or after installation.
- B. All field test results including but not limited to fresh concrete properties and in-place moisture-density shall be reported in legible draft form to the DEN Inspector

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immediately at the test site. Any failing test shall be reported separately to the DEN Inspector or DEN Project Manager. The draft test results shall also be attached to the Daily Quality Control Inspection Report (reference Section 014510 "Contractor Quality Control") and transmitted to the DEN Project Manager the next workday.

- C. Typed test reports shall be provided to the DEN Project Manager as specified in the "Weekly Reports" Article in this Section. The test reports shall be numbered sequentially in chronological order. Individual tests shall be numbered sequentially. The reports and tests shall also be organized per specification section. All test results must be reviewed and signed by a registered licensed engineer in the State of Colorado. The signature represents that the test procedures used are in strict conformance with the applicable testing standard, the calculated data are true and accurate, the tools and equipment used were in calibration, the sample was not contaminated and the persons running the test were qualified.
- D. Reports of inspections and test activities are record documents and shall be maintained in a manner that provides integrity of item identification, acceptability, and traceability. Reports shall identify the following:
 - Contractor's name.
 - 2. DEN Contract number and title.
 - 3. Material Testing Agency name.
 - 4. Name of items inspected/tested including a physical description and, as applicable, model and make.
 - 5. Quantity of items.
 - 6. Inspection/test procedure used. If national standards are used, any deviation from these standards.
 - 7. Date the sample was taken and the date the test was made.
- E. Location (by coordinates, building grid or station number and elevation) of where tests and/or samplings were performed including environmental condition where applicable. Include plan drawing indicating location of test, lot size and location and work item sampled or tested.
 - 1. Name of inspector/tester.
 - 2. In the event the testing or sampling is a re-test or re-sampling, reference the previous respective testing or sampling report.
 - 3. Specified requirements in the Contract that the item must meet. Include reference to technical specification section and paragraphs.
 - 4. Acceptability.
 - Deviations/nonconformance.
 - 6. Evaluation of results.
 - 7. All information required for the specific test as specified in the applicable ASTM standard.
 - 8. Signature of authorized evaluator.

1.6 WEEKLY SUMMARY REPORTS

A. The CTA and Quality Control Manager shall prepare and submit to the DEN Project

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Manager a weekly summary report each week, which summarizes by specification section all work activities and results for the quality control tests and inspections conducted during that period. The weekly summary report shall be submitted within two (2) weeks from the end of the reporting period. At a minimum, the weekly summary report shall identify all inspections, test types, test locations, testers, test results, specifications, whether the test passed or failed, quantity of materials placed and the number of tests performed for each material, and the material supplier, installer and Contractor. Re-tests shall be identified in a fashion that easily correlates to the failing test. Any failed tests that have not been corrected when the report is published shall be highlighted and noted in the cover letter of the report.

B. The weekly report shall be submitted per Sections 013000 and 013350 requirements.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 REMOVAL OF NONCONFORMING MATERIAL

A. The Contractor is obligated to correct or remove nonconforming materials, whether in place or not. If necessary, the DEN Project Manager will send written notification to the Contractor to correct or remove the defective materials from the project. If the Contractor fails to respond, the DEN Project Manager may order correction, removal, and/or replacement of defective materials by others, in which case the Contractor shall bear all costs incurred by such actions.

3.2 PERFORMANCE

A. If the DEN Project Manager determines that the CTA or its personnel are not effectively enforcing or performing the testing and documentation requirements specified in the Contract, the DEN Project Manager will require, in writing, the Contractor to remove and replace CTA or such personnel at no cost to DEN.

3.3 CONTROL OF MEASURING AND TEST EQUIPMENT

A. The CTA shall select measuring and test equipment in such a manner as to provide proper type, range, accuracy, calibration, and tolerance for determining compliance with specified requirements. Measuring and test devices shall be calibrated, adjusted and maintained at prescribed intervals prior to use based upon equipment stability and other conditions affecting measurement. Provisions shall be made for the proper handling and storage of equipment. Calibration shall be accomplished using certified standards that have a known traceable relationship to the National Institute of Standards and Technology. Every calibrated measuring and test device shall show the current status, date of last calibration and the due date for the next calibration. Calibration records shall be maintained onsite as quality records and shall be made available for inspection upon the DEN Project Manager's request.

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PART 4 - MEASUREMENT

4.1 METHOD OF MEASUREMENT

A. No separate measurement shall be made for work under the Section.

PART 5 - PAYMENT

5.1 METHOD OF PAYMENT

- A. No separate payment will be made for work under this Section.
- B. Refer to Title 17 Inspection and Defects of the General Contract Conditions, 2011 Edition, for guidance on payment methods.

END OF SECTION 014525

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SECTION 014545 - SPECIAL INSPECTION AGENCY AND OWNER TESTING AGENCIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.
- B. Special Inspection Statement issued as part of the application for building permit for the specific task or project.

1.2 SUMMARY

- A. The City will employ the services of Special Inspection Agencies (SIA). This Section identifies the requirements for the Contractor to coordinate, facilitate, and support DEN and its agents and consultants to fulfill the requirements of Special Inspection.
 - 1. Any additional tests deemed necessary by the Building Official, Engineer of Record, Special Inspector or DEN Project Manager to assure these agencies that all material and work on the Project meet the requirements of the Contract and all applicable codes and regulations.
 - Minimum Laboratory and field testing requirements to be conducted by the SIA for materials and construction on this Project are included in the Table at the end of this Section.
 - 3. All caissons and piers drilling on this Project shall be continuously inspected by Special Inspection Agency hired by DEN directly or through the Engineer of Record or its sub-consultants.
 - 4. The Contractor shall not perform any work that could cover work or material that has not passed the requirement of special inspection or require the presence of the special inspector to meet the requirements of continuous or periodic inspection.
 - It is the responsibility of the Contractor to plan, coordinate all testing requirements on the project to assure no delays are occurring due to the lack of inspection or testing.
 - 6. The Contractor must allow sufficient time in the schedule to perform all required inspection and testing.
 - 7. All rework due to nonconformance, failing tests or rework to test covered work prior to proper inspection and testing shall be borne by the Contractor.
 - 8. All re-inspections and re-testing costs due to non-conformances or failing tests or revisiting to test covered or incomplete work shall be borne by the Contractor at a cost of \$100 per hour in addition to all direct and indirect costs associated with testing.
 - 9. Periodic welding inspection shall include the minimum of fitting inspection and final inspection at all times.
 - 10. Inspections and tests conducted by the SIA shall not relieve in any way the

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- Contractor of the Contractor's responsibility and obligation to meet all specifications and referenced standards. Employment of the SIA does not relieve the Contractor of providing the required Quality Control program.
- 11. When inspections or tests by the SIA prove that the item or material does not meet all applicable specifications and requirements, the cost incurred for the re-testing or re-inspection shall be borne by the Contractor. Reference Article 5.1 of this Section.
- 12. Samples will only be considered if taken at random. The Contractor shall permit representatives of the City to witness the selection of samples. Inspection or tests of items or materials that fail shall be sufficient cause to terminate further inspections/tests of the same brand, make or source of that product.
- 13. The Contractor is obligated to correct any item deemed deficient at no additional cost to DEN.

1.3 SUBMITTALS

A. All submittals shall comply with requirements of Section 013300 "Submittals" and Section 013325 " "Shop and Working Drawings, Product Data and Samples" for submittal requirements.

1.4 CONTRACTOR SUBMITTAL OF PROPOSED CONTRACTOR'S TESTING AGENCIES

- A. Projects requiring Special Inspection where the Contractor is utilizing certified shop to produce material. DEN requires that testing be performed to satisfy the certification be no less than the following: All material and workmanship meets the requirements of a Contractor Material Testing Agency.
- B. The Contractor shall employ the services of a Testing Agency for process control and acceptance by the subcontractors and suppliers or material delivery for Contractor convenience or contractual obligations with others.
- C. The Contractor's Testing Agency must be accredited agency to perform any test required to be submitted for compliance with a Contract requirement or for use of data by DEN agencies for any official use, for examples and not to grant any obligation on the DEN Project Management Team, any payment reduction factor calculation. Any dispute or requirement to recalibrate testing equipment or machine, proof of compliance of material that was installed in contrary to manufacturer recommendation, any apparent defect due to adverse weather, improper installation, incomplete material record.
- D. Contractor's testing agency must be a qualified entity that has performed testing on similar jobs in size and complexity and has been accredited by AASHTO or CCRL or an approved equal to perform the tests required in the Contract. The CTA may also provide technicians to perform the required inspections. However, inspection and testing cannot be performed simultaneously by the same technician.
- E. The Contractor shall not submit for acceptance to the DEN Project Manager any

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testing agency or laboratory utilized in the design or construction document preparation or presently employed by DEN as part of DEN Quality Assurance.

- F. For consideration of acceptance, the Contractor shall submit to the DEN Project Manager the following items received from the CTA:
 - 1. Affidavit of current accreditation from a national certification and/or accreditation program.
 - 2. Evidence that the CTA Laboratory is accredited to perform the testing required in the Contract Documents.
 - 3. Resumes and evidence of professional engineer registration and licensing in the State of Colorado for the personnel reviewing and signing test reports.
 - 4. Resumes and current certifications verifying that SIA management and supervisory personnel, laboratory staff, field testing technicians, and inspecting technicians are qualified in accordance with ASTM C 1077, D 3666, D 3740, and E 329 requirements to perform the Work. NICET, ACI, WAQTC, LabCAT, CDOT, NRMCA, PCA, AWS, ASNT certifications, or a degree in a related engineering field with construction field experience can demonstrate qualifications. A list summarizing all management, supervisory, laboratory, field testing, and inspection personnel assigned to the Project including the testing and/or inspection each individual will be performing, certifications held by each individual, and the expiration date of each certification.
 - 5. A matrix indicating each technical specification section, paragraph, quantity and type of sampling and/or testing required.
 - 6. Copies of all laboratory, field testing, and inspection report forms.

1.5 SUBMITTAL OF REPORTS

- A. Test results shall be submitted by the Special Inspector and/or DEN Testing Agency to the DEN Project Manager after completion of inspections/tests by the SIA/OTA and prior to incorporation of the items into the Work unless the test or inspection must be done during or after installation.
- B. All field test results including but not limited to fresh concrete properties and in-place moisture-density shall be reported in legible draft form to the DEN/PMT Inspection and the Contractor Quality Control Manager immediately at the test site. Any failing test shall be reported separately to the DEN/PMT Inspector or DEN Project Manager within two (2) hours after the discovery.
- C. The Contractor's Quality Control Manager or his/her Authorized representative must keep track and official record of all tests passed, failed, or defected. The Contractor shall be fully responsible to show passing tests of all required elements. The lack of any passing test record of any required element does not waive the requirement to of testing or inspection as required by the Contract Documents and the IBC. The Contractor shall bear all costs associated with recovering missing tests including but not limited to the cost of the cost of disassembling, testing or inspecting, reassembling, and any indirect time or cost impacts of a missing required test or inspection.
- D. Typed test reports shall be provided by the testing agency to the DEN Project Manager

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as specified in Part 1 of this Section Weekly Summary Reports. The test reports shall be numbered sequentially in chronological order. Individual tests shall be numbered sequentially. The reports and tests shall also be organized per specification section. All test results must be reviewed and signed by a registered licensed engineer in the State of Colorado. The signature represents that the test procedures used are in strict conformance with the applicable testing standard, the calculated data are true and accurate, the tools and equipment used were in calibration, the sample was not contaminated and the persons running the test were qualified.

- E. A plan of work and administrative procedure shall be established to assure that all test and inspections frequency required are performed and all defects are tracked and retested and re-inspected to meet all applicable specifications, codes, and standards.
- F. The Contractor shall track all tests performed on the daily reports and shall submit a statement for each phase of the Work showing all elements of Quality have been completed and all defects are addressed or scheduled to be addressed prior to covering the Work.
- G. Reports of inspections and test activities are record documents and shall be maintained in a manner that provides integrity of item identification, acceptability, and traceability. Reports shall identify the following:
 - 1. Contractor's name.
 - 2. DEN Contract number and title.
 - 3. Testing Agency name.
 - 4. Name of items inspected/tested including a physical description and, as applicable, model and make.
 - 5. Quantity of items.
 - 6. Inspection/test procedure used. If national standards are used, any deviation from these standards.
 - 7. Date the sample was taken and the date the test was made.
 - 8. Location, by coordinates, building grid or station number, of where tests and/or samplings were performed including environmental condition where applicable. Include plan drawing indicating location of test and work item sampled or tested.
 - 9. Name of inspector/tester.
 - 10. In the event the testing or sampling is a re-test or re-sampling, reference the previous respective testing or sampling report.
 - 11. Specified requirements in the Contract that the item must meet. Include reference to technical specification section and paragraphs.
 - 12. Acceptability.
 - 13. Deviations/nonconformance.
 - 14. Corrective action.
 - 15. Evaluation of results.
 - 16. All information required for the specific test as specified in the applicable ASTM standard.
 - 17. Signature of authorized evaluator.

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1.6 WEEKLY SUMMARY REPORTS

- A. The SIA/OTA shall prepare and submit to the DEN Project Manager a weekly summary report each week that summarizes by specification section all work activities and results for the quality control tests and inspections conducted during that period.
- B. The weekly summary report shall be submitted within two (2) weeks from the end of the reporting period. At a minimum, the weekly summary report shall identify all inspections, test types, test locations, testers, test results, specifications, whether the test passed or failed, quantity of materials placed and the number of tests performed for each material, and the material supplier, installer and Contractor.
- C. Re-tests shall be identified in a fashion that easily correlates to the failing test. Any failed tests that have not been corrected when the report is published shall be highlighted and noted in the cover letter of the report. The SIA shall identify costs of re-testing or additional site visits required due to scheduling changes by the Contractor. A current Corrective Action Report log (CAR) shall also be included in the weekly summary report.
- D. The weekly report shall be submitted per Section 013300 "Submittal Procedures" and Section 013325 "Shop and Working Drawings, Product Data and Samples" requirements.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 CORRECTION OR REMOVAL OF NONCONFORMING MATERIAL

A. The Contractor is obligated to correct or remove nonconforming materials, whether in place or not. If necessary, the DEN Project Manager will send written notification to the Contractor to correct or remove the defective materials from the Project. If the Contractor fails to respond, the DEN Project Manager may order correction, removal, and/or replacement of defective materials by others, in which case the Contractor shall bear all costs incurred by such actions.

3.2 PERFORMANCE

A. If the DEN Project Manager determines that the SIA or its personnel are not effectively enforcing or performing the testing and documentation requirements specified in the Contract, the DEN Project Manager will, state in writing, the requirement for the Contractor to remove and replace SIA or such personnel at no cost to DEN.

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3.3 CONTROL OF MEASURING AND TEST EQUIPMENT

- A. The SIA shall select measuring and test equipment in such a manner as to provide proper type, range, accuracy, calibration, and tolerance for determining compliance with specified requirements. Measuring and test devices shall be calibrated, adjusted and maintained at prescribed intervals prior to use based upon equipment stability and other conditions affecting measurement.
- B. Provisions shall be made for the proper handling and storage of equipment. Calibration shall be accomplished using certified standards that have a known traceable relationship to the National Institute of Standards and Technology. Every calibrated measuring and test device shall show the current status, date of last calibration and the due date for the next calibration. Calibration records shall be maintained onsite as quality records and shall be made available for inspection upon the DEN Project Manager's request.

PART 4 - MEASUREMENT

4.1 METHOD OF MEASUREMENT

A. No separate measurement shall be made for Work under the Section. DEN Project Management Team staff will track all costs and remark the conditions and track all associated impacts for credits to the City. The contractor record of the same is only valid if signed by the DEN Project Manager or authorized representative.

PART 5 - PAYMENT

5.1 METHOD OF PAYMENT

- A. No separate payment will be made for Work under this Section.
- B. Refer to Title 17 Inspection and Defects in the General Contract Conditions, 2011 Edition, for guidance on payment methods.

END OF SECTION 014545

TECHNICAL SPECIFICATIONS 01 GENERAL REQUIREMENTS 015050 MOBILIZATION DENVER INTERNATIONAL AIRPORT TUNNEL SEWER REPAIRS CONTRACT NO. 202056250

SECTION 015050 - MOBILIZATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.
- B. Section 012910 "Schedule of Values"

1.2 SUMMARY

- A. The Work specified in this Section consists of preparatory work and operations including, but not limited to the following:
 - 1. Those necessary for the movement of personnel, equipment, supplies, and incidentals to the work site.
 - 2. For the establishment of all offices, buildings and other facilities necessary for the Work on the Project.
 - 3. For all other work and operations that must be performed or costs incurred prior to beginning work on the various Contract items on the work site.

1.3 SUBMITTALS

- A. Refer to Section 013300 "Submittal Procedures" and Section 013325 "Shop and Working Drawings, Product Data and Samples" for submittal procedures.
- B. Submit a Mobilization Schedule a minimum of fourteen (14) days prior to first billing for mobilization.

1.4 DELIVERY

A. Delivery to the work site of construction tools, equipment, materials, and supplies shall be accomplished in conformance with all local governing regulations.

PART 2 - PRODUCTS

2.1 PRODUCTS

A. Provide construction tools, equipment, materials, and supplies of the type and quantities that will facilitate the timely execution of the Work.

TECHNICAL SPECIFICATIONS 01 GENERAL REQUIREMENTS 015050 MOBILIZATION DENVER INTERNATIONAL AIRPORT TUNNEL SEWER REPAIRS CONTRACT NO. 202056250

PART 3 - EXECUTION

3.1 EXECUTION AND REMOVAL

A. Provide personnel, products, construction materials, equipment, tools, and supplies at the work site at the time they are required and scheduled to be installed or utilized.

PART 4 - MEASUREMENT

4.1 METHOD OF MEASUREMENT

A. Refer to Section 013210 - Schedule, for details regarding mobilization scheduling, billing, and payment.

PART 5 - PAYMENT

5.1 METHOD OF PAYMENT

A. Refer to Article 1104 - Changes in the Work, Contract Price or Contract Time of the General Contract Conditions, 2011 Edition.

END OF SECTION 015050

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SECTION 015210 - TEMPORARY FACILITIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.
- B. Related Requirements:
 - 1. Section 011000 "Summary" for work restrictions and limitations on utility interruptions.
 - 2. Section 312319 "Dewatering" for disposal of ground water at Project site.

1.3 DESCRIPTION

- A. The Work specified in this Section consists of furnishing, installing, operating, maintaining, and removing temporary construction barriers, enclosures, and field facilities including the Contractor's construction offices, staging areas, yards, storage areas, electrical power, telephone, water, fire protection, and sanitary service.
- B. Construction Offices, Construction Yards and Storage Areas:
 - 1. The Contractor's offices, construction yards laydown and storage areas shall be located as shown on the Contract Drawings and/or as designated by the DEN Project Manager. All construction offices, staging areas, and material storage areas are to occur within these areas.
 - 2. Any activity that is expected to result in disturbance of the ground surface equal to or greater than one acre or part of a larger project that is expected to disturb equal to or greater than one acre, is required to be identified in their Erosion Control permit. These areas include, but are not limited to, laydowns, borrow areas, stockpiles, and storage areas regardless of the location.
 - 3. All areas of ground disturbance are required to be stabilized in accordance with State, local, and airport rules and regulations prior to permit termination and/or closure of the Contract.
 - 4. The Contractor shall restore any area on DEN property that becomes contaminated as a result of its operations in accordance with Airport Rule and Regulation 180. Restoration shall be either to applicable standards under Federal and State law or to such other levels as may be required by the Manager of Aviation, at the Manager's sole discretion.

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- 5. All temporary facility sites must be inspected prior to Contract closeout.
 - a. The DEN Project Manager or authorized representative shall conduct an inspection of contractor areas used during the life of the project. These areas include but are not limited to, staging areas, laydown areas, borrow areas, and contractor yards and offices.
- 6. The DEN Project Manager will ensure these areas have been properly stabilized in accordance with DEN Rules and Regulations and required permits. Site must be restored to the condition in which the City initially provided to the Contractor. A representative from DEN Environmental Services shall be present during the final walk through.
- 7. Contractor materials shall be managed in accordance with all applicable Environmental Regulations.
- 8. Temporary facilities which the Contractor desires to locate in secondary laydown and staging areas adjacent to the Work or within the project limits are subject to approval by the DEN Project Manager. If approved, these areas must also be included as part of their erosion control permit.
- 9. Access to and security of the Contractor's construction offices, yard, temporary facilities, and storage areas shall be as shown on the Contract Drawings or as specified in the Contract Special Conditions.
- Contractor Field Office:
 - a. The Contractor shall acquire all necessary permits for installation and construction work related to the Contractor's field office and fencing.
 - b. The Contractor shall provide, as part of the Contractor's on-site field office, a conference room for weekly meetings. Minimum size to accommodate [fifteen (15)] [<specify number>] people with the currently approved schedule posted on a wall. The conference room shall have [network connection with a monitor] and [one (1)] [<insert number>] available telephone.
 - c. Jack the mobile office unit off its wheels and provide support. Enclose the underside of the trailer with weatherproof skirting.
 - d. Install tie downs in compliance with all applicable codes.
 - e. Provide access to the field office and easily accessible space for parking [six (6)] [<insert number>] full size passenger automobiles as a minimum. Grade the field office site, access roadway, and parking area for drainage, and surface with gravel paving or crushed stone.
 - f. Water and sewer lines to the field office, if installed, shall be installed so they will not freeze.
- 11. All Contractor Storage Yards must be fenced. Submit fencing plan and typical details to DEN Project Manager at least seven (7) days before planned execution for review and acceptance.
- 12. In accordance with Denver Fire Department Requirements, all Temporary Facilities shall have signage that lists the following information:
 - a. Company Name
 - b. Contact Telephone Number
 - c. Facility Address

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C. Electrical Service

- 1. Provide lighting and power for field offices, storage facilities and other construction facilities and areas.
- 2. Provide power centers for electrically operated and controlled construction facilities including tools, equipment, testing equipment, interior construction lighting, heating, cooling and ventilation equipment.
- 3. Provide night security lighting at secured areas within construction limits at offices, storage facilities, temporary facilities and excavated areas.
- 4. Provide battery operated or equivalent emergency lighting facilities at construction areas where normal light failures would cause employees to be subjected to hazardous conditions. Test such facilities monthly and maintain a record of these tests for the DEN Project Manager's review.
- Contractor shall bear all costs of temporary electric service permits, fees, and deposits required by the governing authorities, and connection charges and temporary easements including installation, maintenance, and removal of equipment.

D. Telephone/Communications Service:

- 1. The Contractor shall furnish, install, and maintain at least two (2) telephones in the Contractor's main field office. These phones shall be manned at all times by the Contractor's personnel or by an answering machine when personnel are not in the field office.
- 2. Comply with requirements of Division 26 Sections.

E. Water Service:

- The Contractor shall make all connections and extensions required and shall make use of water in direct support of the Work. The Contractor shall install an approved Water Department tap at the City's water source prior to obtaining any water. The Contractor shall arrange and pay for its supply/distribution system from the City's point of connection. The location and alignment of the Contractor's temporary supply/distribution system must be approved by the DEN Project Manager prior to its installation. The Contractor shall leave in place all above ground and underground water distribution facilities unless otherwise directed by the DEN Project Manager.
- 2. The Contractor shall not use in place fire hydrants or standpipes as sources for construction water or potable water.
- 3. Comply with requirements of Division 22 Sections.

F. Fire Protection:

- 1. Furnish, install, and maintain temporary portable fire protection equipment throughout the construction period at all buildings (including the project site), maintenance shops, and fuel storage on all large construction equipment and at the location of any flammable materials or construction materials.
- 2. Comply with requirements of Division 21 Sections.

G. Sanitary Service:

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- 1. Furnish, install, and maintain temporary sanitary facilities and services throughout the construction period.
- 2. Ensure that separate or single user toilets shall be provided to ensure privacy between the sexes.
- 3. Provide general washing facilities adequate for the number of employees.
- 4. Provide special washing facilities adequate for the number of employees engaged in the application of paints, coating, and other volatile or hazardous materials.

1.4 SUBMITTALS

- A. Refer to Section 013300 "Submittal Procedures" and Section 013325 "Shop and Working Drawings, Product Data and Samples" for submittal procedures.
- B. Submit a shop drawing within five (5) days of the Notice to Proceed that shows the following:
 - 1. Temporary facilities equipment and materials (include manufacturer's literature).
 - 2. Details and layout of temporary installations including fences, roads, parking, buildings, storage areas, signage, and drainage plans.
 - 3. Lighting plan showing temporary lighting facilities, electrical service panel location, electrical circuit diagram, and anticipated light level on the working roadway, pathway, or construction surface.
 - 4. As-built description of any temporary underground utilities referenced to the Airport grid and benchmark system within five (5) days of completion of the installation.
 - 5. Copies of all permits for all temporary facilities.

1.5 QUALITY CONTROL

A. Provide products for, and the execution of, the Work of this Section that will satisfy the requirements of all applicable codes. Provide products that satisfy the requirements of the applicable codes.

PART 2 - PRODUCTS

2.1 ELECTRICAL SERVICE

A. Provide temporary power and lighting equipment consisting of fixtures, transformers, panel boards, groundings, lamps, switches, poles, conduits and wiring sized and capable of continuous service and having adequate capacity to ensure a complete operating system. Comply with NEMA and Division 26 requirements.

2.2 TELEPHONE/COMMUNICATIONS SERVICE

A. Provide equipment that is compatible with that of the current DEN service provider and

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the telephone exchange to which the Contractor connects.

2.3 POTABLE WATER SERVICE

- A. Provide sanitary materials and equipment that satisfies the requirements of codes and regulations pertaining to temporary water systems. Bottled products may be used if those products comply with codes. Clearly label portable containers having a dispensing tap and used only for drinking water. Provide single service disposable cups and a sanitary container for dispensing cups. A trash receptacle shall be provided and maintained beside each portable water supply.
- B. If paints, coatings and other volatile or hazardous materials injurious to humans will be applied as part of the Contract, provide washing facilities with warm water of approximately 120 degrees F.

2.4 FIRE PROTECTION

A. Fire extinguishers shall be UL rated and shall comply with the International Fire Code with City of Denver amendments.

2.5 SANITARY SERVICE

- A. Provide materials and equipment adequate for the intended purposes, which will neither create unsanitary conditions nor violate the codes applicable to temporary sanitary facilities. Enclosures for toilet and washing facilities shall be weatherproof, sight proof, ventilated and sturdy, and shall be maintained in clean conditions.
- Provide portable type toilet facilities that satisfy the requirements of OSHA.
- C. Provide washing facilities as needed. Furnish soap, single-service paper towels, towel dispenser, and towel receptacle.

PART 3 - EXECUTION

3.1 ELECTRICAL SERVICE

- A. The approximate location of primary power lines is shown on the Construction Drawings. The Contractor shall locate electrical service where it will not interfere with equipment, storage spaces, traffic, and prosecution of the Work or the work of others. Installation shall present a neat and orderly appearance and shall be structurally sound. Maintain service in a manner that will ensure continuous electrical service and safe working conditions.
- B. Comply with requirements of Division 26 Sections.

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3.2 TELEPHONE/COMMUNICATION SERVICE

A. Install temporary telephone service in a neat and orderly manner, and make structurally and electrically sound to ensure continuous service. Modify, relocate, and extend, as work progress requires. Place conduit and cable where those products will not interfere with traffic, work areas, materials, handling equipment, storage areas, and the work of other contractors. Service lines may be aerial.

3.3 WATER SERVICE

- A. Install the systems in a neat and orderly manner. Make them structurally and mechanically sound. Provide continuous service. Modify, relocate, and extend the systems as the Work progresses.
- B. Comply with requirements of Division 22 Sections.
- C. Locate systems where they will be convenient to work stations, sanitary facilities, and first aid station but will not interfere with traffic, work areas, materials handling equipment, storage areas, or the work of other contractors.
- D. Provide sanitary bubbler drinking fountains if potable water service is available. Disinfect water piping before using for the potable water service.
- E. Install vacuum breakers, backflow preventers, and similar devices in a manner and location that will prevent temporary water from returning to the water mains.
- F. Do not incorporate any part of temporary water distribution system into the permanent water distribution system.

3.4 FIRE PROTECTION

- A. Install products in conformance with the requirements of the applicable Denver Fire Department and OSHA regulations.
 - 1. Provide functional, approved fire extinguishers that are clearly identified for fire and an accessible supply of water during the period of construction. These fire extinguishers shall remain in place until permanent fire protection systems are functional.
- B. Instruct construction personnel as to location and use of temporary fire protection equipment.
- C. Comply with requirements of Division 21 Sections.

3.5 SANITARY SERVICE

A. Place temporary sanitary and washing facilities in a neat and orderly manner within the limits of the Work and convenient to the workstations. Make these facilities structurally

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and mechanically sound. Modify, relocate, and extend the facilities as required by progress of the Work.

- B. Service toilets at those time intervals that will minimize the accumulation of wastes and prevent creation of unsanitary conditions, but not less than once a week.
- C. The waste from the sanitary and wash facilities shall be disposed of in accordance with all applicable rules, regulations, and laws and with the least environmental impact.

3.6 FENCING

A. Contact all utility service companies prior to planning fence location and post locations for certification of current utilities. Locate pothole posts planned within five (5) feet of known utilities.

3.7 SIGNAGE

A. Contractor shall not provide any signage for temporary facilities without prior approval from the DEN Project Manager.

3.8 REMOVAL

A. The Contractor shall locate all temporary facilities including the underground utilities so they can be completely removed without damaging permanent work or the work site of other contractors.

PART 4 - MEASUREMENT

4.1 METHOD OF MEASUREMENT

A. No separate measurement shall be made for work under this Section.

PART 5 - PAYMENT

5.1 METHOD OF PAYMENT

A. No separate payment will be made for work under this section.

END OF SECTION 015210

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TECHNICAL SPECIFICATIONS 01 GENERAL REQUIREMENTS 015215 FIELD OFFICES DENVER INTERNATIONAL AIRPORT TUNNEL SEWER REPAIRS CONTRACT NO. 202056250

SECTION 015215 - FIELD OFFICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. The Work specified in this Section consists of furnishing, installing and maintaining a field office at the work site for the City's use.
- B. DEN will try to obtain location in Concourse A basement currently used for other project.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

PART 4 - MEASUREMENT

4.1 METHOD OF MEASUREMENT

A. No separate measurement shall be made for work under this Section.

PART 5 - PAYMENT

5.1 PAYMENT

A. No separate payment will be made for work under this Section.

END OF SECTION 015215

TECHNICAL SPECIFICATIONS 01 GENERAL REQUIREMENTS 015215 FIELD OFFICES DENVER INTERNATIONAL AIRPORT TUNNEL SEWER REPAIRS CONTRACT NO. 202056250

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SECTION 015525 - TRAFFIC CONTROL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. The Work specified in this Section consists of furnishing plans and designs for traffic control and haul routes, implementing these plans with all necessary personnel and equipment. Installation may require but not be limited to signage, cones, flaggers, signal lights, lighting and temporary roads.
- B. All Work must be in conformance with the "Manual of Uniform Traffic Control Devices for Streets and Highways" (MUTCD) and CDOT Standard Plans regarding traffic control.
- C. The Contractor must coordinate the Contractor's proposed traffic control needs with the needs of other contractors on the airport construction site in writing through the DEN Project Manager.
- D. Refer to Article 805 Protection of Street and Road System in the General Contract Conditions, 2011 Edition.

1.3 QUALITY CONTROL

- A. Temporary signal work shall conform to CDOT Standard Plans and the current version of the CDOT Standard Specifications.
- B. Designate a qualified person to inspect and test traffic control devices daily and to ascertain that those devices are continuously operating, serviceable, in place, and clean.
- C. Provide certified personnel who will be responsible for design, implementation, and inspection of traffic control needs.

1.4 SUBMITTALS

- A. Refer to Technical Specifications Sections 013300 "Submittals" and 013325 "Shop and Working Drawings, Product Data and Samples" for submittal procedures.
- B. Submit a Traffic Control Plan (TCP) that includes, at a minimum, the following list of

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items for approval before starting Work. Submit an updated TCP when necessary to modify traffic operation or undertake a construction activity that creates a different traffic pattern:

- 1. Traffic blockade and reductions anticipated to be caused by construction operations.
- 2. Temporary detours.
- A Method of Handling Traffic (MHT) must be submitted and approved by the DEN Project Manager, which at a minimum will show and describe proposed location, dates, hours, and duration of detours, vehicular traffic routing, and management, traffic control devices for implementing detours and details of barricades.
- C. Submit Haul Route Plan for both on- and off-site hauls. The Haul Route Plan shall be submitted 30 days prior to hauling any permanent material. The Plan shall be updated as the Contractor's plans change.
- D. Specific Traffic Considerations: The DEN Project Manager may require the Contractor to revise the Traffic Control Plan to address traffic considerations not included in the Contractor's plan.
- E. Shutdown requests for any impact to traffic must be submitted for approval a minimum of five days before the intended shutdown. These requests will be made through the DEN Project Manager.

PART 2 - PRODUCTS

2.1 TRAFFIC CONTROL DEVICES

A. Devices including signs, delineators, striping, barriers, barricades, and high-level warning devices shall conform to the latest revision of the MUTCD and the latest revision of the Colorado Department of Transportation Standard Plans.

PART 3 - EXECUTION

3.1 TEMPORARY TRAFFIC CONTROL DEVICES

- A. Place temporary control devices in a manner that allows for the smooth flow of traffic at the posted speed limit, limiting hazards or abrupt changes in direction.
- B. Place traffic cones or delineators as directed by the MUTCD. Operate warning lights between sunset and sunrise.
- C. Place control devices so that approaching traffic is alerted to hazards and variances to normal traffic patterns.
- D. Clean and repair damaged devices or replace them with new devices as required.

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3.2 TEMPORARY TRAFFIC STRIPING AND PAVEMENT MARKINGS

- A. Full-compliance striping is required at all times per the MUTCD.
- B. Temporary signs must be replaced with permanent signing within three days per the MUTCD.

3.3 FLAGGERS

A. Furnish flaggers where required for safety and by the MHT.

3.4 CONSTRUCTION VEHICULAR TRAFFIC

- A. Restrict construction vehicles to approved haul routes.
- B. Haul routes on the airfield must be approved by Security.

3.5 CONTROLLING VEHICULAR AND PEDESTRIAN FLOW ADJACENT TO WORK SITE

A. Ensure that construction operations will not impede normal traffic. Where work is in the area of pedestrian or occupant activity, the Contractor shall detail a plan for managing pedestrian traffic safely. Refer to Title 8 - Protection of Persons and Property, Section 801.1 in the General Contract Conditions, 2011 Edition.

3.6 SIGNS

- A. Refer to Title 8, Article 802 Protective Devices and Safety Precautions in the General Contract Conditions, 2011 Edition.
 - 1. The Contractor must contact the DEN Project Manager a minimum of five (5) working days in advance of construction for installation, relocation, or removal of regulatory parking signs.
- B. Coordinate and pay any expense associated with the furnishing and installation of all parking regulatory signs, such as "No Stopping Any Time," etc., at the work site.
- C. Furnish and install any necessary advance detour or guidance signing.
- D. Authorize, modify, and install regulatory parking controls and vehicle turn restrictions.
- E. Implement those traffic control modifications outside of the traffic control zone that are necessary to manage diverted traffic.

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PART 4 - MEASUREMENT

4.1 METHOD OF MEASUREMENT

A. No separate measurement shall be made for work under this Section.

PART 5 - PAYMENT

5.1 PAYMENT

A. Payment for Traffic Control under these schedules will be for work performed under the applicable unit price item or lump sum bid item.

END OF SECTION 015525

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SECTION 015719 - TEMPORARY ENVIRONMENTAL CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Specifications Conditions and other Division 01 Specification Sections, apply to this Section.
- B. Title 8 Protection of Persons and Property in the General Contract Conditions, 2011 Edition, specifically the following articles:
 - 1. Article 806 Protection of Drainage Ways
 - 2. Article 807 Protection of Environment
 - 3. Article 808 Hazardous and Explosive Materials or Substances
 - 4. Article 809 Archaeological and Historical Discoveries
- C. Denver Municipal Airport System Rules and Regulations, Part 180-Environmental Management.
- D. DEN Environmental Management System (EMS)

1.2 SUMMARY

- A. The Work specified in this Section consists of identifying, and avoiding or mitigating adverse environmental impacts to air, water, soil, and other natural resources caused by construction activities.
 - 1. The Contractor, in conducting any activity on airport property or in conducting work for an airport project not on airport property, shall comply with all applicable airport, local, state, and federal rules, regulations, statutes, laws, and orders.
 - 2. Work shall not commence on any project until all FAA approvals have been received, applicable permits have been issued and signed by permitee, and all inspection requirements have been satisfied in accordance with State and local permitting requirements.

1.3 SUBMITTALS

- A. Refer to Section 013300 "Submittal Procedures" and Section 013325 "Shop and Working Drawings, Product Data and Samples" for submittal procedures.
- B. Within ten (10) days after Notice to Proceed on a task order, the Contractor shall submit the following if applicable, unless waived by the DEN Project Manager:
 - 1. Submittals pertaining to water quality management:

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- a. Construction Activities Stormwater Discharge Permit
 - 1) City and County of Denver
 - a) Sewer Use & Drainage Permit (SUDP)
 - b) Construction Activities Stormwater Discharge Permit (CASDP)
 - 2) Colorado Department of Public Health and Environment (CDPHE) Colorado Discharge Permit System (CDPS) Authorization to Discharge (Contractor need not submit a copy of the general permit or the general permit rationale)
 - a) CDPS General Permit for Stormwater Discharges Associated with Construction Activities
 - b) CDPS General Permit for Associated with Non-Extractive Industrial Activity
 - c) CDPS General Permit for Construction Dewatering Discharges (Prior to obtaining a CDPS General Permit for Construction Dewatering Discharges permit, the Contractor shall submit a draft permit application and the final permit application for DEN review and approval PRIOR to submittal to CDPHE. The Contractor need not submit a copy of the general permit or the general permit rationale.
 - 3) Upon request the contractor shall provide the following documentation
 - a) Stormwater Management Plan (SWMP)
 - b) CASDP Inactivation Request
 - c) CDPS Notice of Termination
 - d) Permit Transfer Application
 - e) Modification Application
 - f) Discharge Monitoring Reports (DMRs)
 - g) A copy of the well permit from the state Division of Water Resources for every new well that diverts or for the monitoring of groundwater. (A draft copy of the Notice of Intent for any borehole structure filed with the state Division of Water Resources).
 - h) Section 404 related permitting (Prior to obtaining a permit issued by the US Army Corps of Engineers, the contractor shall submit a draft copy of the application and coordinate with efforts DEN Environmental Services).
 - 4) Revisions or amendments to the CASMP by the Contractor: At the completion of the Project, after final stabilization has been achieved and accepted in accordance with CASDP requirements, the Contractor shall submit a copy of the CASDP Inactivation Request.
- 2. Submittals pertaining to sewage holding tanks associated with buildings and trailers: For purposes of this Section, the generic term "sewage holding tank"

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means "individual sewage disposal system (ISDS)", "privy vault", "septic tank", or "septic system":

- a. Draft copy of the permit application for a sewage holding tank.
- b. Copy of the Sewer Use & Drainage Permit issued by the Denver Department of Public Works.
- c. Copy of the ISDS permit issued by the Denver Department of Environmental Health.
- 3. Submittals pertaining to air quality management:
 - 1) Copy of any permit issued by the CDPHE Air Pollution Control Division (APCD)
- 4. Submittals pertaining to storage tanks and containers:
 - a. Copy of the approved application issued by the State of Colorado,
 Department of Labor and Employment, Division of Oil and Public Safety, for
 installation of petroleum, or other regulated substances, storage tanks
 located on airport property and used for the Project.
 - b. Copy of permits issued by the Denver Fire Department for storage tank installations, storage tank removals, and hazardous materials use/storage.
 - c. Copy of Spill Prevention, Control, and Countermeasure (SPCC) Plan for petroleum storage tanks and containers with capacity of 55 gallons of oil or greater located on airport property and used for the Project.
- 5. Copies of any other plans, permits, permit applications, correspondence with regulatory agencies, including violations, waste manifests, results of laboratory analyses, or other environmental documentation required for the Project not previously identified herein.

1.4 RELATED DOCUMENTS

- A. Code of Federal Regulations (CFR) Publications, including, but not limited to, the following:
 - 1. 33 CFR 323 Permits for discharges of dredged or fill materials into waters of the United States.
 - 2. 40 CFR Protection of Environment.
 - 3. 49 CFR 171-180 Hazardous Materials Transportation Regulations.
- B. Colorado Revised Statutes, including, but not limited to, the following:
 - 1. Water Quality Control, Title 25, Article 8.
 - 2. Air Quality Control, Title 25, Article 7.
 - 3. Hazardous Waste, Title 25, Article 15.
 - 4. Noise Abatement, Title 25, Article 12.
 - 5. Petroleum Storage Tanks, Title 8, Article 20.5.
 - 6. Liquefied Petroleum Gas (LPG) Storage Tanks, Title 8, Article 20, Part 4.

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- 7. Solid waste regulations.
- C. City and County of Denver Executive Orders, including, but not limited to, the following:
 - 1. Executive Order No. 115 Required Use of Denver-Arapahoe Disposal Site (Landfill).
 - 2. Executive Order No. 123 Greenprint Denver Office and Sustainability Policy.
 - 3. Denver Revised Municipal Code, Title II, Sections 48-44 and 48-93 Solid Waste.
- D. City and County of Denver Construction Sites Program.
- E. City and County of Denver Construction Activities Stormwater Management Plans Information Guide.
- F. Any other applicable rules, regulations, ordinances, and guidance must be followed as applicable.
- G. Refer to Section 013300 "Submittal Procedures" and 013325 "Shop and Working Drawings, Product Data and Samples" for submittal procedures.
- H. Refer to Section 017419 "Construction Waste Management" for waste management requirements

PART 2 - PRODUCTS

2.1 PRODUCTS

- A. Products required for the Work shall meet all Environmental Requirements.
- B. At a minimum, products for erosion and sediment control must conform to the technical requirements contained in the City and County of Denver "Construction Activities Stormwater Manual" and the current version of the "Urban Drainage and Flood Control District's Urban Storm Drainage Criteria Manual, Volume 3: Best Management Practices".

PART 3 - EXECUTION

3.1 AIR POLLUTION CONTROLS

A. The Contractor shall use appropriate control measures to comply with applicable air quality permit requirements. Additionally, the Contractor must be aware of the following procedures and techniques while conducting construction activities on DEN property. NOTE: Application of dust control measures should be discussed and outlined in the Dust Control Plan.

ISSUED FOR: CONFORMED DOCUMENTS 12/22/20

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- 1. Apply water as needed to the construction site haul roads, disturbed surface areas and public access roads as needed to suppress dust. The use of chemical stabilizer can be requested by the Contractor. The type of stabilizer to be used and locations of use must be included in the Dust Control Plan, which must be approved by the DEN Project Manager prior to application.
- 2. The Contractor shall suspend all earthmoving activities if wind speed exceeds 30 mph. For purposes of this Section, the generic term "earthmoving" means clearing, grubbing, excavation, topsoil removal, backfilling, embankment work, grading, trenching, drilling, and installation of borings. Contractors are expected to check wind speeds with the airport's ramp tower to demonstrate compliance with this requirement. In addition, the Project may be shut down if two of three of the Runway Visual Range (RVR) instruments read visibility of 2,400 feet or less. The instruments are used by FAA Control Tower personnel to ensure safe aircraft operations. Costs for shutdowns due to wind velocities or RVR readings shall not be grounds for delay or extra cost claims.
- B. Burning of materials is strictly prohibited on DEN property.

3.2 WATER POLLUTION CONTROLS

- A. The Contractor shall conduct construction activities in accordance with all applicable permit requirements. In addition, the Contractor shall comply with the following procedures and requirements while conducting activities on DEN property:
 - 1. Water encountered during construction cannot be discharged to the stormwater system or placed onto the ground surface without a permit AND prior written approval by the DEN Project Manager. If groundwater or stormwater is anticipated to be encountered and the Contractor desires to discharge it to the stormwater system or onto the ground surface, then the Contractor must obtain an appropriate CDPS discharge permit in advance of the discharge unless this activity is specifically authorized under the CDPS Construction Stormwater Permit.
 - 2. If water is encountered and the Contractor desires to discharge these waters to the sanitary sewer system, then the Contractor must obtain approval from DEN Environmental Services in advance of the discharge.
 - 3. The Contractor shall ensure that stormwater that comes in contact with storage areas does not become impacted and discharged to the stormwater sewer system or to an impervious surface. Furthermore, any materials in storage areas shall not be stored directly on the ground.
 - 4. The Contractor shall not operate any valves, sluice gates or other drainage appurtenances related to any DEN sewer system without the prior approval of both the DEN Project Manager and DEN Environmental Services. Any violation of this directive may result in the payment of a financial penalty by the Contractor if the State of Colorado assesses such a penalty.

3.3 EROSION CONTROL AND SEDIMENTATION CONTROL

A. This Work consists of constructing, installing, maintaining and removing, if required,

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temporary and permanent control measures during the life of the Contract (and possibly afterward) until the Contractor achieves final stabilization of the site to prevent or minimize erosion, sedimentation, and pollution of any state waters in accordance with all Environmental Requirements.

- B. The Contractor is responsible for compliance with all requirements in accordance with the CASDP, the City and County of Denver Construction Sites Program, the approved CASMP, and CDPS-issued permits.
- C. Temporary facilities, including but not limited to storage areas, laydowns, borrow areas, and contractor offices and work yards, shall be managed in accordance with Section 015210 "Temporary Facilities".
- D. Clean soil fill may be stockpiled in any area that has been previously approved and signed off by the DEN Section Manager of Construction, Design and Planning, and Environmental Services. Soil stockpiles are considered a potential pollutant source and must be addressed in the CASMP and/or SWMP.
- E. Make immediately available, upon the DEN Project Managers request, all labor, material, and equipment judged appropriate by the DEN Project Manager to maintain suitable erosion and sediment control features. These actions requested by the DEN Project Manager take precedence over all other aspects of project construction that have need of the same labor, material and equipment, except those aspects required to prevent loss of life or severe property damage.

3.4 CONSTRUCTION OF CONTROL MEASURES FOR EROSION AND SEDIMENTATION

- A. The Contractor must install control measures in accordance with the most recent version of the "Urban Drainage and Flood Control District's Urban Storm Drainage Criteria Manual, Volume 3: Best Management Practices and the City and County of Denver Construction Activities Stormwater Manual".
 - 1. Deviations from these two documents are allowed with written consent from the City and County of Denver NPDES Inspector.

3.5 STORAGE OF OIL, FUELS, OR HAZARDOUS SUBSTANCES

- A. The Contractor shall prevent oil or other hazardous substances, as defined in federal and state regulations, from entering the ground, drainage or local bodies of water, and shall provide containment, diversionary structures, or equipment to prevent discharged oil from reaching a watercourse and take immediate action to contain and clean up any spill of oily substances, petroleum products, or hazardous substances. The Contractor shall provide one or more of the following preventive systems at each petroleum storage site:
 - 1. Dikes, berms, or retaining walls capable of containing at least 100% of the volume of the largest single tank and equipped with sufficient freeboard to

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- contain precipitation events. The secondary containment must be "sufficiently impermeable" to prevent a release to the environment.
- 2. Culverting, curbing, guttering, or other similar structures capable of containing at least 100% of the volume of the largest single tank and freeboarding from precipitation.
- B. The provision of such preventive systems shall be subject to acceptance by the DEN Project Manager prior to tank installation and shall follow the SPCC regulations (40 CFR Part 112).
- C. Prior to bringing any containers of 55-gallon or above capacity onto DEN property for storage of oil, fuel, or other petroleum substances, the Contractor may be required to prepare an SPCC Plan that conforms to 40 CFR Part 112. The plan must include a certification either from a Professional Engineer or self-certification, if applicable, as well as management approval from the legally responsible Contractor representative.

3.6 SPILL RESPONSE AND NOTIFICATION

- A. The Contractor is responsible for all spills that may result from its activities. For ANY suspected or confirmed release or spill of oil, fuel, solid waste, hazardous waste, unknown materials, lavatory waste, or miscellaneous chemicals, etc., that occurs as the result of the Contractor's activities on DEN property, the Contractor is required to take immediate action to mitigate the release or spill and report it to the DEN Project Manager and to the DEN Communications Center at (303) 342-4200.
- B. The Contractor is responsible for notifying the appropriate regulatory agency in the event suspected and/or confirmed releases are identified, in accordance with regulatory requirements.

3.7 SITE REMEDIATION AND RESTORATION

- A. The Contractor shall be required to perform any necessary site assessment and remediation activities required by applicable regulatory agency.
- B. During routine construction activities, the Contractor is required to manage soils using typical construction techniques. The Contractor must differentiate between soils and wastes, including contaminated soils versus clean soils, and determine those materials that can remain on DEN property and those that must be transported off site for disposal.
- C. During all construction activities that require the management of soils, the Contractor must notify the DEN Project Manager and DEN Environmental Services (ES) that soils being managed may be impacted by industrial activities conducted at the airport. "Process knowledge" pertaining to previous use and/or impact for the locations under construction can be used to determine whether impacted soils are probable. Also, common indices such as soil staining and odor can be used as a determination for the probable condition. If probable contamination conditions are suspected, the Contractor will notify the DEN Project Manager and DEN ES immediately. At that time, which may

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be before the Work is initiated where indicative conditions exist, all work will cease until a sampling and analysis approach is determined and implemented by the proper responder.

- D. If the site conditions warrant based on evidence of spillage or contamination, process knowledge, and/or visual or olfactory observations, the Contractor may be required to conduct sampling and analysis to confirm that no remedial action is required. Prior to conducting any removal activities, the Contractor must provide a Scope of Work to the DEN Project Manager describing the proposed site assessment activities.
- E. The impacted project will modify its operation to include a segregation area where probable impacted soils can be placed, stored, and sampled for characterization. Should the soil materials be determined to exceed the applicable standards, the DEN Project Manager, in conjunction with DEN ES, will be responsible for the proper disposal of these materials. Materials that are determined to contain contamination levels below the applicable standards can be considered clean soils and placed back into the excavation or reused elsewhere on DEN property. In accordance with Part 3 of this Section, materials removed that are suitable for recycling will be placed within areas designated on DEN to store these materials.
- F. The Contractor shall restore any area on the Airport that becomes contaminated as a result of its operations. Restoration shall be either to applicable standards under federal and state law or to such other levels as may be required by the Manager of Aviation, at the Manager's sole discretion. Such restoration shall be completed at the earliest possible time, and the Contractor's restoration shall be subject to inspection and approval by the Manager of Aviation or duly authorized representative. See DEN Rules & Regulations Part 180.

PART 4 - MEASUREMENT

4.1 METHOD OF MEASUREMENT

A. No separate measurement shall be made for work under this Section.

PART 5 - PAYMENT

5.1 METHOD OF PAYMENT

- A. No separate payment will be made for work under this Section.
- B. The Contractor shall be responsible for payment of all fees associated with review of environmental permit applications and processing of environmental permits.

END OF SECTION 015719

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SECTION 015810 - TEMPORARY SIGNS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes requirements for the following:
 - 1. Construction signage visible to the public.
 - 2. Temporary directional, informational, or regulatory signage.

B. Related Requirements:

1. Section 015210 "Temporary Facilities" for requirements for temporary facilities.

1.3 SUBMITTALS

A. Submit temporary sign finishes, materials and paint, etc., for review and approval by DEN Project Manager prior to any fabrication.

1.4 QUALITY CONTROL

A. Construction and other temporary signage visible to the public must be commercial grade quality, professionally fabricated, and installed based on the location of the sign. The Contractor is responsible to maintain this signage until it is no longer needed, and to remove signage from the site.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Interior signs that are visible and not physically accessible to the public may be made of rigid board, such as "Gator Board", with vinyl messages. All edges must be finished and all fasteners concealed.
- B. Interior signs that are visible and physically accessible by the public must be vandal-proof. Acceptable examples of vandal-proof signs are messages applied second surface with concealed tamperproof fasteners.

TECHNICAL SPECIFICATIONS 01 GENERAL REQUIREMENTS 015810 TEMPORARY SIGNS DENVER INTERNATIONAL AIRPORT TUNNEL SEWER REPAIRS CONTRACT NO. 202056250

C. Exterior signs must be vandal-proof and fabricated of weatherproof materials.

PART 3 - EXECUTION

3.1 HARDWARE

- A. Interior Signs: Attach with suitable adhesive and/or tape which may be removed without damage to finishes.
- B. Exterior Signs: Must be secured to withstand site conditions and varying weather conditions.

3.2 SIGN FINISHES, MATERIALS, AND PAINT

A. Provide temporary signage to reflect permanent sign design and/or as directed by the DEN Signage Design Project Manager. Submit temporary sign finishes, materials and paint, etc., for review and approval prior to any fabrication.

3.3 MAINTENANCE

A. The Contractor shall maintain temporary signage until it is no longer needed, as determined by DEN Project Manager.

3.4 REMOVAL

A. The Contractor shall remove all temporary signs, and clean and refurbish affected areas to their original, or intended, condition.

PART 4 - MEASUREMENT

4.1 METHOD OF MEASUREMENT

A. No separate measurement shall be made for work under this Section.

PART 5 - PAYMENT

5.1 METHOD OF PAYMENT

A. No separate payment will be made for work under this Section.

END OF SECTION 015810

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SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.

B. Related Requirements:

- 1. Section 012300 "Alternates" for products selected under an alternate.
- 2. Section 012510 "Substitutions" for requests for substitutions.
- 3. Section 014225 "Reference Standards" for applicable industry standards for products specified.

1.3 DEFINITIONS

- A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
 - 2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
 - 3. Comparable Product: Product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- B. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.

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1.4 SUBMITTALS

- A. Comparable Product Requests: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number, title, and Drawing numbers and titles.
 - 1. Include data to indicate compliance with the requirements specified in "Comparable Products" Article.
 - 2. DEN Project manager's Action: If necessary, DEN Project Manager will request additional information or documentation for evaluation within one week of receipt of a comparable product request. DEN Project Manager will notify Contractor[through Construction Manager] of approval or rejection of proposed comparable product request within [15] <Insert number> days of receipt of request, or [seven (7)] <Insert number> days of receipt of additional information or documentation, whichever is later.
 - Form of Approval: As specified in Section 013300 "Submittal Procedures."
 - b. Use product specified if DEN Project Manager does not issue a decision on use of a comparable product request within time allocated.
- B. Basis-of-Design Product Specification Submittal: Comply with requirements in Section 013300 "Submittal Procedures." Show compliance with requirements.

1.5 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.
 - 1. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
 - 2. If a dispute arises between contractors over concurrently selectable but incompatible products, DEN Project Manager will determine which products shall be used.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.
- B. Delivery and Handling:
 - 1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
 - Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
 - 3. Deliver products to Project site in an undamaged condition in manufacturer's

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- original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
- 4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.

C. Storage:

- 1. Store products to allow for inspection and measurement of quantity or counting of units
- 2. Store materials in a manner that will not endanger Project structure.
- 3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
- 4. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
- 5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
- 6. Protect stored products from damage and liquids from freezing.
- 7. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

1.7 PRODUCT WARRANTIES

- A. Refer to Title 18 Warranties, Guarantees and Corrective Work of the General Contract Conditions, 2011 Edition.
- B. Submittal Time: Comply with requirements in Section 017720 "Contract Closeout."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged, and unless otherwise indicated, are new at time of installation.
 - 1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
 - 2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
 - 3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
 - 4. Where products are accompanied by the term "as selected," DEN Project Manager will make selection.
 - 5. Descriptive, performance, and reference standard requirements in the

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Specifications establish salient characteristics of products.

6. Or Equal: For products specified by name and accompanied by the term "or equal," or "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.

B. Product Selection Procedures:

- 1. Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
- 2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
- 3. Products:
 - a. Restricted List: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience [will] [will not] be considered[unless otherwise indicated].
 - b. Nonrestricted List: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product.

4. Manufacturers:

- a. Restricted List: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience [will] [will not] be considered[unless otherwise indicated].
- Nonrestricted List: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed manufacturer's product.
- 5. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.
- C. Visual Matching Specification: Where Specifications require "match DEN Project Manager's sample", provide a product that complies with requirements and matches DEN Project Manager's sample. DEN Project Manager's decision will be final on

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whether a proposed product matches.

- If no product available within specified category matches and complies with other specified requirements, comply with requirements in Section 012510 "Substitutions" for proposal of product.
- D. Visual Selection Specification: Where Specifications include the phrase "as selected by DEN Project Manager from manufacturer's full range" or similar phrase, select a product that complies with requirements. DEN Project Manager will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 COMPARABLE PRODUCTS

- A. Conditions for Consideration: DEN Project Manager will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, DEN Project Manager may return requests without action, except to record noncompliance with these requirements:
 - 1. Evidence that the proposed product does not require revisions to the Contract Documents that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
 - 2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 - 3. Evidence that proposed product provides specified warranty.
 - 4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
 - 5. Samples, if requested.

2.3 MATERIALS

- A. General: Comply with requirements specified in other Sections.
 - For projects requiring compliance with sustainable design and construction practices and procedures, use products for patching that comply with requirements in Section 018113.13 "Sustainable Design Requirements - LEED for New Construction and Major Renovations," Section 018113.16 "Sustainable Design Requirements - LEED for Commercial Interiors," Section 018113.19 "Sustainable Design Requirements - LEED for Core and Shell Development."
- B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
 - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to DEN Project Manager for the visual

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and functional performance of in-place materials.

PART 3 - EXECUTION (Not Used)

PART 4 - MEASUREMENT

- 4.1 METHOD OF MEASUREMENT
 - A. No separate measurement shall be made for work under this Section.

PART 5 - PAYMENT

- 5.1 METHOD OF PAYMENT
 - A. No separate payment will be made for work under this Section.

END OF SECTION 016000

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SECTION 016610 - STORAGE AND PROTECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. The Work specified in this Section consists of providing storage and protection of the materials, products and supplies which are to be incorporated into the construction and indicating such storage areas on the working drawings with the location and dates when such areas will be available for each purpose.

B. Related Requirements:

1. Section 015210 "Temporary Facilities" for requirements for temporary facilities.

1.3 SUBMITTALS

- A. Refer to Technical Specifications Sections 013300 "Submittal Procedures" and 013325 "Shop and Working Drawings, Product Data and Samples" for submittal procedures. Submit concurrently with submittals required in Section 013223 "Construction Layout, As-built and Quantity Surveys".
- B. Submit working drawings showing locations of storage areas not indicated on the Contract Drawings.
- C. Submit descriptions of proposed methods and locations for storing and protecting products.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Materials required for the storage and protection of the items specified shall be durable, weatherproof and either factory finished or painted to present an appearance acceptable to the DEN Project Manager and the City. Storage facilities shall be uniform in appearance with similar materials used to the maximum extent possible.

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PART 3 - EXECUTION

3.1 GENERAL REQUIREMENTS OF EXECUTION

- A. Palletize materials, products, and supplies that are to be incorporated into the construction and stored off the ground. Material and equipment shall be stored only in those areas that are indicated as storage areas on the Contract Drawings and on the reviewed and accepted working drawings.
 - 1. Store these items in a manner which will prevent damage and which will facilitate inspection.
 - 2. Leave seals, tags, and labels intact and legible.
 - 3. Maintain access to products to allow inspection.
 - 4. Protect products that would be affected by adverse environmental conditions.
- B. Periodically inspect stored products to ensure that products are being stored as stipulated and that they are free from damage and deterioration.
 - 1. Any damaged or deteriorated materials must be replaced immediately to avoid delays in the project schedule.
- C. Do not remove items from storage until they are to be incorporated into the Work.
- D. The Contractor shall ensure that all protective wrappings and coverings are secure and ballasted to prevent any items from deterioration and/or subsequent dislodgment. All items on the work site that are subject to becoming windborne shall be ballasted or anchored.

3.2 HANDLING AND TRANSPORTATION

A. Handling:

- 1. Avoid bending, scraping, or overstressing products. Protect projecting parts by blocking with wood, by providing bracing or by other approved methods.
- 2. Protect products from soiling and moisture by wrapping or by other approved means.
- 3. Package small parts in containers such as boxes, crates, or barrels to avoid dispersal and loss. Firmly secure an itemized list and description of contents to each container.

B. Transportation:

1. Conduct the loading, transporting, unloading, and storage of products so that they are kept clean and free from damage.

3.3 STORAGE

A. Store items in a manner that shall prevent damage to the DEN's property. Do not store

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hydraulic fluids, gasoline, liquid petroleum, gases, explosives, diesel fuel, and other flammables in excavations. Petroleum products and chemicals must be stored in closed containers within secondary containment.

- B. Provide sheltered weather-tight or heated weather-tight storage as required for products subject to weather damage.
- C. Provide blocking, platforms or skids for products subject to damage by contact with the ground.
- D. All material shall be stored according to the manufacturer's recommendations. Any material that has to be stored within specified temperature or humidity ranges shall have a 24-hour continuously written recording made of the applicable condition. Should the recording show that the material was not stored within the recommended ranges the material shall be considered defective and in nonconformance. If a certification from the manufacturer's engineering design representative is provided stating that the actual variations are acceptable and will in no way harm the material or affect warranties, then the deficiency will be considered corrected.
- E. Store hazardous material separately, with all material marked with a label showing the hazard and how to treat exposure to the material. Store incompatible materials separately.
- F. Extra materials that are left over at the completion of the Work shall be removed from the Project site by the Contractor unless they are required to be delivered to DEN as per Contract Document requirements for maintenance stock.

3.4 LABELS

A. Storage cabinets and sheds that will contain flammable substances and explosive substances shall be labeled "FLAMMABLE - KEEP FIRE AWAY" and "NO SMOKING" with conspicuous, bold lettering and conforming to OSHA requirements. Flammable substances shall be stored in flammable storage cabinets that conform to OSHA requirements.

PART 4 - MEASUREMENT

4.1 METHOD OF MEASUREMENT

A. No separate measurement shall be made for work under this Section.

PART 5 - PAYMENT

5.1 METHOD OF PAYMENT

A. The cost of the Work described in this Section shall be included in the applicable unit

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price item, work order, or lump sum bid item.

B. Reference Section 012910 "Schedule of Values" for additional requirements for the possible payment of stored material.

END OF SECTION 016610

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SECTION 017330 - CUTTING AND PATCHING

PART 1 - GENERAL

- A. RELATED DOCUMENTS
- B. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.
- C. Refer to Article 316, Cutting and Patching the Work in the General Contract Conditions, 2011 Edition

1.2 SUMMARY

- A. Section Includes:
 - 1. Project information.
 - 2. Work covered by Contract Documents.
 - 3. Phased construction.
 - Work by DEN.
 - 5. Work under separate contracts.
 - 6. Future work.
 - 7. Purchase contracts.
 - 8. DEN-furnished products.
 - 9. Contractor-furnished, DEN-installed products.
 - 10. Access to site.
 - 11. Coordination with occupants.
 - 12. Work restrictions.
 - 13. Specification and drawing conventions.
 - 14. Miscellaneous provisions.

B. Related Requirements:

- 1. Section 015210 "Temporary Facilities" for limitations and procedures governing temporary use of DEN's facilities.
- 2. Section 015719 "Temporary Environmental Controls" for environmental control requirements.
- 3. Section 024119 "Selective Demolition" for selective demolition of structures and other elements.
- 4. Section 099123 "Interior Painting" for interior painting of areas of cutting and patching.
- C. Alternates: Refer to Division 01 Section 012300 "Alternates" for description of Work in this Section affected by Alternates.

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1.3 DEFINITIONS

- A. Cutting: Removal of existing construction to permit installation of or to perform other Work.
- B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

1.4 SUBMITTALS

- A. Refer to Section 013300 "Submittal Procedures" and Section 013325 "Shop and Working Drawings, Product Data and Samples" for submittal procedures.
- B. Cutting and Patching Proposal: Submit a proposal describing procedures at least thirty (30) calendar days before the time cutting and patching will be performed, requesting approval to proceed. Obtain approval of cutting and patching proposal by DEN Project Manager before cutting and patching. Approval does not waive right to later require removal and replacement of unsatisfactory work. The proposal shall include at least the following information:
 - 1. Identification of the Contract and the Contractor's name.
 - 2. Description of proposed work:
 - a. Scope of cutting, patching, alteration, or excavation.
 - b. The necessity for cutting or alteration.
 - c. Drawing showing location of the requested cutting or alteration, along with radar or x-ray report.
 - d. Trades that will execute the work.
 - e. Products proposed to be used.
 - f. Extent of refinishing to be done.
 - g. Alternatives to cutting and patching.
 - 3. Changes to Existing Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in the building's appearance and other significant visual elements.
 - 4. Utilities: List utilities that cutting and patching procedures will disturb or affect. List utilities that will be relocated and those that will be temporarily out of service. Indicate how long service will be disrupted and proposed dates of interruption of service. Additionally, verify and locate anything in or behind the area prior to cutting.
 - 5. Proposed Dust Control and Noise Control Measures: Submit a statement or drawing that indicates the measures proposed for use, proposed locations, and proposed time frame for their operation. Identify options if proposed measures are later determined to be inadequate.
 - 6. Effect on the work and other surrounding work or on structural or weatherproof integrity of Project.
 - 7. Written concurrence of each contractor or entity whose work will be affected.
 - 8. Cost proposal, when applicable.

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1.5 QUALITY CONTROL

- A. Operational Elements: Do not cut and patch ANY operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance, decreased operational life or safety unless approved by the DEN Project Manager. Operations elements may include, but are not limited to the following:
 - 1. Primary operational systems and equipment.
 - 2. Air or smoke barriers.
 - 3. Fire protection systems.
 - 4. Control systems.
 - 5. Communication systems.
 - 6. Conveying systems.
 - 7. Electrical wiring systems.
 - 8. Operating systems of special construction as described in Divisions 13 and 26.
 - 9. HVAC systems.
- B. Miscellaneous Elements: Do not cut and patch ANY of the following elements or related components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or those results in increased maintenance, decreased operational life or safety unless approved by the DEN Project Manager. Miscellaneous elements may include, but are not limited to the following:
 - 1. Water, moisture, or vapor barriers.
 - 2. Membranes and flashings.
 - 3. Exterior curtain wall construction.
 - 4. Equipment supports.
 - 5. Piping, ductwork, vessels and equipment.
 - 6. Noise control and vibration control elements and systems.
 - 7. Stud walls.
 - 8. Roofing system
- C. Visual Elements: Do not cut and patch ANY construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would reduce, in DEN's sole opinion, the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactorily manner.
 - 1. If possible, retain the original installer or fabricator to cut and patch exposed Work listed below. If it is impossible to engage the original installer or fabricator, engage another recognized, experienced, and specialized firm as approved by the DEN Project Manager. Visual elements may include, but are not limited to:
 - a. Stonework and stone masonry.
 - b. Ornamental metal.
 - c. Matched-veneer woodwork.
 - d. Preformed metal panels.
 - e. Firestopping.
 - f. Window wall systems.

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- g. Terrazzo.
- h. Flooring.
- i. Wall coverings and finishes.
- j. HVAC enclosures, cabinets, or covers.
- D. Cutting and Patching Conference: Before proceeding, meet at the Project site with all parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

1.6 WARRANTY

- A. Existing Warranties: Remove, replace, patch and repair materials and surfaces cut or damaged during cutting and patching operations by methods and with materials so as not to void existing warranties.
 - All effort shall be made to engage the original installer or fabricator to patch the
 exposed Work listed below that is damaged during selective demolition. If it is
 impossible to engage the original installer or fabricator, engage another
 recognized, experienced and specialized firm as approved by the DEN Project
 Manager:
 - a. Processed concrete finishes.
 - b. Stonework and stone masonry.
 - c. Ornamental metal.
 - d. Matched-veneer woodwork.
 - e. Preformed metal panels.
 - f. Firestopping.
 - g. Window wall systems.
 - h. Terrazzo.
 - i. Flooring.
 - j. Wall coverings and finishes.
 - k. HVAC enclosures, cabinets, or covers.

1.7 MATERIALS

- A. General: All patching material shall be of the type specified for the material being patched. Comply with requirements specified in other specifications Sections.
- B. Existing Materials: Use materials identical to existing materials. For exposed surfaces, use materials that visually and texturally match existing adjacent surfaces to the fullest extent possible.
 - If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of existing materials as approved by the DEN Project Manager.

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PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.
 - 1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers. Provide additional substrates or materials if required to achieve desired final results of patching work.
 - 2. Immediately notify the DEN Project Manager, in writing, of unsuitable, unsafe, or unsatisfactory conditions.
 - 3. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.
 - 4. Proceed with patching only after construction operations requiring cutting are complete and inspected by the DEN Project Manager.

3.2 PREPARATION

- A. Temporary Support: Provide temporary support of Work to be cut to ensure structural value or integrity.
- B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of the Project that might be exposed during cutting and patching operations.
- C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- D. Existing Services: Where existing services are required to be removed, relocated, or abandoned, bypass such services before cutting to avoid or minimize interruption of services to occupied areas. Do not interrupt services in without approval from the appropriate authority. Refer to the appropriate Shutdown specification/procedures for applicable services.

3.3 POLLUTION CONTROLS

- A. Dust Control: Use water mist, temporary enclosures, and other suitable methods to limit the spread of dust and dirt. Comply with governing environmental protection regulations. Reference Section 015719 "Temporary Environmental Controls" for requirements.
 - 1. Do not use water when it may damage existing construction or create hazardous or objectionable conditions such as ice, flooding, and pollution.

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- 2. Wet mop floors to eliminate trackable dirt and wipe down walls and doors of demolition enclosures. Vacuum carpeted areas. Professionally clean carpeted areas if required.
- 3. For outdoor concrete saw cutting operations, slurry waste must be vacuumed up immediately to prevent migration off-site to pervious surfaces, surface waters or drains.
- B. Disposal: Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 - 1. Concrete slurry waste must be disposed of properly in accordance with applicable airport, local and state rules and regulations.
- C. Cleaning: Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to the condition existing before selective demolition operations began.

3.4 PERFORMANCE

- A. General: Employ skilled workers to perform cutting and patching. Execute cutting and demolition by methods that will prevent damage to other work and will provide a proper surface to receive patching.
 - 1. Cut existing construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
 - 2. Execute fitting and adjustment of products to provide a finished installation to comply with specified products, functions, tolerance, and finishes.
 - 3. Restore work that has been cut or removed; install new products to provide complete work in accordance with requirements of the Contract Documents.
 - 4. Fit work airtight and fire safe to pipes, sleeves, ducts, conduit, and other penetrations through surfaces as required by the Contract Documents.
- B. Cutting: Cut existing construction by sawing, drilling, breaking, chipping, grinding, and other similar operations, including excavation, using methods least likely to damage elements retained to adjoining construction. If possible, review proposed procedures with original installer and comply with original installer's written recommendations.
 - In general, use ground fault hand or small power tools designed (to short if metal is hit) for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to the size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 - 2. Existing Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
 - 3. Concrete: Use a cutting machine such as an abrasive saw or a diamond-core drill.
 - 4. Proceed with patching after construction operations requiring cutting are complete.

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- C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other specification Sections.
 - 1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
 - 2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing. For continuous surfaces, refinish entire unit to the nearest break line. For an assembly, refinish entire unit.
 - 3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
 - a. Where patching occurs on a painted surface, apply primer and intermediate paint coats over the patch and apply the final coat over the entire unbroken surface containing the patch. Provide additional coats until the patch blends with adjacent surfaces.
 - 4. Ceilings: Patch, repair or re-hang existing ceilings as necessary to provide an even-plane surface of uniform appearance.
- D. Fire Rated Construction: Where rated elements are cut, reconstruct to approved designs to provide original fire rating.

3.5 CORE DRILLING

- A. The Contractor shall execute a minimum of x-rays or ground penetrating radar (GPR) at each location planned for core drilling prior to submittal to the DEN Project Manager and to utility representatives for approval for core drilling. The request for approval shall be submitted a minimum seven (7) days before Core Drilling. The request for approval shall indicate on the x-ray or radar information regarding alternate locations or core drilling to avoid structural members and any embedded conduit. Embedded conduit may be metallic or plastic. The x-ray or radar system shall be capable of detecting both types of conduit.
- B. Core drilled "cores" and the core-drilled opening shall be inspected by DEN Project Manager Representatives prior to installation of any systems in new openings.
- C. The request for approval shall indicate on the x-ray or radar information regarding alternate locations or core drilling to avoid structural members and any embedded conduit. Embedded conduit may be metallic or plastic. The x-ray or radar system shall be capable of detecting both types of conduit.
- D. X-ray activities may not be performed during hours of activity or occupancy in the area of the x-ray system. The Contractor shall provide all manpower and barriers required

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to secure the areas affected by x-ray activities.

PART 4 - MEASUREMENT

- 4.1 METHOD OF MEASUREMENT
 - A. No separate measurement shall be made for work under this Section.

PART 5 - PAYMENT

- 5.1 METHOD OF PAYMENT
 - A. No separate payment will be made for work under this Section.

END OF SECTION 017330

TECHNICAL SPECIFICATIONS
01 GENERAL REQUIREMENTS
017419
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

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SECTION 017419 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This section describes the requirements for the disposal, recovery, reuse or recycling of non-hazardous and non-asbestos containing construction and demolition waste for both LEED and non-LEED projects. Note that LEED projects may have more specific requirements than identified in this section.
- B. Waste materials shall be managed in accordance with all local, state, and federal regulations.

C. Related Requirements:

- 1. Section 013300 "Submittal Procedures" for submittal procedures.
- 2. Section 013325 "Shop and Working Drawings, Product Data and Samples" for submittal procedures.
- 3. Section 015719 "Temporary Environmental Controls" for environmental control procedures.
- 4. Section 018113 "Sustainable LEED Requirements" for LEED requirements.
- 5. Section 024116 "Structure Demolition" for disposition of waste resulting from demolition of buildings, structures, and site improvements[, and for disposition of hazardous waste].
- 6. Section 024119 "Selective Structure Demolition" for disposition of waste resulting from partial demolition of buildings, structures, and site improvements[, and for disposition of hazardous waste].
- 7. Section 042000 "Unit Masonry" for disposal requirements for masonry waste.
- 8. Section 311000 "Site Clearing" for disposition of waste resulting from site clearing and removal of above- and below-grade improvements.

1.3 DEFINITIONS

A. Solid Waste: means any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, air pollution control facility, or other discarded material; including solid, liquid, semisolid, or contained gaseous material resulting from industrial operations, commercial operations or community activities. Solid waste does not include any solid or dissolved materials in domestic sewage, or agricultural wastes, or solid or dissolved materials in irrigation return flows, or industrial discharges which are point sources subject to permits under the provisions of the "Colorado Water"

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Quality Control Act", Title 25, Article 8, CRS or materials handled at facilities licensed pursuant to the provisions on "Radiation Control Act" in Title 25, Article 11, CRS. Solid waste does not include:

- 1. Materials handled at facilities licensed pursuant to the provisions on radiation control in Article 11 of Title 25, C.R.S.
- 2. Excluded scrap metal that is being recycled.
- 3. Shredded circuit boards that are being recycled.
- B. Salvaged Materials: Defined as materials that exist on the site that can be reused, either on site or by another entity
- C. Recyclable Materials: Defined as materials that exist on site or are generated during the construction process that can be recycled and/or remanufactured into another material. Recyclable waste includes, but is not limited to, the following:
 - 1. Concrete.
 - 2. Asphalt
 - 3. Ferrous and non-ferrous metals.
 - 4. Untreated wood, engineered wood.
 - 5. Gypsum wallboard.
 - 6. Corrugated cardboard, paper goods.
 - Plastic.
 - 8. Glass, insulation.
 - 9. Carpet.
 - 10. Paints, fabric.
 - 11. Rubber.
 - 12. Stone and brick.
- D. Hazardous Waste: Per 6 CCR 1007-3, those substances and materials defined or classified as such by the Hazardous Waste Commission pursuant to 25-15-302, C.R.S., as amended. Also, see hazardous waste definition per 40 CFR 261.3.
- E. Asbestos Containing Materials: Per 5 CCR 1001-10: Regulation No. 8, The Control of Hazardous Air Pollutants, Part B The Control of Asbestos- material containing more than 1% asbestos

1.4 SUBMITTALS

- A. The Contractor shall submit a list of materials and products used with Safety Data Sheets (SDS). Examples include chemicals, solvents, fuels, building materials, etc.
 - 1. A hardcopy or electronic link to the SDS for all materials and products used, if applicable.
 - 2. Identify storage methods for materials, including measures to segregate incompatible materials.
- B. The Contractor shall submit a Waste Management Plan to the DEN Project Manager and DEN Environmental Services. Minimum Waste Management Plan requirements

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include the following:

- 1. A list of all waste streams generated by the project
 - For each waste stream listed, the Contractor shall identify the handling/transportation method, the disposal method, and the disposal facility utilized.
 - b. If the Contractor anticipates generation of hazardous waste, the Contractor shall provide its USEPA (generator) identification number.
- 2. Pollution Prevention Measures
 - a. Describe best practices that will reduce waste. For example, waste reduction measures, requiring vendors to deliver materials in reusable packaging, etc.
- 3. Waste Management Plan Training.
- 4. Storage of materials.
- 5. Spill response.
- C. Approval of Contractor's Waste Management Plan does not relieve the contractor of responsibility for compliance with applicable environmental regulations.
 - 1. The contractor shall maintain a record of the amounts of construction and demolition waste generated, recycled, reused, salvaged, or disposed of, in pounds for review.
 - 2. Hauling manifest records shall be maintained and available for review. Manifest forms are available from the DEN Project Manager

PART 2 - PRODUCTS

- 2.1 A list of all materials and products used. Examples include chemicals, solvents, solvents, fuels, curing compounds, etc.
 - A. A hardcopy or electronic link to SDSs for all materials and products used.
 - B. Identify storage methods, including measures to segregate incompatible materials.
 - C. Refer to the Waste Management Plan

PART 3 - EXECUTION

- A. The Contractor shall not wash down equipment in such a manner as to flush grease, oils, detergents, and other contaminants onto the project site or onto airport property unless the waste is properly contained, treated, and disposed of.
- B. DEN maintains two dry concrete and asphalt recycling yards used for the accumulation and crushing of asphalt and concrete. The South Yard is located on 71st Ave just east

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CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

of Jackson Gap Street. The North Yard is located on the south side of 110th, west of Queensburg Street.

- C. Concrete washwater cannot be discharged to surface waters or to storm sewer systems. Colorado Discharge Permit System (CDPS) coverage conditionally authorizes discharges to the ground of concrete wash water from washing of tools and concrete mixer chutes when appropriate best management practices (BMPs) are implemented.
 - 1. A bermed containment area that allows discharge water to infiltrate or evaporate;
 - a. Alternatives to bermed containment areas include portable concrete washout bins, and industrial washout containment systems where the accumulated waste is removed from the site and disposed of properly.
 - 2. Use of the washout site should be temporary (less than one year);
 - 3. The washout site should not be located in an area where shallow groundwater may be present, such as near natural drainages, springs, or wetlands
 - 4. Upon termination of the washout site, accumulated solid waste, which includes concrete waste and contaminated soils, must be removed from the site and disposed of properly.
- D. Rejected loads and/or other wet concrete or asphalt materials are PROHIBITED TO BE PLACED ANYWHERE on DEN property. These materials must be returned to the facility of origination or other permitted facility for proper disposal.
- E. Concrete saw cutting slurry must be properly contained and disposed of.
- F. Unknown or questionable materials encountered during construction activities, must immediately be reported to the DEN Communications Center at (303) 342-4200 and the DEN Project Manager.

PART 4 - MEASUREMENT

- 4.1 METHOD OF MEASUREMENT
 - A. No separate measurement shall be made for work under this Section.

PART 5 - PAYMENT

- 5.1 METHOD OF PAYMENT
 - A. No separate payment will be made for work under this Section.

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SECTION 017420 - CLEANING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. The Work specified in this section consists of maintaining a clean, orderly, hazard free work site during construction, and final cleaning for the City's Final Acceptance. Failure to maintain the work site will be grounds for withholding monthly payments until corrected to the satisfaction of the DEN Project Manager.
- B. Refer to Article 325, Cleanup During Construction in the General Contract Conditions, 2011 Edition

1.3 JOB CONDITIONS

A. Safety Requirements

Maintain the work site in a neat, orderly, and hazard-free manner in conformance with all federal, state, and local rules, codes, regulations, and orders, including all OSHA requirements, until Final Acceptance of the Work. Keep catwalks, underground structures, work site walks, sidewalks, roadways, and streets, along with public and private walkways adjacent to the work site, free from hazards caused by construction activities. Inspect those facilities regularly for hazardous conditions caused by construction activities.

B. Hazards Control:

- 1. Store waste materials in properly labeled waste containers. This includes solid wastes, hazardous wastes, universal wastes, etc.
- 2. Store volatile wastes in covered metal containers and remove those wastes from work site daily.
- 3. Do not accumulate wastes that create hazardous conditions.
- 4. If volatile and noxious substances are being used in spaces that are not naturally ventilated adequately, provide artificial ventilation.
- 5. Hazard controls shall conform to the applicable federal, state, and local rules and regulations.
- 6. Provide appropriate waste receptacles in all areas in which employees are working. Waste receptacles shall be kept covered at all times. All materials on site shall be anchored and covered to prevent any objects from becoming wind-borne.

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C. Access:

1. Maintain the work site to permit access by other City contractors as required and to allow access by emergency personnel.

1.4 SUBMITTALS

- A. Washing Plan: The Contractor shall prepare a plan describing the specific procedures and materials to be utilized for any equipment, vehicle, etc., washing activities. The plan must be submitted to the DEN Project Manager and approved by the DEN Project Manager and Environmental Services.
 - Outdoor washing at DEN is not allowed unless the materials will be collected or managed in a manner to ensure that they will not enter the municipally owned separate storm sewer system (MS4). The materials can only be disposed at a location pre-approved by DEN Environmental Services (refer to DEN SWMP). Failure to comply with this requirement would result in the discharge of non-stormwater.
 - a. Outdoor wash materials that contain soaps or other cleaning chemicals must be collected and disposed of off site
 - Indoor washing must be conducted in accordance with the Best Management Practices (BMPs) detailed in the DEN SWMP. Refer to Section 015719 "Environmental Controls". In addition, all indoor washing must be conducted in a manner that ensures that there are no prohibited discharges to the sanitary sewer system.
 - All wash-water that will be disposed of into the sanitary sewer must comply with City and County Denver rules and regulations pertaining to prohibited discharges.

PART 2 - PRODUCTS

2.1 CLEANING MATERIALS

- A. Utilize the type of cleaning materials recommended by the manufacturer for the surfaces to be cleaned.
- B. Maintain current Safety Data Sheets (SDS) on site for all chemicals. DEN Environmental Services must approve the chemicals used prior to discharge to the sanitary sewer system.
- C. Ensure proper disposal of all wastes generated from the use of these materials. The Contractor must ensure compliance with all environmental regulations. No wastes can be disposed of on DEN property.

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PART 3 - EXECUTION

3.1 INTERIM CLEANING

- A. Clean the work site every shift/workday for the duration of the construction Contract. Maintain structures, grounds, storage areas and other areas of work site, including public and private properties immediately adjacent to work site, free from accumulations of waste materials caused by construction operations. Place waste materials in covered metal containers. All hard concrete, steel, wood, and finished walking surfaces shall be swept clean daily.
- B. Remove or secure loose material on open decks and on other exposed surfaces at the end of each workday or more often in a manner that will maintain the work site hazard free. Secure material in a manner that will prevent dislodgment by wind and other forces.
- C. Sprinkle waste materials with water or acceptable chemical palliative to prevent blowing of dust.
- D. Promptly empty waste containers when they become full and legally dispose of the contents at dumping areas off the City's property.
- E. Control the handling of waste materials. Do not permit materials to be dropped or thrown from structures.
- F. Immediately remove spillage of construction related materials from haul routes, work site, private property, public rights of way, or on the Denver International Airport site.
- G. Clean only when dust and other contaminants will not precipitate upon newly painted surfaces.
- H. Cleaning shall be done in accordance with manufacturer's recommendation.
- I. Cleaning shall be done in a manner and using such materials as to not damage the Work.
- J. Clean areas prior to painting or applying adhesive.
- K. Clean all heating and cooling systems prior to operations. If the Contractor is allowed to use the heating and cooling system, it shall be cleaned prior to testing.
- L. Clean all areas that will be concealed prior to concealment.
- M. Dispose of all fluids according to the approved Washing Plan.

3.2 FINAL CLEANING

A. Refer to Article, Clean-up Upon Completion in the General Contract Conditions, 2011 Edition. Additionally, the Contractor, shall at a minimum, complete the following:

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- 1. Inspect interior and exterior surfaces, including concealed spaces, in preparation for completion and acceptance.
- 2. Remove dirt, dust, litter, corrosion, solvents, discursive paint, stains, and extraneous markings.
- 3. Remove surplus materials, except those materials intended for maintenance.
- 4. Remove all tools, appliances, equipment, and temporary facilities used in the construction.
- 5. Remove detachable labels and tags. File them with the manufacturer's specifications for that specific material for the City's records.
- 6. Repair damaged materials to the specified finish or remove and replace.
- 7. After all trades have completed their work and just before Final Acceptance, all catch basins, manholes, drains, strainers and filters shall be cleaned; roadway, driveways, floors, steps and walks shall be swept. Interior building areas shall be vacuum cleaned and mopped.
- 8. Final cleanup applies to all areas, whether previously occupied and operational or not.
- 9. Dispose of all fluids according to the approved Washing Plan.

PART 4 - MEASUREMENT

4.1 METHOD OF MEASUREMENT

A. No separate measurement shall be made for work under this Section.

PART 5 - PAYMENT

5.1 METHOD OF PAYMENT

A. No separate payment will be made for work under this Section.

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SECTION 017515 - SYSTEM STARTUP, TESTING AND TRAINING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Provide complete startup, testing, and operator training services to ensure operability of all systems supplied.
- B. Coordinate all start-up and testing with DEN Commissioning Authority or DEN Asset Management through the DEN Project Manager.

1.3 SUBMITTALS

- A. Refer to Section 013300 "Submittal Procedures" and 013325 "Shop and Working Drawings, Product Data and Samples" for submittal procedures. Submit the following:
 - 1. Test procedures.
 - 2. Test reports.
 - 3. Training outline.
- B. Submit Qualification Data: For [facilitator] [instructor] [videographer].
- C. Attendance Record: For each training module submit the following:
 - 1. Module title
 - 2. Module description
 - 3. Length of instruction time
 - 4. Participant names
- D. Evaluations: For each participant and for each training module, submit results and documentation of performance-based test.

1.4 QUALITY ASSURANCE

A. Facilitator Qualifications: A firm or individual experienced in training or educating personnel in a training program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.

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- B. Instructor Qualifications: A factory-authorized service representative, experienced in operation and maintenance procedures and training.
- C. Videographer Qualifications: A professional videographer who is experienced photographing demonstration and training events similar to those required. Recordings shall be high-resolution [720p] [1080p][4k][8k] with a minimum framerate of 60Hz
- D. Preinstruction Conference: Conduct conference at Project site to comply with requirements in Section 014510 "Contractor Quality Control". Review methods and procedures related to demonstration and training including, but not limited to, the following:
 - 1. Inspect and discuss locations and other facilities required for instruction.
 - 2. Review and finalize instruction schedule and verify availability of educational materials, instructor's personnel, audiovisual equipment, and facilities needed to avoid delays. Ensure that students are notified at least 14 [insert other] days prior to the start of instruction.
 - 3. Review required content of instruction.
 - 4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

1.5 COORDINATION

- A. Coordinate instruction schedule with DEN's operations. Adjust schedule as required to minimize disrupting DEN's operations and to ensure availability of DEN's personnel.
 As required, include multiple classed to accommodate various shifts
- B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.
- C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by DEN Project Manager.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 FIELD TESTS AND ADJUSTMENTS

A. All electrical and mechanical equipment including the interfaces with control systems and the communication system, and all alarm and operating modes for each piece of equipment, shall be tested by the Contractor to the satisfaction of the DEN Project Manager before any facility is put into operation. Tests shall be as specified herein and shall be made to determine whether the equipment has been properly assembled, aligned and connected. Any changes, adjustments, or replacements required to make

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the equipment operate as specified shall be carried out by the Contractor as part of the Work.

- At least thirty (30) days before the time allowed in the construction schedule for commencing startup and testing procedures, the Contractor shall submit to the DEN Project Manager six (6) copies of the detailed procedures the Contractor proposes for testing and startup of all electrical and mechanical equipment. These procedures are submitted for review and acceptance by DEN.
- 2. The Contractor's startup and testing procedures shall include detailed descriptions of all pre-operational hardware, electrical, mechanical and instrumentation used for testing work.
 - a. Each control device, item of electrical, mechanical and instrumentation equipment, and all control circuits shall be considered in the testing procedures which shall be designed in a logical sequence to ensure that all equipment has been properly serviced, aligned, connected, wired, calibrated and adjusted prior to operation.
 - b. Motors shall be tested in accordance with ANSI/IEEE Publication 112. The Contractor is advised that failure to observe these precautions may place the acceptability of the subject equipment in question, and the Contractor may either be required to demonstrate that the equipment has not been damaged, or replace it as determined by the DEN Project Manager.
- 3. Testing procedures shall be designed to duplicate as nearly as possible all conditions of operations and shall be carefully selected to ensure that the equipment is not damaged. All filters shall be in place during startup and testing.
 - a. Once the DEN Project Manager has accepted the testing procedures, the Contractor shall provide checkout, alignment, adjustment and calibration signoff forms for each item of equipment and each system that will be used.
 - b. The Contractor and the DEN Project Manager shall use the signoff forms in the field jointly to ensure that each item of electrical, mechanical and instrumentation equipment and each system has been properly installed and tested. The Contractor shall cooperate with project-wide systems contractors where startup and testing is to be conducted concurrently.
- 4. Any special equipment needed to test equipment shall be provided by the Contractor to the City at no cost for a period of thirty (30) days during startup.
- B. Before starting up the equipment, the Contractor shall properly service it and other items, which normally require service in accordance with the maintenance instructions. The Contractor shall be responsible for lubrication and maintenance of equipment and replacement filters throughout the entire equipment "break-in" period described by the manufacturer.
 - 1. The Contractor shall be responsible for the startup, adjustment, preliminary maintenance, and checkout of all equipment and instrumentation. All systems shall be carefully checked for conformance with the design criteria.
 - 2. If any equipment or system does not operate as specified in the Contract, the Contractor shall immediately replace or repair components until it operates

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properly.

3. The Contractor shall submit a test report to the DEN Project Manager within thirty (30) days after completion of the system startup period.

3.2 SYSTEMS STARTUP AND TESTING

- A. The Contractor shall be responsible for a 30-day startup period during which time all hardware, electrical and mechanical equipment, communications, alarm systems, and associated devices shall be energized and operated under local and automatic controls. The Contractor shall be present during the startup period with adequate labor and support personnel to adjust equipment and troubleshoot system failures that might arise.
- B. When a piece of electrical or mechanical equipment is found to be in conflict with specific criteria, an experienced representative of the manufacturer shall adjust the item.
- C. If adjustments fail to correct the operation of a piece of equipment or fixture, the Contractor shall remove the equipment or fixture from the Project site and replace it with a workable replacement that meets the specification requirements.
- D. The 30-day startup period shall commence thirty (30) days prior to the Contract completion date and shall be completed prior to final payment. If, during the startup, any system fails to operate in accordance with Contract requirements, the failure shall be corrected and the startup period shall begin again.
 - 1. At the end of the startup period, all filters shall be replaced with new ones.
 - 2. The City may provide, at its option, a Commissioning Representative to observe or participate in the startup and testing of any system. The Contractor shall coordinate with the Commissioning Representative relating to scheduling, reporting, forms, methods, and procedures of the startup and testing.

3.3 FINAL INSTRUCTIONS AND OPERATION TRAINING

- A. After startup and testing is completed, the Contractor shall demonstrate to the City's personnel the proper manner of operating the equipment, programming messages, making adjustments, responding to alarms and emergency signals, and maintaining the system.
- B. The Contractor shall provide on-the-job training by a suitably qualified instructor to designated personnel and shall instruct them in the operation and maintenance of the systems. In the event qualified instructors on the Contractor's staff are not available, the Contractor shall arrange with the equipment manufacturer for such instruction at no additional cost to the City.
- C. The Contractor shall provide a minimum of eight (8) hours of operator training to the Airport per shift. Classes shall accommodate up to five (5) people at a time with up to two (2) separate courses (one for each shift).

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- D. The Contractor shall provide a syllabus to the DEN Project Manager at least seven (7) calendar days prior to the start of each course that outlines topics to be covered, the proposed time allotted to each topic, and the target audience of the training session (technical, casual operator, overview, etc.). The Contractor shall not commence any training courses until the syllabus has been reviewed and approved by the DEN Project Manager.
- E. The Contractor shall video record all training sessions and provide to the DEN Project Manager. The Contractor shall provide video recordings in format as required in Section 017900 "Demonstration and Training".
- F. The Contractor shall provide an annotated syllabus to the DEN Project Manager that indicates topics contained on each tape.
- G. The contractor shall provide instruction for obtaining live help for questions relating operation and troubleshooting

PART 4 - MEASUREMENT

4.1 METHOD OF MEASUREMENT

A. No separate measurement shall be made for work under this Section.

PART 5 - PAYMENT

5.1 METHOD OF PAYMENT

- A. No separate payment will be made for work under this Section.
- B. No contractual item requiring startup or testing will be paid until the conditions of this Section are completely satisfied.

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SECTION 017720 - CONTRACT CLOSEOUT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Special Sections, apply to this Section.

1.2 SUMMARY

- A. Work specified in this Section includes procedures required prior to Final Acceptance of the Work in addition to those specified in Title 20 Final Completion and Acceptance of The Work in the General Contract Conditions, 2011 Edition, and Technical Specification Section 017840 "Contract Record Documents".
- B. This Section also includes procedures and penalties to ensure prompt completion of the Project Closeout.
- C. Related Sections:
 - 1. Title 20 of the General Contract Conditions, 2011 Edition...
 - 2. Section 017840 "Contract Record Documents" for required record documents.
 - 3. Form CM-75, Closeout Checklist

D. SUBMITTALS

- 1. Submit written Certification to the DEN Project Manager that, in the opinion of the Contractor, the Work is complete.
- 2. Submit final survey within 60 days after issuance of Substantial Completion.
- 3. Submit a Final Statement of Accounting to the DEN Project Manager.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 PREPARATION FOR FINAL INSPECTION

- A. Before requesting inspection for Final Acceptance of the Work by the City, the Contractor shall inspect, clean, and repair the Work as required.
- B. The Contractor shall ensure that all items on the Closeout Checklist have been addressed and accepted by the DEN Project Manager.

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3.2 FINAL INSPECTION

- A. The Contractor shall submit written certification to the DEN Project Manager when, in the opinion of the Contractor, the Work is complete. Such communication shall certify that:
 - 1. The Work has been inspected by the Contractor for conformance with the Contract Documents.
 - 2. The Work has been completed in conformance with the Contract Documents, including all punchlist items.
 - 3. The Work is ready for final inspection by the City.
 - 4. All as-built documents have been submitted and accepted.
 - 5. All damaged or destroyed real, personal, public, or private property impacted by the Work has been repaired or replaced.
 - 6. All Warranties and Bonds have been completed, executed, submitted, and accepted.
 - 7. All personnel badges and vehicle permits have been returned to DEN Airport Security.
- B. The DEN Project Manager will inspect the Work in accordance with the Section 2002.1 of the City and County of Denver's Department of Aviation's General Contract Conditions.
- C. If the DEN Project Manager finds incomplete or defective Work:
 - 1. The DEN Project Manager may, at the DEN Project Manager's sole discretion, either terminate the inspection, or prepare a punchlist and notify the Contractor in writing, listing the incomplete or defective Work.
 - 2. The Contractor shall take immediate steps to remedy all identified deficiencies and resubmit a written certification to the DEN Project Manager that Work is complete.
 - 3. The DEN Project Manager will then re-inspect the Work.

3.3 REINSPECTION FEES

- A. Should the DEN Project Manager be required to perform re-inspections of the Work due to the Contractor prematurely claiming the status of the Work to be complete:
 - 1. The Contractor shall compensate the City for such additional services at the rate of \$125.00 per man-hour, with a minimum charge of \$250.00.
 - 2. The City shall deduct the amount of such compensation from the final payment to the Contractor.

3.4 FINAL SURVEY FEES

A. The Contractor shall complete and submit the final survey within 60 days after issuance of Substantial Completion. If the Contractor fails to complete and submit the final survey within this time frame it is understood that DEN will arrange for a qualified

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surveying company to complete this work at the Contractor's expense. All costs associated with DEN arranging for and completing the final survey will be deducted from the final payment including compensation due the City for the DEN Project Manager's time to manage this work.

- 1. The DEN Project Manager's rate of compensation shall be set at \$150.00 per man-hour.
- 2. Survey submittals needing to be revised may extend the 60-day time frame at the DEN Project Manager's discretion.
- 3. Costs, including the DEN Project Manager's, for the review of the resubmitted survey shall be deducted from the final payment.

3.5 LATE CLOSEOUT FEES

- A. Within 100 days after issuance of substantial completion, all documentation required by this Contract to achieve Project Closeout shall be submitted. Failure to submit all required documentation shall result in fees to compensate the City for project management work while the project remains open.
 - 1. Fees at the rate of \$450 per day.
 - 2. The resubmittal of required documents may extend the 100-day time frame at the DEN Project Manager's discretion.

3.6 FINAL ADJUSTMENT OF ACCOUNTS

- A. Submit a Final Statement of Accounting to the DEN Project Manager.
- B. The Final Statement of Accounting shall reflect all adjustments to the Contract amount and shall include the following:
 - 1. The original Contract Value.
 - 2. Additions and deductions resulting from the following:
 - a. Approved Change Orders.
 - b. Allowances.
 - c. Final quantities for unit price items, including required backup for the quantities.
 - d. Deductions for corrected work.
 - e. Penalties.
 - f. Deductions for liquidated damages.
 - g. Deductions for re-inspection payments.
 - h. Other adjustments.
 - Total Contract Value, as adjusted.
 - 4. Previous payments.
 - 5. Sum remaining due.
- C. If required, the DEN Project Manager will prepare a final Change Order, reflecting the approved adjustments to the Contract Value that were not included in previously

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issued Change Orders.

3.7 FINAL APPLICATION FOR PAYMENT

A. The Contractor shall submit the final application for payment in accordance with the procedures and requirements detailed in Article 2003, Final Settlement in the General Contract Conditions, 2011 Edition.

PART 4 - MEASUREMENT

4.1 METHOD OF MEASUREMENT

A. No separate measurement shall be made for work under this Section.

PART 5 - PAYMENT

5.1 METHOD OF PAYMENT

A. No separate payment will be made for work under this Section.

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SECTION 017825 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. The Work specified in this Section consists of preparing and submitting operation and maintenance data for mechanical, electrical, and other specified equipment/products.
- B. Coordinate all the requirements of the required data with DEN Asset Management.

1.3 SUBMITTALS

- A. Refer to Section 013300 "Submittal Procedures" and Section 013325 "Shop and Working Drawings, Product Data and Samples" for submittal procedures.
- B. All submittals must be provided in electronic data as indicated by the DEN Building Information Modeling (BIM) Design Standards Manual (DSM) and as required by the DEN BIM and DEN Asset Management groups.
- C. Submit one (1) electronic copy and three (3) bound hard copies of the proposed Operation and Maintenance Data Manual not less than [30] [90] days prior to [system startup] [acceptance tests and final inspection].
 - 1. The submitted copies shall provide the Information following the MasterFormat standard. Equipment/Data shall be organized using Section formatting within the 50 MasterFormat Divisions.
- D. Submit one (1) electronic copy and three (3) bound hard copies of Operation and Maintenance Data Manual within ten days after [system startup] [commissioning] is complete. These copies shall incorporate any comments made on the previous submittals, along with final readings on all settings and gauges taken while the system is in fully satisfactory operation.

1.4 CONTINUOUS UPDATING PROGRAM

A. Furnish to DEN AIM Asset Management one (1) electronic copy of the Contractor's letter indicating that suppliers have been notified to provide updated operation and maintenance data, service bulletins, and other information pertinent to the equipment, as it becomes available.

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PART 2 - PRODUCTS

- A. The following products are the requirements of hard copies:
 - 1. Paper size: 8-1/2 inches x 11 inches.
 - 2. Paper: White bond, at least 20-pound weight.
 - 3. Text: Typewritten.
 - 4. Printed data: Manufacturer's catalog cuts, brochures, operation, and maintenance data. Clear reproductions thereof will be acceptable. If this data is in color, all final manuals must contain color data.
 - 5. Drawings: 8½ inches x 11 inches, bound with the text. Larger drawings are acceptable provided they are folded to fit into a pocket inside the rear cover of the manual. Reinforce edges of large drawings.
 - 6. Prints of drawings: Black ink on white paper, sharp in detail and suitable for making reproductions.
 - 7. Flysheets: Separate each portion of the manual with colored, neatly prepared flysheets briefly describing the contents of the ensuing portion.
 - 8. Covers: Provide 40 to 50 mil, clear plastic, front and plain back covers for each manual. The front covers shall contain the information required in paragraph 3.2 below.
 - 9. Bindings: Conceal the binding mechanism inside the manual. Lockable 3-ring binders shall be provided.
 - Training Videos: Provide in digital electronic format as per current DEN requirements.
 - a. Refer to Section 017900 Demonstration and Training for video requirements.

PART 3 - EXECUTION

3.1 GENERAL

A. Assemble each operation and maintenance manual using the manufacturer's latest standard commercial data, and include all additional information that is unique to the Project.

3.2 COVER

- A. Include the following information on the front cover and on the inside cover sheet:
 - 1. Operation and maintenance instructions.
 - 2. Title of structure or facility.
 - Title and number of Contract.
 - 4. Contractor's name and address.
 - 5. General subject of the manual.

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3.3 CONTENTS OF THE MANUAL

- 1. Table of Contents, which references, at a minimum, three heading levels.
- 2. Index of Equipment/Data with entries for equipment type and MasterFormat Division and Section.
- 3. A Master Index that contains index entries for all submitted Operation and Maintenance Data Manuals.
 - a. Equipment/Data shall be indexed by equipment type and MasterFormat Division and Section.
- 4. Name, address, and telephone numbers of Contractor, suppliers and installers along with the manufacturer's order number and description of the order.
- 5. Name, address, and telephone numbers of manufacturer's nearest service representatives.
- 6. Name, address, and telephone number of nearest parts vendor and service agency.
- 7. Copy of guaranties and warranties issued to, and executed in the name of, the City.
- 8. Anticipated date the City assumes responsibility for maintenance.
- 9. Description of system and component parts including theory of operation.
- 10. Pre operation check or inspection list.
- 11. Procedures for starting, operating, and stopping equipment.
- 12. Post operation check or shutdown list.
- 13. Inspection and adjustment procedures.
- 14. Troubleshooting and fault isolation procedures for on-site level of repair.
- 15. Emergency operating instructions.
- 16. Accepted test data.
- 17. Maintenance schedules and procedures.
- 18. Test procedures to verify the adequacy of repairs.
- 19. One (1) copy of each wiring diagram.
- 20. One (1) copy of each piping diagram.
- 21. Location where all measurements are to be made.
- 22. One (1) copy of each duct diagram.
- 23. One (1) copy of control diagram.
- 24. One (1) copy of each accepted shop drawing.
- 25. One (1) copy of software programs imputable or changeable on site.
- 26. Ordering information.
- 27. Training course material used to train DEN staff, including slides and other presentation material.
- 28. Provide the following information, unless the item is covered in the Manufacturer's Operation and Manual:
 - a. Manufacturer's parts list with catalog names, numbers, and illustrations.
 - b. A list of components that are replaceable by the City.
 - c. An exploded view of each piece of the equipment with part designations.
 - d. List of manufacturer's recommended spare parts, current prices, and recommended quantities for two years of operation.
 - e. List of special tools and test equipment required for the operation, maintenance, adjustment, testing and repair of the equipment, instruments

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and components.

- f. Scale and corrosion control procedures.
- g. Disassembly and re-assembly instructions.
- h. Troubleshooting and repair instructions.
- i. Calibration procedures.

PART 4 - MEASUREMENT

4.1 METHOD OF MEASUREMENT

A. No separate measurement shall be made for work under this Section.

PART 5 - PAYMENT

5.1 METHOD OF PAYMENT

A. No separate payment will be made for work under this Section.

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SECTION 017835 - WARRANTIES AND BONDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. The Work specified in this Section consists of preparing and submitting warranties and bonds required by the Contract and these Specifications.

1.3 SUBMITTALS

- A. Refer to Technical Specifications Section 013300 "Submittal Procedures" and Section 013325 "Shop and Working Drawings, Product Data and Samples" for submittal procedures.
 - 1. All warranties shall be executed specifically to the City.
 - Photocopies or reproductions of stock manufacturer's warranties will not be accepted, although electronic copies are acceptable when the manufacturer's warranty is contained in the O&M manual.
- B. Submit samples of warranties and bonds for review by the City prior to execution of Work. Do not submit final warranties until sample warranties have been approved by the City.
 - 1. Submit the warranties and bonds required by the Contract Documents.
 - 2. Prepare and submit a list of all warranties and bonds on the following forms:
 - a. CM-10: Contractor Warranty
 - b. CM-11: Contractor/Sub-Contractor Warranty
- C. Submit executed warranties and bonds

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PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 WARRANTIES AND BONDS

- A. Submit executed warranties and bonds required by the Contract Documents, as detailed in Title 15 Performance and Payment Bonds and Title 18 Warranties, Guarantees, and Corrective Work in the General Contract Conditions, 2011 Edition.
 - 1. Prepare and submit a list of all warranties and bonds on the following forms:
 - a. CM-10, Contractor Warranty
 - b. CM-11, Contractor/Sub-Contractor Warranty

PART 4 - MEASUREMENT

- 4.1 METHOD OF MEASUREMENT
 - A. No separate measurement shall be made for work under this Section.

PART 5 - PAYMENT

- 5.1 METHOD OF PAYMENT
 - A. No separate payment will be made for work under this Section.

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SECTION 017840 - CONTRACT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. The Work specified in this Section consists of maintaining, marking, recording, and submitting Contract record documents that include shop drawings, warranties, Contract Documents, and contractor records.
- B. Refer to DEN Building Information Modeling (BIM) Design Standards Manual (DSM) and Approved BIM execution for data format and file types acceptable for different type of data.
- C. Related Requirements:
 - 1. Section 013100 "Project Management and Coordination".
 - 2. Section 013223 "Construction Layout, As-built and Quantity Surveys".
 - 3. Section 013300 "Submittal Procedures".
 - 4. Section 013325 "Shop and Working Drawings, Product Data and Samples".
 - 5. Section 017720 "Contract Closeout".
 - 6. Section 017825 "Operation and Maintenance Data".

1.3 SUBMITTALS

- A. Each submittal of record documents shall contain the following information:
 - 1. Date.
 - Project title and numbers.
 - Contractor's name and address.
 - 4. Title and number of each record document.
 - 5. Certification that each document as submitted is complete and accurate.
 - 6. Signature of the Contractor or the Contractor's authorized representative.
- B. At the completion of this Contract, deliver all record documents including the following:
 - 1. As-built shop drawings, diagrams, illustrations, schedules, charts, brochures and other similar data.
 - 2. Warranties, guarantees, and bonds.
 - Contract Documents.
 - 4. Contractor records.

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- C. As-built Contract Drawings shall be submitted with each monthly progress payment application, and a complete set shall be submitted prior to final payment.
 - 1. The Contractor shall provide a single electronic copy of each Contract drawing sheet which has been used to produce work during the payment period or work that payment is being requested on, which records the current as-built conditions of work, including the posting of any change orders or change directives not shown on the Contract Documents at the time of Contract signing.
 - a. The Contractor must show as-built work completed through the payment application date including but not limited to utilities, empty conduit, conduit for actual electrical lines, plumbing, HVAC, location of anchor bolts and support points for use by others.
 - b. The Contractor shall be liable for any costs incurred by the City or a third party due to errors or lack of information provided on the as-built drawings.
 - c. All markings on drawings shall be legible to identify the portion of work completed.
 - d. For projects utilizing BIM system by the Contractor or a consultant of the Contractor, all data formats shall be compatible and as approved by the BIM execution plan as required in the DEN BIM DSM.

1.4 QUALITY CONTROL

- A. Submit electronically scanned copies of all documents required by Chapter 17 "Special Inspection and Testing" of the International Building Code 2009 as amended by City and County of Denver 2011. Keep scale and clarify dimension where electronic copies are not as originally scaled and dimensioned.
- B. For projects utilizing BIM for Revit, follow approved BIM execution plan and DEN BIM DSM for record documents, formats, and quality control and assurance procedures.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 MAINTENANCE OF DOCUMENTS

- A. The Contractor must follow all the procedures established in the Contract Documents and DEN BIM DSM.
- B. The Contractor shall maintain at the work site on a current basis one (1) record copy of all drawings, specifications, addenda, change orders, approved shop drawings, working drawings, product data and samples in good order and marked currently to record all changes made during construction.
- C. Maintain at the field office one copy of the following record documents:

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1. Contract Documents:

- a. Contract Drawings with all clarifications, requests for information, directives, changes, and as-built conditions clearly posted.
- b. Contract Specifications with all clarifications, requests for information, changes, directives and record of manufacturer actually used along with product trade name.
- c. Reference Standards in accordance with Section 014225 "Referenced Standards".
- d. Affirmative Action Plan and documents.
- e. One (1) set of drawings to record the following:
 - Horizontal and vertical location of underground utilities affected by the Work.
 - 2) Location of internal utilities; include valves, controls, conduit, duct work, switches, pressure reducers, size reducers, transitions, crosses, tees, filters, motors, heaters, dampers, regulators, safety devices, sensors, access doors and appurtenances that are concealed in the construction shall be shown with dimensions given from a visible and recognizable reference to the item being located in all three dimensions. The drawings shall also reference the applicable submittal for the item being located.
 - 3) Field changes of dimensions and details including as-built elevations and location (station and offset).
 - 4) Details not on original Contract Drawings but obtained through requests for information or by other communications with the City.

2. Contractor Records:

- a. Daily Quality Control Reports.
- b. Certificates of compliance for materials used in construction.
- c. Completed inspection list.
- d. Inspection and test reports.
- e. Test procedures.
- f. Qualification of personnel.
- g. Approved submittals.
- h. Material and equipment storage records.
- i. Safety Plan
- j. Erosion, sediment, hazardous and quality plans.
- k. Hazardous material records.
- I. First report of injuries.

3.2 RECORDINGS

- A. Label each document page or article "PROJECT RECORD" in two-inch high letters.
- B. Keep record documents current daily.
- C. Legibly mark copies of the Contract Drawings to record actual construction.

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- D. Legibly mark up each Section of the specifications and Contract Drawings to record:
 - 1. Manufacturer, trade name, catalog number and supplier of each product and item actually installed
 - 2. Changes made by change orders, requests for information, substitutions, and variations approved by submittals.

3.3 DOCUMENT MAINTENANCE

- A. Follow all the required processes of the approved BIM Execution Plan as approved by DEN for this specific project or in formats acceptable to DEN BIM management system.
- B. Do not use record documents for construction purposes.
- C. Make documents available for inspection by the DEN Project Manager and any others having jurisdiction.

3.4 MONTHLY REVIEW

- A. Prior to any application for payment, the DEN Project Manager or the DEN Project Manager's designated representative will inspect the record documents to ensure that they are being maintained and contain the most current correct data with particular attention to as-built drawings.
- B. If, during the inspection, the DEN Project Manager determines that the documents are not being maintained and kept current as to as-built conditions, an amount may be withheld from the payment request and deducted from the Contract value to cover the City's cost of collecting and recording the as-built Contract data. This cost will be determined based on \$100.00 per man-hour of effort.

PART 4 - MEASUREMENT

4.1 METHOD OF MEASUREMENT

A. No separate measurement shall be made for work under this Section.

PART 5 - PAYMENT

5.1 METHOD OF PAYMENT

A. No separate payment will be made for work under this Section.

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SECTION 017900 - DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for instructing City's personnel, including the following:
 - 1. Demonstration of operation of systems, subsystems, and equipment.
 - 2. Training in operation and maintenance of systems, subsystems, and equipment.
 - 3. Demonstration and training video recordings.

1.3 INFORMATIONAL SUBMITTALS

- A. Instruction Program: Submit outline of instructional program for demonstration and training, including a list of training modules and a schedule of proposed dates, times, length of instruction time, and instructor's names for each training module. Include learning objective and outline for each training module.
 - Indicate proposed training modules using manufacturer-produced demonstration and training video recordings for systems, equipment, and products in lieu of video recording of live instructional module.
- B. Qualification Data: For [facilitator] [instructor] [videographer].
- C. Attendance Record: For each training module, submit list of participants and length of instruction time.
- D. Evaluations: For each participant and for each training module, submit results and documentation of performance-based test.

1.4 CLOSEOUT SUBMITTALS

- A. Demonstration and Training Video Recordings: Submit [two (2)] <Insert number> copies within [seven (7)] <Insert number> days of end of each training module.
 - 1. Identification: On each copy, provide an applied label with the following information:

ISSUED FOR: CONFORMED DOCUMENTS 12/22/20

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- a. Name of Project.
- b. Name and address of videographer.
- c. Name of Architect.
- d. Name of Construction Manager.
- e. Name of Contractor.
- f. Date of video recording.
- 2. Closed Caption: Videos shall contain a visible text version of all speech provided in the recording.
- 3. Transcript: Prepared and bound in format matching operation and maintenance manuals. Mark appropriate identification on front and spine of each binder. Include a cover sheet with same label information as the corresponding video recording. Include name of Project and date of video recording on each page.
- 4. Transcript: Prepared in PDF electronic format. Include a cover sheet with same label information as the corresponding video recording and a table of contents with links to corresponding training components. Include name of Project and date of video recording on each page.
- 5. At completion of training, submit complete training manual(s) for City's use [prepared and bound in format matching operation and maintenance manuals] [in PDF electronic file format] [preapproved electronic media].

1.5 QUALITY ASSURANCE

- A. Facilitator Qualifications: A firm or individual experienced in training or educating personnel in a training program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.
- B. Instructor Qualifications: A professional instructor/trainer who is experienced in operation and maintenance procedures and training.
- C. Videographer Qualifications: A professional videographer who is experienced photographing demonstration and training events similar to those required.
- D. Preinstruction Conference: Conduct conference at Project site to comply with requirements in Section 014510 "Contractor Quality Control". Review methods and procedures related to demonstration and training including, but not limited to, the following:
 - 1. Inspect and discuss locations and other facilities required for instruction.
 - 2. Review and finalize instruction schedule and verify availability of educational materials, instructor's personnel, audiovisual equipment, and facilities needed to avoid delays.
 - 3. Review required content of instruction.
 - 4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

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1.6 COORDINATION

- A. Coordinate instruction schedule with City's operations. Adjust schedule as required to minimize disrupting City's operations and to ensure availability of City's personnel.
 - 1. Include multiple classes to accommodate various shifts, as necessary.
- B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.
- C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by DEN Project Manager.

PART 2 - PRODUCTS

2.1 INSTRUCTION PROGRAM

- A. Program Structure: Develop an instruction program that includes individual training modules for each system and for equipment not part of a system, as required by individual Specification Sections.
- B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following as applicable to the system, equipment, or component:
 - 1. Basis of System Design, Operational Requirements, and Criteria: Include the following:
 - a. System, subsystem, and equipment descriptions.
 - b. Performance and design criteria if Contractor is delegated design responsibility.
 - c. Operating standards.
 - d. Regulatory requirements.
 - e. Equipment function.
 - f. Operating characteristics.
 - g. Limiting conditions.
 - h. Performance curves.
 - 2. Documentation: Review the following items in detail:
 - a. Emergency manuals.
 - b. Operations manuals.
 - c. Maintenance manuals.
 - d. Project record documents.
 - e. Identification systems.
 - f. Warranties and bonds.

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- g. Maintenance service agreements and similar continuing commitments.
- 3. Emergencies: Include the following, as applicable:
 - a. Instructions on meaning of warnings, trouble indications, and error messages.
 - b. Instructions on stopping.
 - c. Shutdown instructions for each type of emergency.
 - d. Operating instructions for conditions outside of normal operating limits.
 - e. Sequences for electric or electronic systems.
 - f. Special operating instructions and procedures.
- 4. Operations: Include the following, as applicable:
 - a. Startup procedures.
 - b. Equipment or system break-in procedures.
 - c. Routine and normal operating instructions.
 - d. Regulation and control procedures.
 - e. Control sequences.
 - f. Safety procedures.
 - g. Instructions on stopping.
 - h. Normal shutdown instructions.
 - i. Operating procedures for emergencies.
 - j. Operating procedures for system, subsystem, or equipment failure.
 - k. Seasonal and weekend operating instructions.
 - I. Required sequences for electric or electronic systems.
 - m. Special operating instructions and procedures.
- 5. Adjustments: Include the following:
 - a. Alignments.
 - b. Checking adjustments.
 - c. Noise and vibration adjustments.
 - d. Economy and efficiency adjustments.
- 6. Troubleshooting: Include the following:
 - a. Diagnostic instructions.
 - b. Test and inspection procedures.
- 7. Maintenance: Include the following:
 - a. Inspection procedures.
 - b. Types of cleaning agents to be used and methods of cleaning.
 - c. List of cleaning agents and methods of cleaning detrimental to product.
 - d. Procedures for routine cleaning
 - e. Procedures for preventive maintenance.
 - f. Procedures for routine maintenance.
 - g. Instruction on use of special tools.

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- 8. Repairs: Include the following:
 - a. Diagnosis instructions.
 - b. Repair instructions.
 - c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 - d. Instructions for identifying parts and components.
 - e. Review of spare parts needed for operation and maintenance.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a training manual organized in coordination with requirements in Section 017825 "Operation and Maintenance Data."
- B. Set up instructional equipment at instruction location.

3.2 INSTRUCTION

- A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between Contractor and City for number of participants, instruction times, and location.
- B. Engage qualified instructors to instruct City's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
 - 1. Contractor will furnish an instructor to describe basis of system design, operational requirements, criteria, and regulatory requirements.
 - 2. City will furnish an instructor to describe City's operational philosophy.
 - 3. DEN Project Manager will furnish Contractor with names and positions of DEN participants.
- C. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.
 - 1. Schedule training with City, through DEN Project Manager, with at a minimum of [thirty (30)] <Insert number> days advance notice.
- D. Training Location and Reference Material: Conduct training on-site in the completed and fully operational facility using the actual equipment in-place. Conduct training using final operation and maintenance data submittals.
- E. Evaluation: At conclusion of each training module, assess and document each participant's mastery of module by use of [an oral] [a written] [a demonstration] performance-based test.

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F. Cleanup: Collect used and leftover educational materials and [remove from Project site] [give to City]. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

3.3 DEMONSTRATION AND TRAINING VIDEO RECORDINGS

- A. General: Engage a qualified commercial videographer to record demonstration and training video recordings. Record each training module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice.
 - 1. At beginning of each training module, record each chart containing learning objective and lesson outline.
- B. Video Recordings: Submit video recordings in an electronic format acceptable to DEN Project Manager [by posting to Project Web site] [by posting to Web-based photographic documentation service provider's Web site]. Recordings shall be high-resolution [720p] [1080p][4k][8k] with a minimum framerate of 60Hz
 - 1. File Names: Utilize file names based upon name of equipment generally described in video segment, as identified in Project specifications.
 - 2. Contractor and Installer Contact File: Using appropriate software, create a file for inclusion on the Equipment Demonstration and Training DVD that describes the following for each Contractor involved on the Project:
 - a. Name of Contractor/Installer.
 - b. Business address.
 - c. Business phone number.
 - d. Point of contact.
 - e. E-mail address.
- C. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to adequately cover area of demonstration and training. Display continuous running time.
 - 1. Film training session(s) in segments not to exceed 15 minutes.
 - a. Produce segments to present a single significant piece of equipment per segment.
 - b. Organize segments with multiple pieces of equipment to follow order of Project Manual table of contents.
 - c. Where a training session on a particular piece of equipment exceeds 15 minutes, stop filming and pause training session. Begin training session again upon commencement of new filming segment.
- D. Light Levels: Verify light levels are adequate to properly light equipment. Verify equipment markings are clearly visible prior to recording.
 - 1. Furnish additional portable lighting as required.

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- E. Narration: Describe scenes on video recording by [audio narration by microphone while] [dubbing audio narration off-site after] video recording is recorded. Include description of items being viewed.
 - 1. Closed Caption: Videos shall contain a visible text version of all speech provided in the recording.
 - 2. Transcript: Prepared and bound in format matching operation and maintenance manuals. Mark appropriate identification on front and spine of each binder. Include a cover sheet with same label information as the corresponding video recording. Include name of Project and date of video recording on each page.
 - 3. Transcript: Prepared in PDF electronic format. Include a cover sheet with same label information as the corresponding video recording and a table of contents with links to corresponding training components. Include name of Project and date of video recording on each page.
- F. Transcript: Provide a transcript of the narration. Display images and running time captured from videotape opposite the corresponding narration segment.
- G. Failure of Video Recordings: If video recordings submitted by Contractor do not comply with Project requirements, or have audio and/or video problems, Contractor will be required to repeat training and video recording in compliance with this Section in order to re-create the training video.

PART 4 - MEASUREMENT

- 4.1 METHOD OF MEASUREMENT
 - A. No separate measurement shall be made for work under this Section.

PART 5 - PAYMENT

- 5.1 METHOD OF PAYMENT
 - A. No separate payment will be made for work under this Section.

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SECTION 024119 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

- 1. Demolition and removal of selected portions of building or structure.
- 2. Demolition and removal of selected site elements.
- 3. Salvage of existing items to be reused or recycled.
- 4. Repair procedures for selective demolition operations.

B. Related Requirements:

- 1. Section 011000 "Summary" for restrictions on the use of the premises, Owner-occupancy requirements, and phasing requirements.
- 2. Section 230505 "Selective Demolition for Mechanical" for demolition of fire suppression, plumbing, and HVAC systems.
- C. Alternates: Refer to Division 01 Section 012300 "Alternates" for description of Work in this Section affected by Alternates.

1.3 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.
- B. Remove and Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner ready for reuse.
- Remove and Reinstall: Detach items from existing construction, prepare for reuse, and reinstall where indicated.
- D. Existing to Remain: Existing items of construction that are not to be permanently removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

TECHNICAL SPECIFICATIONS 02 EXISTING CONDITIONS 024119 SELECTIVE DEMOLITION DENVER INTERNATIONAL AIRPORT TUNNEL SEWER REPAIRS CONTRACT NO. 202056250

1.4 MATERIALS OWNERSHIP

- A. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain DEN's property, demolished materials shall become the Contractor's property and shall be removed from the Project site.
- B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.
 - 1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.5 PREINSTALLATION MEETINGS

- A. Pre-demolition Conference: Conduct conference at location and time as determined by DEN Project Manager
 - 1. Inspect and discuss condition of construction to be selectively demolished.
 - 2. Review structural load limitations of existing structure.
 - 3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
 - 4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
 - 5. Review areas where existing construction is to remain and requires protection.
 - 6. Additional items deemed necessary by the project team shall be brought to the DEN and DOR PM's attention prior to commencing with that portion of the work.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data:

- For firms and persons specified in Section 014510 "Contractor Quality Control" to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- B. Proposed Protection Measures: Submit report, including drawings, that indicates the measures proposed for protecting individuals and property [, for environmental protection] [, for dust control] [and] [, for noise control], and proposed time frame for their operation. Identify options if proposed measures are later determined to be inadequate. Indicate proposed locations and construction of barriers.
- C. Submit Schedule of Selective Demolition Activities. Indicate the Following:
 - 1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure DEN's and tenant's on-site operations are uninterrupted.

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- 2. Interruption of utility services. Indicate how long utility services will be interrupted.
- 3. Do not interrupt utility services without prior written request and approval from DEN Project Manager and authorities having jurisdiction.
- 4. Coordination for shutoff, capping, and continuation of utility services.
- 5. Use of elevator and stairs.
- 6. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.
- D. Inventory: Submit a list of items to be removed and salvaged and deliver to Owner prior to start of demolition.
- E. Predemolition Photographs or Video: Submit before Work begins.
- F. Warranties: Documentation indicated that existing warranties are still in effect after completion of selective demolition.

1.7 CLOSEOUT SUBMITTALS

- A. Inventory: Submit a list of items that have been removed and salvaged.
- B. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.
- C. As-Built Plans: Submit complete as-built plans of all Work, including interface with other Work, in accordance with requirements as specified in Section 013300 "Submittal Procedures".

1.8 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ANSI A10.6 and NFPA 241.

1.9 FIELD CONDITIONS

- A. When there are occupied portions of buildings immediately adjacent to selective demolition area, conduct selective demolition so DEN's or tenant's operations will not be disrupted.
 - 1. Provide not less than 72 hours' notice to DEN Project Manager of activities that will affect DEN's or tenant's operations.
- B. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from authorities having jurisdiction.

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- C. DEN assumes no responsibility for condition of areas to be selectively demolished. DEN will maintain conditions existing at time of inspection for bidding purpose as far as practical.
- D. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
 - 1. Before selective demolition, Owner will remove the following items:
 - a. <Insert items to be removed by Owner>.
- E. Notify DEN Project Manager of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- F. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
 - 1. Hazardous materials will be removed by Owner before start of the Work.
 - 2. If suspected hazardous materials are encountered, do not disturb; immediately notify DEN Project Manager. Hazardous materials will be removed by Owner under a separate contract.
- G. Hazardous Materials: Hazardous materials are present in buildings and structures to be selectively demolished. A report on the presence of hazardous materials is on file for review and use. Examine report to become aware of locations where hazardous materials are present.
 - 1. Hazardous material remediation is specified elsewhere in the Contract Documents.
 - Do not disturb hazardous materials or items suspected of containing hazardous materials except under procedures specified elsewhere in the Contract Documents.
 - 3. Owner will provide material safety data sheets for suspected hazardous materials that are known to be present in buildings and structures to be selectively demolished because of building operations or processes performed there.
- H. Historic Areas: Demolition and hauling equipment and other materials shall be of sizes that clear surfaces within historic spaces, areas, rooms, and openings, including temporary protection, by 12 inches.
- I. Storage or sale of removed items or materials on-site is not permitted.
- J. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
 - 1. Maintain fire-protection facilities in service during selective demolition operations.

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1.10 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties. Notify warrantor before proceeding. Existing warranties include the following:
 - 1. None known at this time. Please notify DEN and DOR PM's otherwise.
- B. Notify warrantor on completion of selective demolition, and obtain documentation verifying that existing system has been inspected and warranty remains in effect. Submit documentation at Project closeout.
 - If possible, retain original installer or fabricator to patch the exposed Work listed below that is damaged during selective demolition. If it is impossible to engage the original installer or fabricator, engage another recognized experienced and specialized firm.
 - a. Ornamental metal.
 - b. Preformed metal panels.
 - c. Firestopping.
 - d. Terrazzo.
 - e. Wall covering.
 - f. ProCoat paint finishes.
 - g. HVAC enclosures, cabinets, or covers.

1.11 CONSTRUCTION WASTE MANAGEMENT

A. Construction waste shall be managed in accordance with provisions of Section 017419 "Construction Waste Management and Disposal". Documentation shall be submitted to satisfy the requirements of that Section.

PART 2 - PRODUCTS

2.1 REPAIR MATERIALS

- A. Use repair materials identical to existing materials.
- B. If identical materials are unavailable or cannot be used for exposed surfaces, use materials that, when installed, will match the visual and functional performance of existing materials, as approved by DEN Project Manager.
- C. Use materials whose installed performance equal or surpass that of existing materials.
- D. Comply with material and installation requirements specified in individual specification sections.

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2.2 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. Review record documents of existing construction provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in record documents.
- C. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- D. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.
- E. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to DEN Project Manager.
- F. Engage a professional engineer to perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective building demolition operations.
 - 1. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.
 - 2. Steel Tendons: Locate tensioned steel tendons and include recommendations for de-tensioning.
- G. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs
 - 1. Comply with requirements specified in Section 013233 "Photographic Documentation."
 - 2. Inventory and record the condition of items to be removed and salvaged. Provide photographsof conditions that might be misconstrued as damage caused by salvage operations.

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3. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. No system component shall be abandoned in place, unless noted otherwise...
- B. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
 - 1. Comply with requirements for existing services/systems interruptions specified in Section 011000 "Summary."
 - Do not interrupt existing utilities serving occupied or operating facilities unless authorized in writing by the DEN Project Manager and authorities having jurisdiction.
- C. Existing Services/Systems to Be Removed, or Relocated: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
 - 1. Arrange to shut off indicated utilities and obtain prior written approval with DEN Project Manager and utility companies.
 - 2. If services/systems are required to be removed, or relocated, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
 - 3. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated to be removed.
 - a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
 - b. Equipment to Be Removed: Disconnect and cap services and remove equipment.
 - c. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
 - d. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
 - e. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.

3.3 PREPARATION

A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

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- Comply with requirements for access and protection specified in Section 015210 "Temporary Facilities."
- 2. Do not close or obstruct roads, streets, walks, walkways, or other adjacent occupied or used facilities without written authorization from the DEN Project Manager and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.
- 3. Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction.
- 4. Protect existing site improvements, appurtenances, and landscaping.
- 5. Erect a plainly visible fence around drip lines of individual trees or around perimeter drip lines of groups of trees.
- B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
 - 1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
 - 2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
 - 3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
 - 4. Cover and protect furniture, furnishings, and equipment that have not been removed.
 - 5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 015000 "Temporary Facilities and Controls."
- C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
 - 1. Strengthen or add new supports when required during progress of selective demolition.
- D. Temporary Enclosures: Provide temporary enclosures for protection of existing buildings and construction projects, both in progress and completed, from exposure, foul weather and other construction operations. Provide temporary weather tight enclosures for building exteriors.
 - Where heating or cooling is needed and permanent enclosures are not complete, provide insulated temporary enclosures. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.
 - 2. Contractor shall be responsible for any damage to existing conditions due to inadequate temporary enclosures or due to failure of temporary enclosures.
- E. Temporary Partitions: Erect and maintain dustproof partitions and temporary enclosures to limit dust and dirt migration and to separate areas from fumes and noise.

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3.4 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
 - 1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
 - 2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
 - 3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 - 4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and] portable fire-suppression devices during flame-cutting operations.
 - 5. Maintain adequate ventilation when using cutting torches.
 - 6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
 - 7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
 - 8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 - 9. Dispose of demolished items and materials promptly. Comply with requirements in Section 017419 "Construction Waste Management and Disposal."
- B. Reuse of Building Elements: Project has been designed to result in end-of-Project rates for reuse of building elements as follows. Do not demolish building elements beyond what is indicated on Drawings without DEN Project Manager's approval.
 - 1. Building Structure and Shell: 100 percent.
 - 2. Nonshell Elements: 60 percent.
- C. Removed and Salvaged Items:
 - 1. Clean salvaged items.
 - 2. Pack or crate items after cleaning. Identify contents of containers.
 - 3. Store items in a secure area until delivery to DEN.
 - 4. Transport items to DEN's storage area as designated by the DEN Project Manager.
 - 5. Protect items from damage during transport and storage.
- D. Removed and Reinstalled Items:
 - 1. Clean and repair items to functional condition adequate for intended reuse.
 - 2. Paint equipment to match new equipment, with coatings of equal color, finish and performance of new equipment.

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- 3. Pack or crate items after cleaning and repairing. Identify contents of containers.
- 4. Protect items from damage during transport and storage.
- 5. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.
- E. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by DEN Project Manager, items may be removed to a suitable, protected storage location during selective demolition, cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.5 PATCHING AND REPAIRS

- A. General: Promptly repair damage to adjacent construction caused by selective demolition operations.
- B. Patching: Comply with Specification Section 017330 "Cutting and Patching".
- C. Repairs: Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.
 - 1. Completely fill holes and depressions in existing masonry walls that are to remain with an approved masonry patching material applied according to manufacturer's written recommendations.
- D. Finishes: Restore exposed finishes of patched areas and extend restoration into adjoining construction in a manner that eliminates evidence of patching and refinishing.
- E. Floors and Walls: Where walls or partitions that are demolished extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish color, texture, and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
 - 1. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements as specified in other sections of these specifications.
 - 2. Where patching occurs on a painted surface, apply primer and intermediate paint coats over the patch and apply a final paint coat over the entire unbroken surface containing the patch. Provide additional coats until the patch blends with adjacent surfaces.
 - 3. Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
- F. Ceilings: Patch, repair or rehang existing ceilings as necessary to provide an evenplane surface of uniform appearance.

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3.6 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

- A. Concrete: Demolish in small sections. Using power-driven saw, cut concrete to a depth of at least 3/4 inch (19 mm) at junctures with construction to remain. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete. Neatly trim openings to dimensions indicated.
- B. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals using power-driven saw, then remove concrete between saw cuts.
- C. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, and then remove masonry between saw cuts.
- D. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.
- E. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI's "Recommended Work Practices for the Removal of Resilient Floor Coverings." Do not use methods requiring solvent-based adhesive strippers.

3.7 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Except for items or materials indicated to be[recycled,] reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site[and legally dispose of them in an EPA-approved landfill].
 - 1. Do not allow demolished materials to accumulate on-site.
 - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 - 3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
 - 4. Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."
 - 5. Disposal shall be in accordance with Division 32 requirements.
- B. Burning: Do not burn demolished materials.
- C. Disposal: Transport demolished materials off Owner's property and legally dispose of them unless otherwise noted..

3.8 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

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3.9 SELECTIVE DEMOLITION SCHEDULE

- A. Existing Items to be Removed: Piping damaged or impacted by soil heave, corrosion, other means. Damaged floor drain grates and cleanout covers. Refer to drawing documents for more detail.
- B. Existing Items to Remain: Existing floor drains in good, working condition, all sump pumps in the drainage stations and utility tunnel, and selected portions of piping not addressed to be replaced in drawing documents. Existing cable trays, utility piping, and fire sprinkler systems in the utility tunnel. Refer to drawing documents for more detail.

PART 4 - MEASUREMENT

4.1 METHOD OF MEASUREMENT

A. No separate measurement shall be made for work under this Section.

PART 5 - PAYMENT

5.1 METHOD OF PAYMENT

A. No separate payment will be made for work under this Section. The cost of the work described in this Section shall be included in the Lump Sum Contract price.

END OF SECTION 024119

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SECTION 033000 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes, for the following:
- 1. Footings.
- 2. Foundation walls.
- 3. Slabs-on-grade.
- 4. Gyp-Crete for abandoned pipes.

1.3 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume; subject to compliance with requirements.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- 1. Include data substantiating that materials comply with requirements.
- B. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, project conditions, weather, test results, or other circumstances warrant adjustments. Concrete materials representing current production shall be tested and used to fabricate trial mix data. The testing lab shall submit and certify the results of all tests and/or certificates of all materials and calculations used to develop the 7-day and 28-day compressive strength test results and applicable reference specifications.
- 1. Indicate amounts of mixing water to be withheld for later addition at Project site.
- 1.5 Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement according to ACI 315 "Details and Detailing of Concrete Reinforcement". Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and

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supports for concrete reinforcement. Include special reinforcement required for openings through concrete structures.

- 1.6 Construction Joint Layout: Indicate proposed construction joints required to construct the structure.
- 1.7 Location of construction joints is subject to approval of the DEN Project Manager. Do not proceed with work unless construction joint shop drawings are approved by Owner.
- 1.8 Coordinate requirements for sample submittals below with DEN Project Engineer.
- 1.9 Samples: For waterstops and vapor retarder.
- 1.10 INFORMATIONAL SUBMITTALS
 - A. Qualification Data: For Installer and manufacturer.
 - B. Material Certificates: For each of the following, signed by manufacturers:
- Cementitious materials.
- Admixtures.
- 3. Form materials and form-release agents.
- B. Steel reinforcement and accessories.
- C. Waterstops.
- D. Curing compounds.
- E. Floor and slab treatments.
- F. Adhesives.
- G. Vapor retarders.
- H. Repair materials.
- I. Structural nonshrink grout.
- J. Material Test Reports: For the following, from a qualified testing agency, indicating compliance with requirements:
 - 1. Aggregates. Include service record data indicating absence of deleterious expansion of concrete due to alkali aggregate reactivity.

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1.11 CLOSEOUT SUBMITTALS

A. As-Built Plans: Submit complete as-built plans of all Work, including interface with other Work, in accordance with requirements as specified in Section 013300 "Submittal Procedures".

1.12 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer who employs on Project personnel qualified as ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.
- B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
- 1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."
- C. Testing Agency Qualifications: An independent testing agency, acceptable to the DEN Project Manager and the City of Denver, and all authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.
- D. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.
- E. Personnel performing laboratory tests shall be ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician Grade I. Testing Agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician Grade II.
- F. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer.
- G. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:
- 1. ACI 301, "Specifications for Structural Concrete,"
- 2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

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- 1.13 Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.
- 1.14 Preinstallation Conference: Conduct conference at location and time as determined by DEN Project Manager.
- 1.15 Before submitting design mixtures, review concrete design mixture and examine procedures for ensuring quality of concrete materials. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following:
- 1.16 Contractor's superintendent.
- 1.17 Independent testing agency responsible for concrete design mixtures.
- 1.18 Ready-mix concrete manufacturer.
- 1.19 Concrete subcontractor.
- 1.20 Special concrete finish subcontractor.
- 1.21 Review special inspection and testing and inspecting agency procedures for field quality control, concrete finishes and finishing, cold- and hot-weather concreting procedures, curing procedures, construction, contraction and isolation joints, and joint-filler strips, semirigid joint fillers, forms and form removal limitations, shoring and reshoring procedures, anchor and anchorage device installation tolerances, steel reinforcement installation, floor and slab flatness and levelness measurement, concrete repair procedures, and concrete protection.
- 1.22 DELIVERY, STORAGE, AND HANDLING
- A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage. Store reinforcement above the ground on platforms, skids or other supports.
- B. Waterstops: Store waterstops under cover to protect from moisture, sunlight, dirt, oil, and other contaminants.
- C. Damaged or non-conforming materials shall be removed from the Project Site and replaced with new satisfactory materials at no additional cost to Owner.
- D. Deliver packaged materials to Project Site in original, unopened, and undamaged containers plainly labeled with manufacturer's name, product name and designation, expiration period for use, mixing instructions for multi-component materials and other pertinent data. Store

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and handle materials to prevent their deterioration or damage due to moisture, temperature changes, contaminants, corrosion, breakage, and other causes.

E. Construction waste shall be managed in accordance with provisions of Section 017419 "Construction Waste Management and Disposal". Documentation shall be submitted to satisfy the requirements of that Section.

PART 2 - PRODUCTS

2.1 FORM-FACING MATERIALS

- A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
- B. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows:
- C. B-B (Concrete Form), Class 1 or better; mill oiled and edge sealed.
- D. Void Forms: Biodegradable paper surface, treated for moisture resistance, structurally sufficient to support weight of plastic concrete and other superimposed loads.
- E. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

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- 2.2 Furnish units that will leave no corrodible metal closer than 1 inch (25 mm) to the plane of exposed concrete surface.
- 2.3 Furnish ties that, when removed, will leave holes no larger than 1 inch (25 mm) in diameter in concrete surface.
- 2.4 Furnish ties with integral water-barrier plates to walls indicated to receive dampproofing or waterproofing.
- 2.5 STEEL REINFORCEMENT
- 2.6 Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), deformed.
- 2.7 Joint Dowel Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), plain-steel bars, cut true to length with ends square and free of burrs.
- 2.8 CONCRETE MATERIALS
- A. Cementitious Material: Use a combination of the following cementitious materials, of the same type, brand, and source, throughout Project:
- 1. Portland Cement: ASTM C 150, Type II
- a. Fly Ash: ASTM C 618, Class F or C.
- b. Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.
- 2. Blended Hydraulic Cement: ASTM C 595, (excluding Type IS and Type IT) cement.
 - B. Normal-Weight Aggregates: ASTM C 33, coarse aggregate or better, graded. Provide aggregates from a single source.
- 1. Maximum Coarse-Aggregate Size: 1 inch (25 mm) nominal.
- 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- C. Water: ASTM C 94/C 94M.

TECHNICAL SPECIFICATIONS 03 CONCRETE		DENVER INTERNATIONAL AIRPORT TUNNEL SEWER REPAIRS		
033000 CONTRACT NO.202056250 CAST-IN-PLACE CONCRETE				
2.9	Water-Reducing Admixture: ASTM C 494/C 494M, Type	A.		
2.10	Retarding Admixture: ASTM C 494/C 494M, Type B.			
2.11	Water-Reducing and Retarding Admixture: ASTM C 494	/C 494M, Type D.		
2.12	WATERSTOPS			
2.13 Flexible Rubber Waterstops: CE CRD-C 513, with factory-installed metal eyelets, for embedding in concrete to prevent passage of fluids through joints. Factory fabricate corners, intersections, and directional changes.				
2.14 Manufacturers: Subject to compliance with requirements, provide products by one of the following:				
2.15	Greenstreak.			
2.16	Williams Products, Inc.			
2.17	or approved equal.			
2.18	Profile: Flat, dumbbell with or without center bulb.			
2.19	Dimensions: 6 inches by 3/8 inch thick			
2.20	VAPOR RETARDERS			
2.21 manufac	Sheet Vapor Retarder: ASTM E 1745, Class A, not less to cturer's recommended adhesive or pressure-sensitive tape			
2.22	Products: Subject to compliance with requirements, prov	ide one of the following:		
2.23	Stego Industries, LLC; Stego Wrap 15 mil Class A			

2.24

or approved equal.

ISSUED FOR: CONFORMED DOCUMENTS 12/22/20

application to fresh concrete.

2.39

2.40

Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for

Products: Subject to compliance with requirements, provide one of the following:

TECHNICAL SPECIFICATIONS 03 CONCRETE

033000 CAST-IN-	PLACE CONCRETE	CONTRACT NO.202056250
2.41	ChemMasters; SprayFilm.	
2.42	Dayton Superior Corporation; Sure Film (J-74).	
2.43	Euclid Chemical Company (The), an RPM company; Eucobar.	
2.44	L&M Construction Chemicals, Inc.; E-CON.	
2.45	Sika Corporation; SikaFilm.	
2.46	SpecChem, LLC; Spec Film.	
2.47 weighing	Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made fig approximately 9 oz./sq. yd. (305 g/sq. m) when dry.	rom jute or kenaf,
2.48 sheet.	Moisture-Retaining Cover: ASTM C 171, polyethylene film or whi	ite burlap-polyethylene
2.49	Water: Potable.	
2.50 Class B	Clear, Waterborne, Membrane-Forming Curing Compound: AST, dissipating.	M C 309, Type 1,
2.51	Products: Subject to compliance with requirements, provide one	of the following:
2.52	Anti-Hydro International, Inc.; AH Curing Compound #2 DR WB.	
2.53	ChemMasters; Safe-Cure Clear.	
2.54	Dayton Superior Corporation; Day-Chem Rez Cure (J-11-W).	
2.55 WB 30C	Euclid Chemical Company (The), an RPM company; Kurez W V0	OX; TAMMSCURE
2.56	L&M Construction Chemicals, Inc.; L&M Cure R.	

DENVER INTERNATIONAL AIRPORT TUNNEL SEWER REPAIRS

- 2.57 SpecChem, LLC; Spec Rez Clear.
- 2.58 Clear, Solvent-Borne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.
- 2.59 ChemMasters; Spray-Cure & Seal Plus.
- 2.60 Dayton Superior Corporation; Day-Chem Cure and Seal (J-22UV).
- 2.61 Euclid Chemical Company (The), an RPM company; Super Diamond Clear; LusterSeal 300.
- 2.62 L&M Construction Chemicals, Inc.; Lumiseal Plus.
- 2.63 RELATED MATERIALS
- 2.64 Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber or ASTM D 1752, cork or self-expanding cork.
- 2.65 Bonding Agent: ASTM C 1059/C 1059M, Type II, non-redispersible, acrylic emulsion, or styrene butadiene.
- 2.66 Epoxy Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to suit requirements, and as follows:
- 2.67 Types IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.
- 2.68 Nonshrink grout:
- A. Materials: Grouting shall be performed with a material meeting the performance requirements that follow. Cement based grouts shall have a minimum 5-year history of use and meet the following performance requirements at maximum water. They shall not contain expansive cement or metallic particles such as aluminum powder or iron fillings.
- 1. Plastic volume change: The grout shall have no shrinkage (0.0) percent and a maximum of 4.0 percent expansion from time of placement until final set when tested in accordance with ASTM C827.

- 2. Hardened Volume Change: The grout shall have no shrinkage (0.0 percent) and a maximum of 0.2 pecent expansion in the hardened state when tested according to CRD C 621.
- 3. Compressive Strength: The grout shall have a minimum 28 day compressive strength of 5,000 psi when tested in accordance with ASTM C109, restrained.
- 4. Creep: The grout shall have creep characteristics equal to or less than the concrete on which it is bearing.
- 5. Approved Manufacturers:
- a. Master Builders, Inc.
- b. Sika Corporation
- c. Five Star Products, Inc.
- d. Lambert Corporation
- e. U.S. Grout Corporation
- 2.69 Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch (3.2 mm) and that can be feathered at edges to match adjacent floor elevations.
- 2.70 Cement Binder: ASTM C 150, Portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
- 2.71 Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
- 2.72 Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch (3.2 to 6 mm) or coarse sand as recommended by underlayment manufacturer.
- 2.73 Compressive Strength: Not less than 5000 **psi** (29 MPa) at 28 days when tested according to ASTM C 109/C 109M.
- 2.74 CONCRETE MIXTURES, GENERAL
- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
- 1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.

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- B. Cementitious Materials: Use fly ash, pozzolan, ground granulated blast-furnace slag, and/or silica fume as needed to reduce the total amount of Portland cement, which would otherwise be used, by not less than 40 percent.
- 1. Silica Fume: 10 percent.
- 2. Combined Fly Ash, Pozzolans, and Silica Fume: 35 percent with fly ash or pozzolans not exceeding 25 percent and silica fume not exceeding 10 percent.
- 3. Combined Fly Ash or Pozzolans, Ground Granulated Blast-Furnace Slag, and Silica Fume: 50 percent with fly ash or pozzolans not exceeding 25 percent and silica fume not exceeding 10 percent.
- C. Limit water-soluble, chloride-ion content in hardened concrete to 0.30 percent by weight of cement.
- D. Admixtures: Use admixtures according to manufacturer's written instructions.
- 2.75 Use water-reducing admixture in concrete, as required, for placement and workability.
- 2.76 Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
- 2.77 CONCRETE MIXTURES FOR BUILDING ELEMENTS
- A. Proportion normal-weight concrete mixture as follows:
- 1. Minimum Compressive Strength: 4,500 psi at 28 days. 1,200 psi at 28 days for Gyp-Crete.
- 2.78 Slump Limit: 4 inches, plus or minus 1 inch.
- 2.79 Air Content: 4 percent, plus or minus 1.5 percent at point of delivery for**1-inch** nominal maximum aggregate size.
- 2.80 Air Content: Do not allow air content of trowel-finished toppings to exceed 3 percent.
- 2.81 FABRICATING REINFORCEMENT
- 2.82 Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."
- 2.83 CONCRETE MIXING
- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM

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C 94/C 94M, and furnish batch ticket information.

- 1. When air temperature is between 85 and 90 deg F (30 and 32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.
- B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Mix concrete materials in appropriate drum-type batch machine mixer.
- 1. For mixer capacity of 1 cu. yd. (0.76 cu. m) or smaller, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.
- 2. For mixer capacity larger than 1 cu. yd. (0.76 cu. m), increase mixing time by 15 seconds for each additional 1 cu. yd. (0.76 cu. m).
- 3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixture time, quantity, and amount of water added. Record approximate location of final deposit in structure.

PART 3 - EXECUTION

3.1 FORMWORK

- A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.
- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
- C. Construct forms tight enough to prevent loss of concrete mortar.
- D. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.
- 1. Install keyways, reglets, recesses, and the like, for easy removal.
- 2. Do not use rust-stained steel form-facing material.
- E. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.
- F. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.

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- G. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.
- H. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
- I. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.2 EMBEDDED ITEMS

- 3.3 Specify embedded items and anchorage devices for other work attached to or supported by cast-in-place concrete. Insert specific requirements for installing embedded items, if any that are part of the Work.
- 3.4 Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

3.5 REMOVING AND REUSING FORMS

- A. General: Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F (10 deg C) for 12 hours after placing concrete. Concrete has to be hard enough to not be damaged by form-removal operations and curing and protection operations need to be maintained.
- 1. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.
- B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.
- C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by DEN Project Manager.

- 3.6 VAPOR RETARDERS
- 3.7 Sheet Vapor Retarders: Place, protect, and repair sheet vapor retarder according to ASTM E 1643 and manufacturer's written instructions.
- 3.8 Lap joints 6 inches (150 mm) and seal with manufacturer's recommended tape.
- 3.9 STEEL REINFORCEMENT
- 3.10 General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.
- 3.11 Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.
- 3.12 Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that would reduce bond to concrete.
- 3.13 Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.
- 3.14 Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.
- 3.15 JOINTS
- 3.16 Coordinate joint types, description, and location with Drawings. Joint types have been consolidated in this article for consistency rather than for strict sequence of installation.
- 3.17 General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- 3.18 Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated, and as approved by DEN Project Manager. Coordinate locations of all construction joints with flooring materials, and review with DEN Project Manager.
- 3.19 Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

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- 3.20 Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
- 3.21 Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated, and as approved by DEN Project Manager. Coordinate locations of all construction joints with flooring materials, and review with DEN Project Manager. Construct contraction joints for a depth equal to at least one-fourthof concrete thickness as follows:
- 3.22 Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch (3.2 mm). Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.

3.23 WATERSTOPS

3.24 Flexible Waterstops: Install in construction joints and at other joints indicated to form a continuous diaphragm. Install in longest lengths practicable. Support and protect exposed waterstops during progress of the Work. Field fabricate joints in waterstops according to manufacturer's written instructions.

3.25 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
- B. Do not add water to concrete during delivery, at Project site, or during placement unless approved by DEN Project Manager.
- C. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
- 1. Deposit concrete in horizontal layers of depth to not exceed formwork design pressures and in a manner to avoid inclined construction joints.
- 2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
- 3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches (150 mm) into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.
- D. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.

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- E. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
- F. Maintain reinforcement in position on chairs during concrete placement.
- G. Screed slab surfaces with a straightedge and strike off to correct elevations.
- H. Slope surfaces uniformly to drains where required.
- I. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.
- J. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
- 1. When average high and low temperature is expected to fall below 40 deg F (4.4 deg C) for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
- 2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
- 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved by DEN Project Manager in mixture designs.
- K. Hot-Weather Placement: Comply with ACI 301 and as follows:
- 1. Maintain concrete temperature below 90 deg F (32 deg C) at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
- 2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

3.26 FINISHING FORMED SURFACES

1. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

3.27 FINISHING FLOORS AND SLABS

- A. General: Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraightening until surface is left with a uniform, smooth,

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granular texture.

3.28 Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.

3.29 MISCELLANEOUS CONCRETE ITEMS

A. Filling In: Fill in holes and openings left in concrete structures after work of other trades is in place unless otherwise indicated. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.

3.30 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h (1 kg/sq. m x h) before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for the remainder of the curing period.
- D. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.

3.31 CONCRETE SURFACE REPAIRS

- A. Defective Concrete: Repair and patch defective areas when approved by DEN Project Manager. Remove and replace concrete that cannot be repaired and patched to DEN Project Manager's approval.
- B. Patching Mortar: Mix dry-pack patching mortar, consisting of one part Portland cement to two and one-half parts fine aggregate passing a No. 16 (1.18-mm) sieve, using only enough water for handling and placing.
- C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.

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- 1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch (13 mm) in any dimension to solid concrete. Limit cut depth to 3/4 inch (19 mm). Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
- 2. Repair defects on surfaces exposed to view by blending white Portland cement and standard Portland cement so that, when dry, patching mortar will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
- 3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by DEN Project Manager.
- D. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.
- 1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch (0.25 mm) wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
- 2. After concrete has cured at least 14 days, correct high areas by grinding.
- 3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
- 4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.
- 5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch (6 mm) to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
- 6. Repair defective areas, except random cracks and single holes 1 inch (25 mm) or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch (19-mm) clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
- 7. Repair random cracks and single holes 1 inch (25 mm) or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.
- E. Perform structural repairs of concrete, subject to DEN Project Manager's approval, using epoxy adhesive and patching mortar.

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F. Repair materials and installation not specified above may be used, subject to DEN Project Manager's approval.

3.32 FIELD QUALITY CONTROL

- A. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:
- 1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd. (4 cu. m), but less than 25 cu. yd. (19 cu. m), plus one set for each additional 50 cu. yd. (38 cu. m) or fraction thereof.
- a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
- 2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
- 3. Air Content: ASTM C 231, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
- 4. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F (4.4 deg C) and below and when 80 deg F (27 deg C) and above, and one test for each composite sample.
- 5. Unit Weight: ASTM C 567, fresh unit weight of structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
- 6. Compression Test Specimens: ASTM C 31/C 31M.
- a. Cast and laboratory cure one set of five (5) standard cylinder specimens for each composite sample.
- b. Cast and field cure one set of five (5) standard cylinder specimens for each composite sample.
- 7. Compressive-Strength Tests: ASTM C 39/C 39M.
- a. Test one (1) set of two (2) field-cured specimens at 7 days and one (1) set of two (2) specimens at 28 days. One (1) specimen shall be held in reserve for additional testing as needed.
- b. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.
- 8. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
- 9. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi (3.4 MPa).

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- 10. Test results shall be reported in writing to DEN Project Engineer, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
- 11. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by DEN Project Manager but will not be used as sole basis for approval or rejection of concrete.
- 12. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by DEN Project Manager. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by DEN Project Manager.
- 13. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
- 14. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.

PART 4 - MEASUREMENT

- 4.1 METHOD OF MEASUREMENT
- A. No separate measurement shall be made for work under this Section.

PART 5 - PAYMENT

- 5.1 METHOD OF PAYMENT
- A. No separate payment will be made for work under this Section. The cost of the work described in this Section shall be included in the Lump Sum Contract price.

END OF SECTION 033000

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SECTION 055300 - METAL GRATINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Metal bar gratings.
 - 2. Expanded-metal gratings.
 - 3. Formed-metal plank gratings.
 - 4. Extruded-aluminum plank gratings.
 - 5. Glass-fiber-reinforced plastic gratings.
 - 6. Metal frames and supports for gratings.
- B. Related Sections:
- C. Alternates: Refer to Division 01 Section 012300 "Alternates" for description of Work in this Section affected by alternates.

1.3 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design gratings, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- B. Structural Performance: Gratings shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated.
 - 1. Floors: Uniform load of 125 lbf/sq. ft. or concentrated load of 2000 lbf, whichever produces the greater stress.
 - 2. Limit deflection to L/240 or 1/4 inch, whichever is less.
- C. Seismic Performance: Provide gratings capable of withstanding the effects of earthquake motions determined according to ASCE/SEI 7.

1.4 ACTION SUBMITTALS

A. Product Data: For the following:

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- 1. Formed-metal plank gratings.
- 2. Extruded-aluminum plank gratings.
- 3. Glass-fiber-reinforced plastic gratings.
- Clips and anchorage devices for gratings.
- 5. Paint products.
- 6. Include data substantiating that materials comply with requirements.
- B. Shop Drawings: Include plans, sections, details, and attachments to other work.
- C. Delegated-Design Submittal: For installed products indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified professional engineer.
- B. Mill Certificates: Signed by manufacturers of stainless-steel sheet certifying that products furnished comply with requirements.
- C. Welding certificates.
- D. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers certifying that shop primers are compatible with topcoats.

1.6 CLOSEOUT SUBMITTALS

A. As-Built Plans: Submit complete as-built plans of all Work, including interface with other Work, in accordance with requirements as specified in Section 013300 "Submittal Procedures".

1.7 QUALITY ASSURANCE

- A. Metal Bar Grating Standards: Comply with NAAMM MBG 531, "Metal Bar Grating Manual" and NAAMM MBG 532, "Heavy-Duty Metal Bar Grating Manual."
- B. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code Steel."
- C. Welding Qualifications: Qualify procedures and personnel according to the following:
 - 1. AWS D1.1/D1.1M, "Structural Welding Code Steel."
 - 2. AWS D1.2/D1.2M, "Structural Welding Code Aluminum."
 - 3. AWS D1.3, "Structural Welding Code Sheet Steel."
 - 4. AWS D1.6, "Structural Welding Code Stainless Steel."

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1.8 PROJECT CONDITIONS

A. Field Measurements: Verify actual locations of walls and other construction contiguous with gratings by field measurements before fabrication.

1.9 COORDINATION

- A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.
- B. Coordinate installation of anchorages for gratings, grating frames, and supports. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

1.10 CONSTRUCTION WASTE MANAGEMENT

A. Construction waste shall be managed in accordance with provisions of Section 017419 "Construction Waste Management and Disposal". Documentation shall be submitted to satisfy the requirements of that Section.

PART 2 - PRODUCTS

2.1 FERROUS METALS

- A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.
- B. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- C. Steel Bars for Bar Gratings: ASTM A 36/A 36M or steel strip, ASTM A 1011/A 1011M or ASTM A 1018/A 1018M.
- D. Wire Rod for Bar Grating Crossbars: ASTM A 510.
- E. Uncoated Steel Sheet: ASTM A 1011/A 1011M, structural steel, Grade 30.
- F. Galvanized-Steel Sheet: ASTM A 653/A 653M, structural quality, Grade 33, with G90 coating.
- G. Expanded-Metal Carbon Steel: ASTM F 1267, Class 1.
- H. Expanded-Metal Galvanized Steel: ASTM F 1267, Class 2, Grade A.
- I. Stainless-Steel Sheet, Strip, Plate, and Flat Bars: ASTM A 666, Type 316.

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- J. Stainless-Steel Bars and Shapes: ASTM A 276, Type 316.
- K. Expanded-Metal Stainless Steel: ASTM F 1267, Class 3, made from stainless-steel sheet, ASTM A 666, Type 316.

2.2 FASTENERS

- A. General: Unless otherwise indicated, provide Type 304 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.
 - 1. Provide stainless-steel fasteners for fastening aluminum.
 - 2. Provide stainless steel fasteners for fastening stainless steel.
- B. Steel Bolts and Nuts: Regular hexagon-head bolts, ASTM A 307, Grade A; with hex nuts, ASTM A 563; and, where indicated, flat washers.
- C. Stainless-Steel Bolts and Nuts: Regular hexagon-head annealed stainless-steel bolts, nuts, and, where indicated, flat washers; ASTM F 593 for bolts and ASTM F 594 for nuts, Alloy Group 1.
- D. Anchor Bolts: ASTM F 1554, Grade 36, of dimensions indicated; with nuts, ASTM A 563; and, where indicated, flat washers.
 - 1. Hot-dip galvanize or provide mechanically deposited, zinc coating where item being fastened is indicated to be galvanized.
- E. Plain Washers: Round, ASME B18.22.1.
- F. Lock Washers: Helical, spring type, ASME B18.21.1.
- G. Post-Installed Anchors: Torque-controlled expansion anchors capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency.
 - 1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5, unless otherwise indicated.
 - 2. Material for Exterior Locations and Where Stainless Steel is Indicated: Alloy Group 1 stainless-steel bolts, ASTM F 593, and nuts, ASTM F 594.

2.3 MISCELLANEOUS MATERIALS

A. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

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2.4 FABRICATION

- A. Shop Assembly: Fabricate grating sections in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.
- B. Cut, drill, and punch material cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- C. Form from materials of size, thickness, and shapes indicated, but not less than that needed to support indicated loads.
- D. Fit exposed connections accurately together to form hairline joints.
- E. Welding: Reference Section 050510 "Welding" for general welding requirements. Comply with AWS recommendations and the following:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove welding flux immediately.
- F. Provide for anchorage of type indicated; coordinate with supporting structure. Fabricate and space the anchoring devices to secure gratings, frames, and supports rigidly in place and to support indicated loads.
 - 1. Fabricate toeplates to fit grating units and weld to units in shop unless otherwise indicated.
 - 2. Fabricate toeplates for attaching in the field.
 - 3. Toeplate Height: 4 inches unless otherwise indicated.

2.5 METAL BAR GRATINGS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Alabama Metal Industries Corporation; a Gibraltar Industries company.
 - 2. All American Grating.
 - BarnettBates Corporation.
 - 4. Borden Metal Products (Canada) Limited.
 - 5. Fisher & Ludlow; Division of Harris Steel Limited.
 - 6. Grating Pacific, Inc.
 - 7. Grupo Metelmex, S.A. de C.V.
 - 8. IKG Industries; a division of Harsco Corporation.
 - 9. Marwas Steel Co.; Laurel Steel Products Division.
 - 10. Ohio Gratings, Inc.
 - 11. Seidelhuber Metal Products; Division of Brodhead Steel Products.
 - 12. Copeland Precast, Inc.

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- 13. or approved equal.
- B. Welded Steel Grating [MBG-<#>]:
 - 1. Bearing Bar Spacing: 1-3/8 inches] o.c.
 - 2. Bearing Bar DepthAs required to comply with structural performance requirements].
 - 3. Bearing Bar Thickness: As required to comply with structural performance requirements.
 - 4. Crossbar Spacing: 2 incheso.c.
 - 5. Grating Mark W-11-4 (1 x 3/16) STEEL: 1-by-3/16-inch bearing bars at 11/16 inch o.c., and crossbars at 4 inches o.c.
 - 6. Grating Mark W-15-4 (1 x 1/8) STEEL: 1-by-1/8-inch bearing bars at 15/16 inch o.c., and crossbars at 4 inches o.c.
 - 7. Grating Mark W-19-4 (1-1/4 x 3/16) STEEL: 1-1/4-by-3/16-inch bearing bars at 1-3/16 inches o.c., and crossbars at 4 inches o.c.
 - 8. Grating Mark W-19-4 (1-1/2 x 3/16) STEEL: 1-1/2-by-3/16-inch bearing bars at 1-3/16 inches o.c., and crossbars at 4 inches o.c.
 - 9. Grating Mark W-19-4 (2 x 1/4) STEEL: 2-by-1/4-inch bearing bars at 1-3/16 inches o.c., and crossbars at 4 inches o.c.
 - 10. Grating Mark W-30-4 (5 x 3/8) STEEL: 5-by-3/8-inch bearing bars at 1-7/8 inches o.c., and crossbars at 4 inches o.c.
 - 11. Grating Mark: As indicated.
 - 12. Traffic Surface: [Plain] -.
 - 13. Steel Finish: Hot-dip galvanized with a coating weight of not less than 1.8 oz./sq. ft. of coated surface.
- C. Removable Grating Sections: Fabricate with banding bars attached by welding to entire perimeter of each section. Include anchors and fasteners of type indicated or, if not indicated, as recommended by manufacturer for attaching to supports.
 - 1. Provide no fewer than four weld lugs for each heavy-duty grating section, with each lug shop welded to two bearing bars.
 - 2. Provide no fewer than four saddle clips for each grating section composed of rectangular bearing bars 3/16 inch or less in thickness and spaced 15/16 inch or more o.c., with each clip designed and fabricated to fit over two bearing bars.
 - 3. Provide no fewer than four weld lugs for each grating section composed of rectangular bearing bars 3/16 inch or less in thickness and spaced less than 15/16 inch o.c., with each lug shop welded to three or more bearing bars. Interrupt intermediate bearing bars as necessary for fasteners securing grating to supports.
 - 4. Provide no fewer than four flange blocks for each section of aluminum I-bar grating, with block designed to fit over lower flange of I-shaped bearing bars.
 - 5. Furnish threaded bolts with nuts and washers for securing grating to supports.
 - 6. Furnish self-drilling fasteners with washers for securing grating to supports.
 - 7. Furnish galvanized malleable-iron flange clamp with galvanized bolt for securing grating to supports. Furnish as a system designed to be installed from above grating by one person.
 - a. Products: Subject to compliance with requirements, provide one of the following:

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- 1) Kee Industrial Products, Inc.; Grating Clip.
- 2) Lindapter North America, Inc.; Grate-Fast.
- 3) Insert manufacturer's name; product name or designation.
- 4) or approved equal.
- D. Fabricate cutouts in grating sections for penetrations indicated. Arrange cutouts to permit grating removal without disturbing items penetrating gratings.
 - 1. Edge-band openings in grating that interrupt four or more bearing bars with bars of same size and material as bearing bars.
- E. Do not notch bearing bars at supports to maintain elevation.

2.6 GRATING FRAMES AND SUPPORTS

- A. Frames and Supports for Metal Gratings: Fabricate from metal shapes, plates, and bars of welded construction to sizes, shapes, and profiles indicated and as necessary to receive gratings. Miter and weld connections for perimeter angle frames. Cut, drill, and tap units to receive hardware and similar items.
 - 1. Unless otherwise indicated, fabricate from same basic metal as gratings.
 - Equip units indicated to be cast into concrete or built into masonry with integrally welded anchors. Unless otherwise indicated, space anchors 24 inches o.c. and provide minimum anchor units in the form of steel straps 1-1/4 inches wide by 1/4 inch thick by 8 inches long.
- B. Frames and Supports for Glass-Fiber-Reinforced Plastic Gratings: Fabricate from glass-fiber-reinforced plastic shapes of sizes, shapes, and profiles indicated and as necessary to receive gratings. Miter connections for perimeter angle frames. Cut, drill, and tap units to receive hardware and similar items.
 - 1. Unless otherwise indicated, use shapes made from same resin as gratings.
 - 2. Equip units indicated to be cast into concrete or built into masonry with integral anchors.
- C. Galvanize steel frames and supports in the following locations:
 - 1. Exterior.
 - 2. Interior[, where indicated].

2.7 STEEL FINISHES

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Finish gratings, frames, and supports after assembly.

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- C. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A 153/A 153M for steel and iron hardware and with ASTM A 123/A 123M for other steel and iron products.
 - 1. Do not quench or apply post galvanizing treatments that might interfere with paint adhesion.
- D. Shop prime gratings, frames and supports[not indicated to be galvanized] unless otherwise indicated.
 - 1. Shop prime with [universal shop primer] [primers specified in Section 099113 "Exterior Painting" and Section 099123 "Interior Painting"] unless [zinc-rich primer is] [primers specified in Section 099600 "High-Performance Coatings" are] indicated.
- E. Preparation for Shop Priming: Prepare surfaces to comply with [SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."] [SSPC-SP 7/NACE No. 4, "Brush-off Blast Cleaning."] [requirements indicated below:]
 - 1. Exterior Items: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
 - 2. Items Indicated to Receive Zinc-Rich Primer: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
 - 3. Items Indicated to Receive Primers Specified in Section 099600 "High-Performance Coatings": SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
 - 4. Other Items: SSPC-SP 7/NACE No. 4, "Brush-off Blast Cleaning."
- F. Shop Priming: Apply shop primer to comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.

PART 3 - EXECUTION

- 3.1 INSTALLATION, GENERAL
 - A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing gratings to in-place construction. Include threaded fasteners for concrete and masonry inserts, through-bolts, lag bolts, and other connectors.
 - B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing gratings. Set units accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.
 - C. Provide temporary bracing or anchors in formwork for items that are to be built into concrete or masonry.
 - D. Fit exposed connections accurately together to form hairline joints.

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- 1. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade the surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.
- E. Attach toeplates to gratings by welding at locations indicated.
- F. Field Welding: Reference Section 050510 "Welding" for general welding requirements. Comply with the following requirements:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove welding flux immediately.
- G. Corrosion Protection: Coat concealed surfaces of aluminum that will come into contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.

3.2 INSTALLING METAL BAR GRATINGS

- A. General: Install gratings to comply with recommendations of referenced metal bar grating standards that apply to grating types and bar sizes indicated, including installation clearances and standard anchoring details.
- B. Attach removable units to supporting members with type and size of clips and fasteners indicated or, if not indicated, as recommended by grating manufacturer for type of installation conditions shown.
- C. Attach nonremovable units to supporting members by welding where both materials are same; otherwise, fasten by bolting as indicated above.

3.3 INSTALLING EXPANDED-METAL GRATINGS

- A. General: Comply with manufacturer's written instructions for installing gratings.
- B. Place units with straight edge of bond up and with long direction of diamond-shaped openings parallel to direction of span.
- C. Attach removable units to supporting members by bolting at 6-inch intervals.
- D. Attach nonremovable units to supporting members by welding unless otherwise indicated. Space welds at 6-inch intervals.
- E. Attach aluminum units to steel supporting members by bolting at 6-inch intervals.
- F. Butt edges parallel to long direction of diamond-shaped openings and weld at every second bond point. Place individual grating sections so diamonds of one piece are aligned with those of adjacent sections.

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3.4 INSTALLING METAL PLANK GRATINGS

- A. General: Comply with manufacturer's written instructions for installing gratings. Use manufacturer's standard anchor clips and hold-down devices for bolted connections.
- B. Attach removable units to supporting members by bolting at every point of contact.
- C. Attach nonremovable units to supporting members by welding unless otherwise indicated. Comply with manufacturer's written instructions for size and spacing of welds.
- D. Attach aluminum units to steel supporting members by bolting at side channels at every point of contact and by bolting intermediate planks at each end on alternate sides. Bolt adjacent planks together at midspan.

3.5 INSTALLING GLASS-FIBER-REINFORCED PLASTIC GRATINGS

A. Comply with manufacturer's written instructions for installing gratings. Use manufacturer's standard stainless-steel anchor clips and hold-down devices for bolted connections.

3.6 ADJUSTING AND CLEANING

- A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material as used for shop painting to comply with SSPC-PA 1 requirements for touching up shoppainted surfaces.
 - 1. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.
- B. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."
- C. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

PART 4 - MEASUREMENT

4.1 METHOD OF MEASUREMENT

A. No separate measurement shall be made for work under this Section.

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PART 5 - PAYMENT

5.1 METHOD OF PAYMENT

A. No separate payment will be made for work under this Section. The cost of the work described in this Section shall be included in the Lump Sum Contract price.

END OF SECTION 055300

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SECTION 220130.16 - TELEVISION INSPECTION OF SEWER PIPELINES

PART 1 - GENERAL

1.1 REFERENCES

- A. The following is a list of standards that may be referenced in this section:
 - 1. National Association of Sewer Service Companies (NASSCO): Pipeline Assessment Certification Program (PACP).
 - 2. Occupational Safety and Health Act (OSHA).

1.2 SUBMITTALS

A. Action Submittals:

- 1. Catalog and manufacturer's data sheets for television equipment.
- 2. Acceptance Standard closed-circuit television (CCTV) video; two copies.

B. Informational Submittals:

- 1. Certification that staff to be used for the Work is properly trained in confined space entry and hazardous atmospheres.
- 2. Training and inspection plan, seven (7) days prior to manual inspection.
- 3. Confined space entry procedures.
- 4. CCTV Inspection:
 - a. After the point repair has been completed. CCTV prior to the excavation is required to verify repair. However, only the post rehabilitation video is required for submittal to DEN Project Manager.
 - b. Include the following with each inspection submitted:
 - 1) Inspection media.
 - 2) Inspection reports.
- 5. Log of cable footage counter calibration checks.
- 6. Listing of actual measured flow depth and times.
- 7. Project-specific Safety Plan.
- 8. Confined space entry permits as needed, if area is determined to be confined space. If not, still use safe practices (i.e., use air monitor, ventilate, and have constant supervision/watcher). (Permit to be provided to DEN).

1.3 QUALITY ASSURANCE

- A. Prestart up Meeting: Contractor to coordinate with DEN Project Manager and Airport Ops when completing CCTV in operational locations.
- B. Acceptance Standard CCTV Video:

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- DVD format showing example quality of work that Contractor proposes for Project.
- Submittal shall also include examples that demonstrate camera advancement speeds, picture clarity, environment condition, lighting, panning as well as focus on defects, title frame, and screen labels for images, and sample stills.
- Picture quality and definition shall be to satisfaction of DEN Project Manager.

1.4 SEQUENCE AND SCHEDULING

- A. Contractor shall coordinate scheduling with DEN Project Manager and Airport Ops prior to inspections.
- B. Contractor shall complete CCTV prior to all cleaning, coating and corrosion protection, excavation and/or rehabilitation for point pipeline repairs.
- C. Contractor shall complete CCTV after all cleaning, coating and corrosion protection, excavation and/or rehabilitation for point pipeline repairs.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 GENERAL

- A. Complete closed-circuit television (CCTV) inspection for pipe segments as indicated on Drawings prior and post to any cleaning, excavation and/or rehabilitation work.1. Label assets and structures in inspection records using same identification nomenclature in a System Rehabilitation Mapbook on drawings.
- B. Complete applicable Work specified in Section 225728, Temporary Flow Control prior to starting CCTV inspection work.
- C. Record entry positions and scope directions on drawings for submittal for as-builts. Records must also correlate to video submittals.

D. Traffic Control:

Landside traffic control shall conform to the minimum requirements identified on Drawings TC-2 through TC-5 and approved by Terminal Ops and Landside Engineering Manager.

3.2 **NOTIFICATIONS**

Α. **DEN Project Manager:**

- A minimum of five (5) days prior to the anticipated commencement of inspections landside.
- When obstruction, restricting flow in pipeline, is discovered.
- If depth of flow in pipeline exceeds 25 percent of pipe diameter.
- If conditions for CCTV inspection are found to be unsafe or impractical.
- Pipe configuration in field is different than shown on maps; include diagram clearly

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indicating location of structure in relation to immediately adjacent structures.

3.3 EQUIPMENT

A. Inspection Vehicle:

- Equipped with monitoring equipment specifically compatible with sewer inspection equipment and meet DEN Security requirements.
- 2. Equipped with a safety backup alarm and traffic warning flashers.
- 3. Clearly marked with the inspection company name and phone number.

B. Inspection Equipment:

- 1. Inspection equipment that fails to produce satisfactory inspection quality shall be removed from the Work.
- 2. Transport Platform:
 - a. Self-propelled, mounted on skid, or mounted on float.
 - b. Sized for each pipe diameter in accordance with manufacturer's recommendations.
 - c. Cables: 1,000 feet long, minimum.
 - d. Equipped with tag line suitable for pulling camera backwards.
 - e. Equipped with winch, power winch, TV cable, powered rewind, or other devices used to move camera through pipe.
 - 1) When powered and controlled winches are used to pull television camera through line, provide telephones, radios, or other means of communication between the two (2) cleanouts to ensure communications exist between crewmembers.
 - f. Remote Reading Footage Counter:
 - 1) Accuracy: 0.20 foot over length of section being inspected.
 - 2) Counter display.
 - 3) Marking on cable will not be allowed.
 - 4) Calibration: Perform each day prior to setup.
 - g. Secure cable, chains, and other devices used with camera so as not to obstruct camera view or otherwise interfere with proper documentation of sewer conditions.

3. Television Camera:

- a. Closed-circuit color television camera.
- b. Sufficient for 3–inch through 12–inch diameters and in accordance with manufacturer's recommendations.
- c. Mounted on transport platform.
- d. Operative in 100 percent humidity conditions without lens fogging.
- e. Operative in hazardous and corrosive environment and specifically designed for pipeline inspection.
- f. Camera Lighting:
 - Mounted on and turned in direction of camera head.

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- 2) Light Sensitivity: Greater than 1.5 lux minimum.
- 3) Minimize reflective glare.
- 4) Remote variable intensity control.
- 5) Provide clear, in-focus picture of entire inside periphery of pipe.
- 6) Ability to achieve proper balance of tint and brightness.
- g. Resolution:
 - 1) Horizontal Resolution: 460 lines minimum.
 - 2) Vertical Resolution: 400 lines minimum.
 - 3) Meet or exceed monitor resolution.
- h. Rotation: 360 degrees.
- i. Pan and Tilt: 270 degrees, with adjustable supports designed for operation in connection with pipe inspection.
- j. Viewing Angle: 65 degrees, minimum.
- k. Focus and Iris Controls:
 - 1) Automatic or remote.
 - 2) Remote control adjustment for focus and iris.
- I. Focal Distance: Adjustable through range from 6 inches to infinity.
- m. Zoom: Capable of 40:1 (10x optical, 4 times digital).

3.4 INSPECTION

A. Video Recording:

- CCTV inspection is represented by one cleanout-to-cleanout pipe segment or other access-to-access point; not multiple cleanout-to-cleanout segments.
- 2. Prior to beginning CCTV inspection, complete initial screen text step and position camera at center of cleanout and with axis at centerline of pipe.
- 3. Before camera enters pipe, inspection shall provide internal video of cleanout. Video recording shall begin by facing pipe segment to be televised and then pan/tilt/zoom as necessary to point camera up towards cleanout opening.
- 4. Show continuous footage reading on inspection image. Place on screen where it is clearly visible (if black font, do not place on dark background, if white font, do not place on light background).
- 5. Viewing shall be in direction of flow, except while camera is being used in a reverse setup. Inspection shall proceed from upstream to downstream, unless prohibited by obstruction.
- If during inspection operation television camera will not pass through entire line segment due to obstruction, set up equipment so inspection can be performed from opposite cleanout.
- 7. If upstream (reverse) setup, is required, establish new inspection run separate from downstream (normal) setup.
- 8. Keep camera lens clean and clear. If material or debris obscures image or causes reduced visibility, clean or replace lens prior to proceeding with recording operation.
- 9. Camera lens shall remain above visible water level and may submerge only while passing through clearly identifiable line sags or vertical misalignments. If flow exceeds 25 percent of diameter, such that camera lens becomes obscured, stop inspection until flow subsides. If necessary, reschedule CCTV operation. Surcharging and flooding of camera lens is not an excusable condition if it has been artificially created upstream (for

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example, placement of flow plugs or freshwater flushing in pipe).

- 10. Recordings shall clearly show defects and observations, and their severity, in addition to obvious features, such as laterals and joints.
- 11. Immediately report to DEN Project Manager, any obstructions that restrict flow and cause inspection to be interrupted. Document condition with still photographs, and begin inspections of other pipelines.
- 12. Camera Operation:
 - a. Speed: 30 feet per minute, maximum, during inspection.
 - b. Stop, for a minimum of 5 seconds, at every lateral, or other defect or adversity.
 - c. Pan entire diameter or area of pipe at each defect and lateral connection.
 - d. Read just lens, lighting, and focus in order to ensure clear, distinct, and properly lighted image of defect.
- 13. Loss of color or severe red or green color will be cause for rejection of inspection.
- 14. Recordings shall be without distortion or outside interference.
- 15. Televise line segments from structure-to-structure on same DVD in continuous run.
 - a. Video shall clearly show camera starting and ending at structure, unless defects do not allow it.
 - b. Do not perform partial televising on one DVD and then complete run on another DVD.
 - If line is partially televised, as a result of an excusable condition, (for example, collapsed line), televised length shall be viewed by DEN Project Manager for acceptability.
 - d. If portion of line is unacceptable, entire segment shall be deemed unacceptable and shall be re-televised.
- 16. DEN Project Manager may accept physical inspection that does not adhere to minimum standards if adverse conditions are encountered and reinspection is not advised. In such a case, enough data shall be provided to permit accurate assessment.

B. Measurement:

- 1. Record in English units.
- 2. Obtain pipe diameter by physical measurement in upstream (or downstream) access structure.
- 3. Verify pipe material and surface lengths between cleanouts.
- 4. Use calipers or measuring rod to determine diameter of inlet and outlet pipe.
- 5. Footage measurements shall begin at centerline of upstream manhole, unless DEN Project Manager approves otherwise.
- 6. Continuous Footage Readings:
 - a. Use to identify location of defects.
 - b. Accurate to within plus or minus 0.20 feet tolerance.
 - c. Defect identifications are to be called out and recorded to nearest 0.10 feet.
 - d. Line segment recording will be unacceptable if continuous footage meter is inaccurate, or identified defects or features leave doubt as to accuracy of locations or total length.
- 7. Measurement shall be zeroed after each segment inspected.

3.5 RECORDING OF DOCUMENTATION

TELEVISION INSPECTION OF SEWER PIPELINES

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A. Upon completion of CCTV inspection post rehabilitation, transfer inspection data to DVD or electronic media of sufficient capacity and compatibility with Owner's equipment; include code required for proper playback of video file.

1. Labeling:

- a. Provide printed label on outside of DVD that indicates the following:
 - 1) Denver International Airport.
 - 2) Project title.
 - 3) Date of inspection.
 - 4) Inspection company.
 - 5) Range of pipe structure identification numbers included.

B. Media:

1. Video:

- a. Inspections completed, with a unique filename per inspection.
- b. Encoded in .WMV, .MPG, or .AVI format.
- c. Opening Screen: The following is an example of required on-screen text display fields:
 - 1) Date and Time: (YYYY/MM/DD), (military time hh:mm).
 - 2) Surveyor's Name/Company: John Doe/ABC Company.
 - 3) Project Name: XYZ project.
 - 4) Location: 1 Building.
 - 5) Location Code: Room#.
 - 6) Pipe Segment Ref. ##### (Feature IDs, direction).
 - 7) Starting Footage: ###(nearest tenth of foot).11) Inspection Direction: Downstream or upstream.
 - 8) Pipe Material: Example, ductile iron.
 - 9) Pipe Diameter/Height/Width: Diameter: ##/COP Height below finished floor: ##/Width: ## (as measured in field).
 - 10) Weather: Example, snow, rain, dry.
 - 11) Additional Information: Additional important information/comments. i.e.:

 Broken/deformed pipe/ distance and location relative to the building column lines.
- d. Continuous View: Following is list of required on-screen text display fields:
 - 1) Inspection date and time.
 - 2) Continuous forward and reverse readout of cameral distance from center of manhole reference (tape counter footage).
 - 3) Pipe structure identification number.
 - 4) Defect/observation code(s) (when encountered).

2. Audio:

- a. Embedded in video file.
- b. Operator shall include description of inspection setup, including related information from log form and unusual conditions.

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TELEVISION INSPECTION OF SEWER PIPELINES

- c. Operation changes (for example, remove roots and restart inspection at footage prior to root removal).
- d. Verbal description and location of each defect.
- e. Verbal description and location of each service connection.

3. Still Photographs:

- a. Provide digital photographs showing inspection image whenever observation or defect is recorded.
- b. Each with unique filename.
- c. Encoded in .jpg format.
- d. Minimum 640 by 480 resolution.
- e. Provide label on front of photograph with structure identification number, footage (if not visible on photograph), and defect code.

C. Inspection Reports:

- 1. Provide .PDF inspection reports including:
 - a. Summary of inspections completed. An example summary inspection report is shown as a supplement at the end of this section.
 - b. Pipe graphs of each inspection showing asset information and defects/observations.

2. Field Maps:

- a. Corrected to reflect actual field conditions.
- b. Illustrate changes in pipe routing that differ from anticipated network on Drawings and in the Mapbook. Indicate pipe number on drawings from on screen text log data above. Correlate data with drawings.
- c. Neatly strike out incorrect data using green pencil and clearly mark in correct data, using red pencil. Show notes that clarify changes in blue pencil.

3.6 FIELD QUALITY CONTROL

- A. Review videos and reports to resolve inconsistent and conflicting data and to improve accuracy of data prior to submittal.
- B. If minimum level of accuracy is not met between videos and reports after review by DEN Project Manager, perform reinspection of pipes that do not meet requirements.
- C. Quality control procedures shall be in accordance with method attached as a supplement at the end of this section.

3.7 SUPPLEMENTS

- A. The supplements listed below part 4, Measurement and Payment are a part of this specification.
 - 1. Inspection Summary Sheet
 - 2. NASSCO PACP Quality Control

TECHNICAL SPECIFICATIONS
22 PLUMBING
220130.16
TELEVISION INSPECTION OF SEWER PIPELINES

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PART 4 MEASUREMENT AND PAYMENT

4.1 No measurement for payment is associated with this specification section. Work covered by this specification section shall be considered included in related bid items.

END OF SECTION 220130.16

ISSUED FOR: CONFORMED DOCUMENTS
22 December 2020

THE CE GROUP 220130-16-8 REVISION NO 00

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NASSCO PACP QUALITY CONTROL PROCEDURE

General Method

CCTV contracting companies shall have a Random Number Quality Control procedure in place that is then audited by client. A random number is one of a series of numbers that have no detectable pattern, so that each and every item in a known population has an equal chance of being selected based upon random number. A minimum of 5 percent of CCTV contractor's data shall be checked using a Random Number Quality Control procedure as basis of selecting inspections for review. Intent is for Client to actually audit CCTV contractor's QC procedure rather than performing their own QC. If there is doubt about results then Client can ask for another differing set of Random Numbers to be created and be applied to CCTV operator in question, thereby generating another different set of inspections to be checked. Create QC history for each CCTV operator and not for each contract.

Generating Random Numbers

A Random Number list, based upon population and selection percentage, is available from many web

sites. This site generates a list of random numbers that can be sorted in numerical order and printed. Each

CCTV operator shall have a different set of Random Numbers.

Selection of Inspections to be Checked

In the field, CCTV operator inspects each sewer segment and enters PACP information into a computer database. In the office, QC employee/operator counts through inspections, for each separate CCTV operator, in the order in which they were inspected. When inspection coincides with a Random Number a copy of inspection is made from HD/DVD onto CCTV operator's master QC HD/DVD. A copy of corresponding CCTV report is also printed from ccomputer. These are then kept in CCTV operator's QC folder until QC is carried out by qualified QC employee/operator. By using the Random Number sampling system CCTV operator will not be able to "abuse" system. Client can ask for the set of Random Numbers for each CCTV operator at start of Project, or Client can provide a set of Random Numbers to be used for each operator associated with Project.

Quality Control of Inspection

It is expected that accuracy of Header record exceeds 90 percent as most field contents are based upon facts. The simplest method for QC of Header record is as follows:

Each field completed, and those that are not but should have been, is counted, producing a "number of fields checked", say 32 (ignoring unused fields).

Then fields with mistakes are counted, irrelevant of level of the mistake, creating an "error count" say for this example, 2.

Therefore, calculation is:

(error count/number of fields checked) * 100 = percentage error 100 - error percentage =

TECHNICAL SPECIFICATIONS
DIVISION 22 – PLUMBING
SECTION 220130.16 – TELEVISION INSPECTION OF SEWER PIPELINES

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accuracy percentage

(2/32) * 100 = 6.25%

100% - 6.25% = 93.75% accuracy level

This percentage accuracy level is then entered onto a graph so that ongoing accuracy can easily be seen, again, for each CCTV operator.

Detail Information

It is expected that accuracy of Observation/Defect codes exceed 90 percent.

As with Header records, each field that has been completed in the Detail records is added up, irrelevant of whether it is a Clock At/To, the Continuous Defect field or Distance/Video digits. Each entry is treated as equally important. From this number of entries made in the Detail section, a figure is arrived. A qualified QC employee/operator then looks through the same inspection and checks accuracy of each field and reaches two values, the number of entries that should have been made and an error count. No attempt should be made to create a new inspection from scratch, just check what has already been reported on. If a defect is not recorded then number of fields that support the missed defect is added to Error Count, for instance, if CCTV operator misses an EMJ then error count increases by at least five errors:

Video Digit, Distance, Code, Clock At and To and the percent

The five errors must also be added to number of entries that should have been made as well as any other errors to reach a total number of entries. Therefore at the end each inspection there are two values, the number of entries that should have been made and the error count. Calculation for Quality Control of each inspection is as follows:

(Error Count / Number of entries that should have been made) * 100 = Percentage Error

100 – Percentage Error = Accuracy Level

Assume number of entries made should have been 122 Assume Error Count is 8: (8 / 122) * 100 = 6.5%

100% - 6.5% = 93.5% Accuracy Level

This percentage Accuracy Level is then entered onto a graph so that ongoing level can be easily seen for each CCTV Operator.

Summary

QC inspection information for each sewer segment checked is entered into QC forms so that an Audit trail can be established. There must be hard copies of each inspection checked with Errors and Omissions clearly marked. Accuracy Level calculations must also be entered into QC logs. Random Number must be entered against each aspect of QC procedure. A continuing Accuracy Level Graph must be kept up to date for each CCTV operator; it is acknowledged that results could be as much as 1 month behind time of inspection.

END OF SECTION 220130.16

SEWER PIPE POINT REPAIRS AND OBSTRUCTION REMOVALS

DENVER INTERNATIONAL AIRPORT TUNNEL SEWER REPAIRS CONTRACT NO 202056250

SECTION 220131 - SEWER PIPE POINT REPAIRS AND OBSTRUCTION REMOVALS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Repair of sanitary sewers by replacing short lengths of failed pipe with new pipe.
- B. Repair of service lines by replacing short lengths of failed pipe with new pipe.
- C. Obstruction removal by remote device or excavation.

1.2 DEFINITIONS

- A. Point Repair: Repair of broken or collapsed gravity sanitary sewer lines, including mains, collectors and service lines, by replacing, at the point of failure, the length of failed pipe with new pipe.
- B. Obstruction Removal: Clearing sewer mains of obstructions to allow for rehabilitation.
- C. Sewer Lines: Gravity flow pipe lines which collect sanitary sewer discharges from service lines and discharge into another sewer line (main or collector), or into a lift station or treatment plant.
- D. Service Lines: Those gravity flow sewer lines from commercial buildings that discharge into a sewer line.

1.3 PERFORMANCE REQUIREMENTS

A. Point Repair:

- 1. Locate and replace small lengths of one or more pipe sections where isolated line failure has occurred due to settlement, corrosion, crushing, or separation of joints, or other significant defect.
- 2. The DEN Project Manager may identify potential locations for point repair, but the Contractor is responsible for verifying locations. Point repairs to sewer lines are listed as shown in the Drawings.
- 3. Determine the location of point repairs by closed circuit television (CCTV) inspection of the failed pipe location per Section 220130.16 Television Inspection of Sewer Pipelines.
- B. Obstruction Removal: Remove obstructions by one of the following methods:
 - 1. Obstruction removal by remote device:
 - a. Protruding taps: Service lines that protrude more than one inch into the sewer.

SEWER PIPE POINT REPAIRS AND OBSTRUCTION REMOVALS.

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- b. Other obstructions: Hanging gaskets, fixed debris, stabilized sand, hardened mineral deposits, roots, rust scale, tuberculation, etc.
- 2. Obstruction removal by excavation: Obstructions encountered during liner insertion that are removed by digging and exposing the pipe.

1.4 SUBMITTALS

- A. Submit product data for each pipe product, fitting and jointing material.
- B. Submit Post-Inspection video in accordance with Section 220130.16 Television Inspection of Sewer Pipelines.

1.5 SEQUENCING

- A. Complete obstruction removal on the section of pipe that is to be replaced.
- B. Complete point repair as identified on the Drawings.
- C. Remove temporary flow control once the point repair has been replaced and backfilled.

PART 2 PRODUCTS

2.1 PVC PIPE

- A. 15-Inch Diameter and Smaller:
 - 1. In accordance with ASTM D3034.
 - 2. Joints: Integral bell and spigot, in accordance with ASTM D3212.
 - 3. Minimum SDR: 26.
 - 4. Cell Classification: 12454-B or 12454-C, as defined by ASTM D1784.
 - 5. Fittings: SDR 35 minimum wall thickness.
 - Gaskets: Factory fabricated rubber compression type with solid cross section in accordance with ASTM F477. Lubricant for joining pipe as approved by pipe manufacturer.

2.2 JOINTING MATERIALS

A. Use flexible adapters secured with 1/2-inch stainless steel bands, as manufactured by Fernco, or approved equal.

PART 3 EXECUTION

3.1 PROTECTION

A. Provide barricades, warning lights and signs for excavations created by point repairs as identified on the traffic control sheets for landside.

SEWER PIPE POINT REPAIRS AND OBSTRUCTION REMOVALS.

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B. Do not allow soil, sand, debris or runoff to enter sewer system during repair.

3.2 EXCAVATION

- A. Excavate and backfill trenches in accordance with Division 31 Section 31 23 33
 Trenching and Backfilling. Point repairs in unimproved areas are to be backfilled with native material. Point repairs in paved or concrete areas are to be backfilled with CLSM.
- B. Perform work in accordance with OSHA standards.
- C. Install and operate necessary dewatering and surface water control measures as required.
- D. Remove and lawfully dispose of excess excavated material and debris from the work site daily.

3.3 TYPICAL SEQUENCE OF POINT REPAIR

- A. Perform pre-installation video inspection to verify the location of sewer line point repairs. Perform service testing between cleanouts to verify location of service line point repairs.
- B. After the location of a point repair, excavate the required length for the point repair.
- C. Prior to replacing pipe, determine condition of the existing line on both sides of the point repair by lamping the line at least 10 feet in each direction. Determine whether additional lengths of line (beyond "minimum length" criteria) need replacement.
- D. Excavate and remove the damaged pipe, replace with new pipe, shaping the bottom of the trench and placing the required pipe bedding so that the grade of the replaced pipe matches the grade of the existing line.
- E. Connect the new pipe to sound, unbroken existing pipe using flexible adapters. If joints cannot be made watertight using flexible adapters, place waterstop gaskets on each joint and encase in a reinforced concrete collar. Reconnect affected service connections or stacks using full-bodied fittings. No field fabrication of fittings allowed.
- F. Backfill the excavation and complete site restoration as specified in Division 31.
- G. Perform a post-installation video inspection as specified in Section 220130.16 Television Inspection of Sewer Pipeline. Point repairs that show offset joints, non-uniform grade, incorrect alignment, excessive deflection or similar

SEWER PIPE POINT REPAIRS AND OBSTRUCTION REMOVALS

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conditions are considered defective work. Replace pipe and bedding as required to correct defective work.

H. Extra length of Pipe Replacement beyond the Point Repair limits may be extended to the entire section either way, even to the next continuous section, as directed by the DEN Project Manager.

3.4 OBSTRUCTION REMOVAL

- A. Remote Device: Remove obstructions identified during video inspection of a sanitary sewer line segment which could cause a non-uniform liner pipe installation or obstruction of the liner during installation. Obtain authorization from the DEN Project Manager for obstruction removal with a remote device before proceeding.
 - 1. Use a power-driven cutting device (robotic cutter) to remove protruding taps. Cut protruding taps so that protrusions are no greater than 3/4 inch. If a protruding tap cannot be removed by the cutting device, then a point repair may be performed. Obtain authorization from the DEN Project Manager before proceeding.
 - 2. To remove other obstructions, use a remote device. Pull or drive the device from cleanout to cleanout up to a continuous length of 500 feet using a solid steel mandrel, porcupine, root saw, bucket, robotic cutter or similar device to remove the obstruction. Select a device that is adequately sized to remove the obstruction.
- B. Excavation: Use excavation as the method of obstruction removal when installation of the liner in the sanitary sewer is in progress. If during the liner insertion operation, a collapsed sewer, off-set joint or other obstruction is encountered which prevents or blocks the passage or insertion of the liner, notify the DEN Project Manager for authorization to excavate. Uncover and remove the obstruction as follows:
 - 1. Excavate at the point where there is an obstruction. Use a trench safety system as required.
 - 2. Break out the minimum amount of existing sanitary sewer pipe (carrier pipe) as needed. Remove only that amount of material which is causing the obstruction.

PART 4 MEASUREMENT AND PAYMENT

- 4.1 Measurement and payment are as follows:
 - A. Point repairs are to be measured on a lump sum basis per repair and includes furnishing all equipment, labor, and materials necessary for repair of the cleanout or pipeline as listed in the Design Analysis Manual, including but not limited to CCTV, flushing the line as needed, excavation, removing and hauling the existing segment of pipe, installing a new section of pipe, fittings, backfilling, importing or hauling backfill material, and surface restoration to the satisfaction of the DEN Project Manager. Pay item includes all other work necessary to

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SEWER PIPE POINT REPAIRS AND OBSTRUCTION REMOVALS

complete the installation per the Drawings and as specified.

END OF SECTION 220131

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SECTION 220400 - BASIC PLUMBING REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Provide, unless specified otherwise, all labor, materials and equipment necessary for completely finished and operational mechanical systems described and specified under other Sections of this Division 22.
- B. Provide all minor incidental items such as offsets, fittings, and accessories required as part of the Work even though not specified or indicated.
- C. Inspection: Inspect Work preceding or interfacing with Work of Division 22 and report any known or observed defects that affect the Work to the General Contractor. Do not proceed with the Work until defects are corrected.
- D. Alternates: Refer to Division 01 Section 012300 "Alternates" for description of Work in this Section affected by Alternates.

1.3 REFERENCES

A. General:

- 1. For products or workmanship specified by association, trades, or Federal Standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable Codes.
- 2. The date of the standard is that in effect as the date of the Contract Documents, except when a specific date is specified.
- 3. When required by individual Specifications Section by means of reference for cleaning or installation requirements, etc., obtain a copy of the standard.

 Maintain the copy at job site during work until substantial completion. Copy may be in electronic format.
- 4. Schedule of Referenced Organizations: Reference Section 014210 "Referenced Material" for a list of the acronyms of organizations referenced in these Specifications:

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1.4 DEFINITIONS

- A. Conform to Division 01: These Specifications are of abbreviated, simplified, or streamlined type and include incomplete sentences. Singular words will be interpreted as plural and plural words will be interpreted as singular where applicable and where full context of the Contract Documents so indicates.
- B. The following words are re-defined and/or elaborated on for the context of Division 22 Work:
 - 1. Furnish: Except as otherwise defined in greater detail, term "furnish" is used to mean supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, etc., as applicable in each instance.
 - 2. Install: Except as otherwise defined in greater detail, term "install" is used to describe operations at Project site including unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning and similar operations, as applicable in each instance.
 - 3. Provide: Except as otherwise defined in greater detail, term "provide" means furnish and install, complete and ready for intended use, as applicable in each instance.
 - 4. General Contractor: The term "General Contractor" used in Division 22 and elsewhere in the Contract Documents means the party with whom the Owner has executed the Owner-Contractor Agreement.

1.5 QUALITY CONTROL

- A. Conform to Division 01. Materials and apparatus required for the Work to be new; to be furnished, delivered, erected, connected and finished in every detail; and to be so selected and arranged so as to fit properly into the building spaces.
 - 1. Unless otherwise specifically indicated, equipment and materials to be installed in accordance with the recommendations of the Manufacturer. This includes the performance of tests as recommended by the Manufacturer.

1.6 REGULATORY REQUIREMENTS

- A. Comply with latest editions of all applicable Codes, Standards, Ordinances and Regulations in effect as of the date of the Contract Documents including but not necessarily limited to the following:
 - 1. ACI American Concrete Institute.
 - 2. ASHRAE American Society of Heating, Refrigeration, and Air Conditioning Engineers.
 - 3. ANSI American National Standards Institute.
 - 4. ASTM American Society for Testing of Materials.
 - 5. AWS American Welding Society.
 - 6. FM Factory Mutual Insurance Association.
 - 7. NACE National Association of Corrosion Engineers.

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- 8. NAPCA National Association of Pipe Coating Applicators.
- 9. SMACNA Sheet Metal and Air Conditioning Contractors National Association.
- 10. SSPC The Society for Protective Coatings.
- 11. UL Underwriters Laboratories.
- B. If discrepancies occur between the Contract Documents and any applicable Codes, Guidelines, Ordinances, Acts, or Standards, the most stringent requirements shall apply.
 - Where hourly fire ratings are indicated or required, provide components and assemblies meeting requirements of the American Insurance Association, Factory Mutual Insurance Association and listed by Underwriters Laboratories, Inc.

1.7 PRODUCT OPTIONS AND SUBSTITUTIONS

- A. Substitutions: Refer to Division 01, General Requirements.
 - 1. Some materials and equipment are specified by Manufacturer and catalog numbers. The Manufacturer and catalog numbers are used to establish a degree of quality and style for such equipment and material.
 - 2. When alternate or substitute materials and equipment are used, Contractor shall be responsible for space requirements, configurations, performance, changes in bases, supports, structural members and openings in structure, electrical changes and other apparatus and trades that may be affected by their use.
 - 3. When providing a product and/or service under the qualification of "acceptable equal," Contractor shall be entirely responsible for additional costs incurred due to modifications to the civil, architectural, structural, mechanical, and electrical design that may be required to accommodate the "acceptable equal."
 - 4. Substitute materials and equipment are only allowed to be provided from the Manufacturers listed as approved.

1.8 SHOP DRAWINGS AND PRODUCT DATA

- A. General: Comply with the General Conditions of the Contract and with Division 01 General Requirements.
 - All documents shall be submitted in electronic format. Each submittal shall be in a single security free PDF document. PDF documents shall be compatible with Adobe Acrobat 10.0 or newer. All as-built documents shall be submitted in Revit in accordance with Division 1 requirements.

1.9 CONTRACT RECORD DOCUMENTS

A. General: Comply with the General Conditions of the Contract and with Division 01 - General Requirements,

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1.10 OPERATING AND MAINTENANCE DATA

- A. Plumbing Contractor shall submit electronic copy containing a single PDF file of the entire maintenance manual to the DEN Project Manager, General Contractor for their approval.
 - 1. The manual shall have:
 - a. Alphabetical list of all system components including the name, address, and 24-hour phone number of the company responsible for servicing each item during the first year's operation.
 - b. Maintenance instructions, including valves, valve tag and other identified equipment lists, proper lubricants and lubricating instructions for each piece of equipment and necessary cleaning/replacing/adjusting schedules.
 - c. Manufacturer's data on each piece of equipment, including:
 - 1) Installation instructions.
 - 2) Drawings and specifications (approved shop drawings).
 - 3) Parts lists.
 - 4) Complete wiring and temperature control diagrams (approved shop drawings).
 - 2. Each piece identified on any schedule shall be bookmarked in the electronic file by its scheduled tag ID (IE: FD-1)
- B. Plumbing Contractor shall be responsible for scheduling instructional meetings for maintenance personnel on the proper operation and maintenance of all mechanical systems, using the maintenance manual as a guide. These meetings must be scheduled through the DEN Project Manager, and General Contractor far enough in advance so that all personnel can be notified.
- C. Division 22 Contractor shall provide proof of performance certification of all Plumbing Equipment and Systems to demonstrate that all Plumbing Equipment and Systems are operating to the intent of the design.

1.11 FINAL OBSERVATION

- A. Comply with the requirements of Division 01 and the following:
 - 1. Prior to the request for final observation, all Work under the contract shall be complete; all systems shall be in proper working order and placed in operation for a minimum duration of 48 hours.
 - 2. All plumbing systems shall be properly functioning with quantities shown on the Drawings, and all water circuits shall be adjusted to provide the proper flows.
 - 3. All equipment shall be cleaned. All debris and construction materials shall be removed from the DEN property to a DEN approved landfill off-airport.
 - 4. At the request of the DEN Project Manager, a representative of the Contractor who is thoroughly familiar with the Project and operation of the various systems shall be present during the final observation to demonstrate proper operation of

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the systems. If requested by the DEN Project Manager, the Contractor shall have representatives from the Contractor's subcontractors present to assist during final observation.

1.12 PROJECT CONDITIONS

A. Accessibility:

- 1. Division 22 Contractor shall locate all equipment, which must be serviced, operated, or maintained in fully accessible positions. Minor deviations from Drawings may be allowed to provide for better accessibility. Any changes shall be approved by the DEN Project Manager prior to making the change.
- 2. Provide carpentry, masonry, concrete and metalwork required for work of this Division where not specifically called for under other Sections.

B. Scaffolding, Rigging and Hoisting:

1. Provide all scaffolding, rigging, hoisting and services necessary for erection and delivery into the premises of any equipment and apparatus furnished; remove same from premises when no longer required. Conform to OSHA requirements and standards.

1.13 COORDINATION

- A. General: Coordinate and order the progress of plumbing Work to conform to the progress of the Work of the other trades. Complete the entire installation as soon as the condition of the building will permit.
- B. Coordinate Work with Division 33 Utilities and other Divisions as required to perform the Work.
- C. Existing System Interruptions: Comply with Division 01.
- D. Cutting and Patching: Reference Section 017330 "Cutting and Patching".
- E. Drawings and Specifications: The Plumbing Drawings indicate the general design and arrangement of lines, equipment, systems, etc. Information shown is diagrammatic in character and does not necessarily indicate every required offset, fitting, etc. Do not scale the Drawings for dimensions. Take dimensions, measurements, locations, levels, etc., from the Architectural and Engineering Drawings and equipment to be furnished.
- F. Discrepancies: Examine Drawings and Specifications for other parts of the Work, and if any discrepancies occur between the plans for the Work of this Division and the plans for the work of others, report such discrepancies to the DEN Project Manager and obtain written instructions for any changes necessary.
- G. Order of Precedence: The precedence of construction documents are as Specified in the General Conditions.

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H. Grout and Gypcrete: Reference Section 033000 "Cast-In-Place Concrete".

1.14 START-UP PROCEDURES

- A. If systems are not to continue in use following the start-up procedures, steps should be taken to ensure against accidental operation or operation by unauthorized personnel.
- Factory personnel shall be notified as appropriate to start systems requiring their services.
- C. Notify the DEN Project Manager in writing a minimum of 72 hours prior to start-up of all major mechanical equipment and systems.
- D. Should there be any equipment found which had not been properly started up, it will be the responsibility of this Contractor to arrange for the appropriate personnel to start up the equipment at the Contractor's expense and at a time as scheduled by the DEN Project Manager.

1.15 SCHEDULE OF TESTING

- A. Provide testing in accordance with the General Conditions of the Contract and as per requirements in Division 22 Sections.
- B. A schedule of testing shall be drawn up by the Division 22 Contractor in such a manner that it will show areas tested, test pressure, length of test, date, time and signature of testing personnel.
- C. Notify the DEN Project Manager, DEN Mechanical Inspector and DEN Mechanical Engineer in writing a minimum of 72 hours prior to testing of any mechanical equipment and systems.
- D. All testing must be performed in the presence DEN Project Manager and or designated representative; the DEN Project Manager's signature for verification of the test must appear on the schedule.
- E. All testing must be performed in accord with the procedures set forth in Division 22 and other Sections of the Specifications where referenced. At completion of testing, the schedule shall then be submitted in triplicate to the DEN Project Manager.
- F. Complete all tests required by Code Authorities, such as health codes, building codes, and safety codes.

1.16 CLEANING AND FINISHING

- A. Provide cleaning in accordance with the General Requirements of the Contract
- B. Cleaning shall include but not be limited to removing grease, dirt, dust, stains, labels, fingerprints, and other foreign materials from sight-exposed piping, equipment, fixtures, and other such items installed under Division 22 of the Work. If finishes have been

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damaged, refinish to original condition and leave everything in proper working order and of intended appearance.

C. Clean Domestic Water Systems in accordance with applicable Division 22 Sections.

1.17 WARRANTIES

A. Conform to Division 01: Provide a written warranty covering the entire plumbing Work to be free from defective materials, equipment, and workmanship for a minimum period of two (2) years after date of acceptance. During this period, provide labor and materials as required to repair or replace defects. Provide certificates for such items of equipment, which have or are specified to have warranties in excess of one (1) year.

1.18 CONSTRUCTION WASTE MANAGEMENT

A. Construction waste shall be managed in accordance with provisions of Section 017419 "Construction Waste Management and Disposal". Documentation shall be submitted to satisfy the requirements of that Section.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

PART 4 - MEASUREMENT

4.1 METHOD OF MEASUREMENT

A. No separate measurement shall be made for work under this Section.

PART 5 - PAYMENT

5.1 METHOD OF PAYMENT

A. No separate payment will be made for work under this Section. The cost of the work described in this Section shall be included in the Lump Sum Contract price.

END OF SECTION 220400

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COMMON WORK RESULTS FOR PLUMBING EQUIPMENT

SECTION 220500 - COMMON WORK RESULTS FOR PLUMBING EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following basic mechanical materials and methods to complement other Division 22 Sections.
 - 1. Piping materials and installation instructions common to most piping systems.
 - 2. Cutting and patching.
 - 3. Touch up painting and finishing.
- B. Alternates: Refer to Division 01 Section 012300 "Alternates" for description of Work in this Section affected by Alternates.

1.2 RELATED SECTIONS

- A. Drawings and general provisions of Contract, including General and the Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Section 220400 "Basic Plumbing Requirements".
- C. Section 220553 "Identification for Plumbing Piping and Equipment".

1.3 DEFINITIONS

- A. Pipe, pipe fittings, and piping include tube, tube fittings, and tubing.
- B. Finished Spaces: Spaces other than mechanical and electrical equipment rooms, furred spaces, pipe and duct shafts, unheated spaces immediately below the roof, spaces above ceilings, unexcavated spaces, crawl spaces, and tunnels.
- C. Exposed Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and mechanical equipment rooms.
- D. Concealed Interior Installations: Concealed from view and protected from physical contact by building occupants. Examples include above ceilings and in duct shafts.

1.4 SUBMITTALS

A. General: Submit the following according to the Conditions of the Contract and Division 01 Specification Sections:

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- 1. Prepare coordination drawings according to Division 01 Section "Submittals" to a 1/4 inch equals 1 foot scale or larger. Detail major elements, components, and systems of mechanical equipment and materials in relationship with other systems, installations, and building components. Show space requirements for installation and access. Show where sequence and coordination of installations are important to the efficient flow of the Work. Include the following:
 - a. Clearances for servicing and maintaining equipment, including space for equipment disassembly required for periodic maintenance.
- 2. Floor x-rays.
- 3. All documents shall be submitted in electronic format. Each submittal shall be in a single security free PDF document. PDF documents shall be compatible with Adobe Acrobat 10.0 or newer. All as-built documents shall be submitted in Revit in accordance with Division 1 requirements.
- 4. Spool drawings shall be submitted in electronic format in Revit (including PDF's) in compliance with Division 1 requirements. Files shall not contain security or password protection. Other file formats will not be accepted.
- 5. Field Test Reports: Written reports of each pressure tests specified in Division 22 Sections. Include the following:
 - a. Test procedures used.
 - b. Test results that comply with requirements.
 - c. Failed test results and corrective action taken to achieve requirements.

1.5 QUALITY CONTROL

A. Unless specified otherwise, all materials and equipment shall be of domestic (USA) manufacture and shall be of the best quality used for the purpose in commercial practice.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver pipes and tubes with factory-applied end-caps. Maintain end-caps through shipping, storage, and handling to prevent pipe-end damage and prevent entrance of dirt, debris, and moisture.
- B. Protect stored, pipes and tubes from moisture and dirt. Elevate above grade. When stored inside, do not exceed structural capacity of the floor.
- C. Store plastic pipes protected from direct sunlight. Support to prevent sagging and bending.
- D. Protect flanges, fittings, and piping specialties from moisture and dirt.
- E. Deliver fittings with plastic sheeting to protect it from elements. Inspect duct liner for exposure to dirt and tears.

1.7 SEQUENCING AND SCHEDULING

- A. Coordinate plumbing equipment installation with other building components.
- B. Coordinate the installation of required supporting devices.
- C. Sequence, coordinate, and integrate installations of plumbing materials and equipment for efficient flow of the Work.
- D. Coordinate installation of identifying devices after completing covering and painting where devices are applied to surfaces.

PART 2 - PRODUCTS

2.1 PIPE AND PIPE FITTINGS

- A. Refer to individual piping system specification Sections for pipe and fitting materials and joining methods.
- B. Pipe Threads: ASME B1.20.1 for factory-threaded pipe and pipe fittings.

2.2 JOINING MATERIALS

- A. Refer to individual piping system specification Sections in Division 22 for special joining materials not listed below.
- B. Grooved Mechanical Couplings: Acceptable only for fire protection piping; not acceptable for any other applications.
- C. Pipe Flange Gasket Materials: Suitable for the chemical, pressure, and thermal conditions of the piping system contents.
 - 1. ASME B16.21, nonmetallic, flat, asbestos-free, 1/8-inch maximum thickness, except where thickness or specific material is indicated.
 - a. Full-Face Type: For flat-face, Class 125 cast-iron and cast-bronze flanges.
 - b. Narrow-Face Type: For raised-face, Class 250 cast-iron and steel flanges.

2.3 SLEEVE SEALS

A. Reference Section 220517 "Sleeves and Sleeve Seals for Plumbing Piping" for sleeve seals.

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COMMON WORK RESULTS FOR PLUMBING EQUIPMENT

PART 3 - EXECUTION

3.1 PIPING SYSTEMS - COMMON REQUIREMENTS

- A. General: Install piping as described below, except where system Sections specify otherwise. Individual piping system specification Sections in Division 22 specify piping installation requirements unique to the piping system.
- B. General Locations and Arrangements: Drawings indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated, except where deviations to layout are approved on coordination drawings.
- C. Install piping at indicated slope.
- D. Install piping free of sags and bends.
- E. Install piping plumb and at right angles and plumb or parallel to building walls. Diagonal runs are prohibited, except where indicated.
- F. Install piping tight to slabs, beams, joists, columns, walls, and other building elements.
- G. Install fittings for changes in direction and branch connections.
- H. Install couplings according to manufacturer's printed instructions.
- I. Piping Joint Construction: Join pipe and fittings as follows and as specifically required in individual piping system Sections.
 - 1. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
 - 2. Remove scale, slag, dirt, rust, and debris from inside and outside of pipe and fittings before assembly.
 - 3. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full inside diameter. Join pipe fittings and valves as follows:
 - a. Note the internal length of threads in fittings or valve ends, and proximity of internal seat or wall, to determine how far pipe should be threaded into joint.
 - b. Apply appropriate tape or thread compound to external pipe threads (except where dry seal threading is specified).
 - c. Align threads at point of assembly.
 - d. Tighten joint with wrench. Apply wrench to valve end into which pipe is being threaded.
 - e. Damaged Threads: Do not use pipe or pipe fittings having threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.

COMMON WORK RESULTS FOR PLUMBING EQUIPMENT

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- J. Piping Connections: Except as otherwise indicated, make piping connections as specified below.
 - 1. Install unions in piping 2 inches and smaller adjacent to each valve and at final connection to each piece of equipment having a 2-inch or smaller threaded pipe connection.
 - 2. Wet Piping Systems: Install dielectric coupling and nipple fittings to connect piping materials of dissimilar metals.

3.2 PAINTING AND FINISHING

- A. Refer to Division 09 Sections for Painting for field painting requirements. Paint color schedule shall conform to ASME A13.1-1996, "Scheme for the Identification of Piping Systems."
- B. Damage and Touch Up: Repair marred and damaged factory-painted finishes with materials and procedures to match original factory finish.

3.3 CONCRETE PENETRATIONS

- A. Reference Section 017330 "Cutting and Patching" for core drilling and saw cutting requirements.
- B. Reference Section 024119 "Selective Demolition" for demolition and removal of selected portions of a building or structure, and repair procedures for selective demolition operations.
- C. All penetrations required through completed concrete construction shall be core drilled or saw cut at minimum size required. All penetrations in concrete require an x-ray to determine if the location is clear of reinforcing steel and embedded systems.

 Precautions shall be taken when drilling to prevent damage to structural concrete.
 - 1. The Contractor shall provide an interpretation of the x-rays and obtain written acceptance from the DEN Project Manager before proceeding with drilling.

3.4 DEMOLITION

- A. Refer to Division 01 and Division 02 for general demolition requirements and procedures.
- B. Temporary Disconnection: Remove, store, clean, reinstall, reconnect, and make operational equipment indicated for relocation.
- C. Disconnect, demolish, and remove plumbing systems, equipment, and components indicated to be removed.
 - 1. Piping to Be Removed: Remove portion of piping and associated supports indicated to be removed, provide a shutoff valve with plug or cap in pressurized

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- systems and cap or plug remaining piping with same or compatible piping material. No piping shall be abandoned in place. Repair insulation.
- 2. If pipe, insulation, or equipment to remain is damaged in appearance or is unserviceable, remove damaged or unserviceable portions and replace with new products of equal capacity and quality.
- 3. Coordinate with the G.C to repair structure floor, ceilings, and slabs from removed supports in accordance with Division 03.

PART 4 - MEASUREMENT

4.1 METHOD OF MEASUREMENT

A. No separate measurement shall be made for work under this Section.

PART 5 - PAYMENT

5.1 METHOD OF PAYMENT

A. No separate payment will be made for work under this Section. The cost of the work described in this Section shall be included in the applicable unit price item, work order or lump sum bid item.

END OF SECTION 220500

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SLEEVES AND SLEEVE SEALS FOR PLUMBING PIPING

SECTION 220517 - SLEEVES AND SLEEVE SEALS FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - Sleeves.
 - 2. Sleeve-seal systems.
- B. Alternates: Refer to Division 01 Section 012300 "Alternates" for description of Work in this Section affected by Alternates.

1.3 REFERENCES

- A. Materials and workmanship shall conform to the latest issue of all industry standards, publications, codes, or regulations referenced in this Section and with the references listed in other Sections as applicable. Refer to Section 014225 "Referenced Standards" for listing of issuing organizations or agencies.
- B. For grout and gypcrete reference Specification Section 033000 "Cast-In-Place Concrete".

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
 - 1. Include data substantiating that materials comply with requirements.
- B. Submit product samples if requested by DEN Project Manager.

1.5 CONSTRUCTION WASTE MANAGEMENT

Construction waste shall be managed in accordance with provisions of Section 017419
 "Construction Waste Management and Disposal". Documentation shall be submitted to satisfy the requirements of that Section.

TECHNICAL SPECIFICATIONS 22 PLUMBING 220517 DENVER INTERNATIONAL AIRPORT TUNNEL SEWER REPAIRS CONTRACT NO. 202056250

SLEEVES AND SLEEVE SEALS FOR PLUMBING PIPING

PART 2 - PRODUCTS

2.1 SLEEVES

A. Galvanized-Steel Wall Pipes: ASTM A 53/A 53M, Schedule 40, with plain ends and welded steel collar; zinc coated.

2.2 SLEEVE-SEAL SYSTEMS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Advance Products & Systems, Inc.
 - 2. CALPICO, Inc.
 - 3. Metraflex Company (The).
 - 4. Pipeline Seal and Insulator, Inc.
 - 5. Proco Products, Inc.
 - 6. Link-Seal
 - 7. or approved equivalent.
- B. Description: Modular sealing-element unit, designed for field assembly, for filling annular space between piping and sleeve.
 - 1. Sealing Elements: EPDM-rubber interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size of pipe.
 - 2. Pressure Plates: Carbon steel. Include two (2) for each sealing element.
 - 3. Connecting Bolts and Nuts: Carbon steel, with corrosion-resistant coating of length required to secure pressure plates to sealing elements.

PART 3 - EXECUTION

3.1 CONCRETE PENETRATIONS

- A. Reference Section 017330 "Cutting and Patching" for core drilling and saw cutting requirements.
- B. Reference Section 024119 "Selective Demolition" for demolition and removal of selected portions of a building or structure, and repair procedures for selective demolition operations.
- C. All penetrations required through completed concrete construction shall be core drilled or saw cut at minimum size required. All penetrations in concrete require an x-ray or ground penetrating radar to determine if the location is clear of reinforcing steel and embedded systems. Precautions shall be taken when drilling to prevent damage to structural concrete.
- D. The Contractor shall provide an interpretation of the x-rays or radar shot and obtain

TECHNICAL SPECIFICATIONS 22 PLUMBING 220517

220517 SLEEVES AND SLEEVE SEALS FOR PLUMBING PIPING DENVER INTERNATIONAL AIRPORT TUNNEL SEWER REPAIRS CONTRACT NO. 202056250

written acceptance from the DEN Project Manager before proceeding with drilling.

3.2 SLEEVE INSTALLATION

- A. Install sleeves for piping passing through penetrations in floors, partitions, roofs, and walls.
- B. For sleeves that will have sleeve-seal system installed, select sleeves of size large enough to provide 1-inch annular clear space between piping and concrete slabs and walls.
 - 1. Sleeves are not required for core-drilled holes.
- C. Install sleeves in concrete floors, concrete roof slabs, and concrete walls as new slabs and walls are constructed.
 - 1. Permanent sleeves are not required for holes in slabs formed by molded-PE or PP sleeves.
 - 2. Cut sleeves to length for mounting flush with both surfaces.
 - a. Exception: Extend sleeves installed in floors of mechanical equipment areas or other wet areas 2 inches above finished floor level.
 - 3. Using grout, seal the space outside of sleeves in slabs and walls without sleeveseal system.
- D. Install sleeves for pipes passing through interior partitions.
 - 1. Cut sleeves to length for mounting flush with both surfaces.
 - 2. Install sleeves that are large enough to provide 1/4-inch annular clear space between sleeve and pipe or pipe insulation.
 - 3. Seal annular space between sleeve and piping or piping insulation; use joint sealants appropriate for size, depth, and location of joint. Comply with requirements for sealants specified in Section 079200 "Joint Sealants."

3.3 SLEEVE-SEAL-SYSTEM INSTALLATION

- A. Install sleeve-seal systems in sleeves in exterior concrete walls and slabs-on-grade at service piping entries into building.
- B. Select type, size, and number of sealing elements required for piping material and size and for sleeve ID or hole size. Position piping in center of sleeve. Center piping in penetration, assemble sleeve-seal system components, and install in annular space between piping and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make a watertight seal.

ISSUED FOR: CONFORMED DOCUMENTS 22 December 2020

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SLEEVES AND SLEEVE SEALS FOR PLUMBING PIPING

3.4 SLEEVE AND SLEEVE-SEAL SCHEDULE

- A. Use sleeves and sleeve seals for the following piping-penetration applications:
 - 1. Exterior Concrete Walls below Grade:
 - a. Piping Smaller Than NPS 6 Sleeve-seal fittings.
 - 1) Select sleeve size to allow for 1-inch annular clear space between piping and sleeve for installing sleeve-seal system.
 - b. Piping NPS 6 and Larger: Galvanized-steel wall sleeves with sleeve-seal system.
 - 1) Select sleeve size to allow for 1-inch annular clear space between piping and sleeve for installing sleeve-seal system.

PART 4 - MEASUREMENT

- 4.1 METHOD OF MEASUREMENT
 - A. No separate measurement shall be made for work under this Section.

PART 5 - PAYMENT

- 5.1 METHOD OF PAYMENT
 - A. No separate payment will be made for work under this Section. The cost of the work described in this Section shall be included in the Lump Sum Contract price.

END OF SECTION 220517

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SECTION 220529 - HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Metal pipe hangers and supports.
 - 2. Fastener systems.
- B. Related Sections:
 - 1. Section 055000 "Metal Fabrications" for structural-steel shapes and plates for trapeze hangers for pipe and equipment supports.
- C. Alternates: Refer to Division 01 Section 012300 "Alternates" for description of Work in this Section affected by Alternates.

1.3 DEFINITIONS

A. MSS: Manufacturers Standardization Society of the Valve and Fittings Industry Inc.

1.4 REFERENCES

- A. Materials and workmanship shall conform to the latest issue of all industry standards, publications, or regulations referenced in this section and with the following references as applicable. Refer to Section 014200 "References" for listing of issuing organizations or agencies.
- B. Applicable Standards:
 - ASME International (ASME):
 - a. B31.1 Power Piping.
 - b. B31.9 Building Services Piping.
 - 2. ASTM International (ASTM):

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- a. A36/A37M Carbon Structural Steel.
- b. C1107 Packaged Dry, Hydraulic-Cement Grout (Nonshrink).
- 3. The International Association of Plumbing and Mechanical Officials (IAPMO):
 - a. PS42 Pipe Alignment and Secondary Support Systems.
- 4. International Building Code (IBC) with the Denver Amendments.
- 5. Manufacturers Standardization Society of The Valve and Fittings Industry Inc. (MSS SP):
 - a. 58 Pipe Hangers and Supports Materials, Design and Manufacture.
 - b. 69 Pipe Hangers and Supports Selection and Application.
 - c. 89 Pipe Hangers and Supports Fabrication and Installation Practices.
 - d. 90 Guidelines on Terminology for Pipe Hangers and Supports.
- 6. The Society for Protective Coatings (SSPC):
 - a. PA1 Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel.

1.5 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design trapeze pipe hangers and equipment supports, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- B. Structural Performance: Hangers and supports for plumbing piping and equipment shall withstand the effects of gravity loads and stresses within limits and under conditions indicated according to ASCE/SEI 7.
 - 1. Design supports for multiple pipes, including pipe stands, capable of supporting combined weight of supported systems, system contents, and test water.
 - 2. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.

1.6 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated, and as follows:
 - 1. Steel pipe hangers and supports.
- B. Design Data: Indicate load carrying capacity of trapeze, multiple pipe, and riser support hangers.
- C. Refer to Section 220400 "Basic Plumbing Requirements" for coordination requirements.

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1.7 CLOSEOUT SUBMITTALS

A. As-Built Plans: Submit complete as-built plans of all Work, including interface with other Work, in accordance with requirements as specified in Section 013300 "Submittal Procedures".

1.8 QUALITY ASSURANCE

- A. Structural Steel Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code Steel."
 - 1. Retain applicable standards below. At a minimum AWS D1.1 is required.
 - a. AWS D1.2.

1.9 CONSTRUCTION WASTE MANAGEMENT

A. Construction waste shall be managed in accordance with provisions of Section 017419 "Construction Waste Management and Disposal". Documentation shall be submitted to satisfy the requirements of that Section.

PART 2 - PRODUCTS

2.1 STEEL PIPE HANGERS AND SUPPORTS

- A. Carbon-Steel Pipe Hangers and Supports:
 - 1. Description: MSS SP-58, Types 1 through 58, factory-fabricated components.
 - 2. Galvanized Metallic Coatings: Pre-galvanized or hot dipped.
 - 3. Nonmetallic Coatings: Plastic coating, jacket, or liner.
 - 4. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion to support bearing surface of piping.
 - 5. Hanger Rods: Continuous-thread rod, nuts, and washer made of carbon steel.

2.2 FASTENER SYSTEMS

- A. Mechanical-Expansion Anchors: Insert-wedge-type, zinc-coated, stainless-steel anchors, for use in hardened portland cement concrete; with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

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- a. B-Line Systems, Inc.; a division of Cooper Industries.
- b. Hilti, Inc.
- c. ITW Ramset/Red Head.
- d. Dewalt
- e. or approved (by Structural EOR) equivalent.

2.3 MISCELLANEOUS MATERIALS

- A. Structural Steel: ASTM A 36/A 36M, carbon-steel plates, shapes, and bars; black and galvanized.
- B. Grout: ASTM C 1107, factory-mixed and -packaged, dry, hydraulic-cement, nonshrink and nonmetallic grout; suitable for interior and exterior applications.
 - 1. Properties: Nonstaining, noncorrosive, and nongaseous.
 - 2. Design Mix: 5000-psi, 28-day compressive strength.

PART 3 - EXECUTION

3.1 PIPE HANGERS AND SUPPORTS

- A. Support horizontal piping as required and in accordance with spans and hanger rod sizes based on MSS SP-69 recommendations. Hanger rod sizes are based on single-rod hangers using ASTM A36-81A or ASTM A575-81 Gr 1020 steel.
 - 1. If local codes or special design considerations necessitate shorter spans or larger rod sizes, they shall govern. Contractor shall adjust requirements as necessary for conditions such as increase in loading caused by valves, fittings, or other conditions.
- B. Support cast iron piping at each joint and in accordance with applicable codes and standards.
- C. Support PVC piping system per the following requirements:
 - 1. Distance Between Supports (feet):

Size (in.)										
	Temp deg F									
	60		80		100		120		140	
	Sched									
	40	80	40	80	40	80	40	80	40	80
1	5.5	6.0	5.0	5.5	3.5	4.5	3.0	3.0	2.5	3.0

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Size (in.)										
	Temp deg F									
1-1/2	6.0	6.5	5.5	6.5	5.0	5.5	3.5	3.5	3.0	3.5
2	6.0	7.0	5.5	6.5	5.0	6.0	3.5	4.0	3.0	3.5
3	7.0	8.0	7.0	7.5	6.0	7.0	4.0	4.5	3.5	4.0
4	7.5	9.0	7.0	8.5	6.5	7.5	4.5	5.0	4.0	4.5
6	8.5	10.0	8.0	9.5	7.5	9.0	5.0	6.0	4.5	5.0
8	9.0	11.0	8.5	10.5	8.0	9.5	5.0	6.5	6.5	8
10	10.0	11.5	9.0	11.0	8.5	10.5	5.0	9.5	5.0	8.0
12	11.5	12.5	10.5	12.0	9.5	11.5	6.5	10.5	5.5	8.5

- D. Install hangers to provide minimum 1/2 inch space between finished covering and adjacent work.
- E. Place a hanger within 12 inches of each horizontal elbow.
- F. Use hangers with 1-1/2 inch minimum vertical adjustment.
- G. Install hangers for cast-iron soil piping with the following maximum horizontal spacing and minimum rod diameters:
 - 1. NPS 1-1/2 and NPS 2: 60 inches with 3/8-inch rod.
 - 2. NPS 3: 60 inches with 1/2-inch rod.
 - 3. NPS 4 and NPS 5: 60 inches with 5/8-inch rod.
 - 4. NPS 6: 60 inches with 3/4-inch rod.
 - 5. NPS 8 to NPS 12: 60 inches with 7/8-inch rod.
 - 6. NPS 15: 60 inches with 1-inch rod.
 - 7. Spacing for 10-foot lengths may be increased to 10 feet. Spacing for fittings is limited to 60 inches.
- H. At changes in pipe flow direction, install piping sufficiently spaced to allow pipe movement without crushing insulation.
- I. Plumbing systems shall not share supports and/or hangers with any other systems.

3.2 HANGER AND SUPPORT INSTALLATION

- A. Steel Pipe-Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Install hangers, supports, clamps, and attachments as required to properly support piping from the building structure.
- B. Fastener System Installation:

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- Install mechanical-expansion anchors in concrete after concrete is placed and completely cured. Insert wedge type expansion shell or shield should be flush with concrete surface in which it is set. This requires the hole in the concrete to be of sufficient depth to accommodate total insertion. Install fasteners according to manufacturer's written instructions.
- C. Install hangers and supports complete with necessary attachments, inserts, bolts, rods, nuts, washers, and other accessories.
- D. Install hangers and supports to allow controlled thermal and seismic movement of piping systems, to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends, and similar units.
- E. Install building attachments within concrete slabs or attach to structural steel. Install additional attachments at concentrated loads, including valves, flanges, and strainers, NPS 2-1/2 and larger and at changes in direction of piping. Install concrete inserts before concrete is placed; fasten inserts to forms and install reinforcing bars through openings at top of inserts.
- F. Load Distribution: Install hangers and supports so that piping live and dead loads and stresses from movement will not be transmitted to connected equipment.
- G. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and to not exceed maximum pipe deflections allowed by ASME B31.9 for building services piping.

3.3 ADJUSTING

- A. Hanger Adjustments: Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.
- B. Trim excess length of continuous-thread hanger and support rods to 1-1/2.

3.4 HANGER AND SUPPORT APPLICATIONS

- A. Specific hanger and support requirements are in Sections specifying piping systems and equipment.
- B. Comply with MSS SP-69 for pipe-hanger selections and applications that are not specified in piping system Sections.
- C. Use hangers and supports with galvanized metallic coatings for piping and equipment that will not have field-applied finish.
- D. Use carbon-steel pipe hangers and supports, metal trapeze pipe hangers, and attachments for general service applications.
- E. Horizontal-Piping Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

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- 1. Adjustable, Steel Clevis Hangers (MSS Type 1): For suspension of noninsulated or insulated, stationary pipes NPS 1/2 to NPS 30.
- 2. Steel Pipe Clamps (MSS Type 4): For suspension of cold and hot pipes NPS 1/2 to NPS 24 if little or no insulation is required.
- 3. Pipe Hangers (MSS Type 5): For suspension of pipes NPS 1/2 to NPS 4, to allow off-center closure for hanger installation before pipe erection.
- 4. Adjustable, Swivel Split- or Solid-Ring Hangers (MSS Type 6): For suspension of noninsulated, stationary pipes NPS 3/4 to NPS 8.
- 5. Adjustable, Steel Band Hangers (MSS Type 7): For suspension of noninsulated, stationary pipes NPS 1/2 to NPS 8.
- 6. Adjustable Band Hangers (MSS Type 9): For suspension of noninsulated, stationary pipes NPS 1/2 to NPS 8.
- 7. Adjustable, Swivel-Ring Band Hangers (MSS Type 10): For suspension of noninsulated, stationary pipes NPS 1/2 to NPS 2.
- F. Hanger-Rod Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
 - 1. Steel Turnbuckles (MSS Type 13): For adjustment up to 6 inches for heavy loads
 - 2. Swivel Turnbuckles (MSS Type 15): For use with MSS Type 11, split pipe rings.
 - 3. Malleable-Iron Sockets (MSS Type 16): For attaching hanger rods to various types of building attachments.
- G. Building Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
 - 1. Steel or Malleable Concrete Inserts (MSS Type 18): For upper attachment to suspend pipe hangers from concrete ceiling.
 - 2.
- H. Use mechanical-expansion anchors instead of building attachments where required in concrete construction.

PART 4 - MEASUREMENT

- 4.1 METHOD OF MEASUREMENT
 - A. No separate measurement shall be made for work under this Section.

PART 5 - PAYMENT

- 5.1 METHOD OF PAYMENT
 - A. No separate payment will be made for work under this Section. The cost of the work described in this Section shall be included in the Lump Sum Contract price.

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END OF SECTION 220529

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SECTION 220553 - IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Pipe labels.
 - Stencils.
- B. Alternates: Refer to Division 01 Section 012300 "Alternates" for description of Work in this Section affected by Alternates.

1.3 REFERENCES

- A. Materials and workmanship shall conform to the latest issue of all industry standards, publications, or regulations referenced in this section and with the following references as applicable. Refer to Section 014200 "References" for listing of issuing organizations or agencies.
- B. Applicable Standards:
 - 1. American Society of Mechanical Engineers (ASME).
 - 2. ASME A13.1 Scheme for the Identification of Piping Systems.
 - 3. International Building Code (IBC) with the Denver Amendments.
 - 4. International Fire Code (IFC) with the Denver Amendments.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Provide manufacturers catalog literature for each product required.
 - 1. Include data substantiating that materials comply with requirements.
- B. Samples: For color, letter style, and graphic representation required for each identification material and device.

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1.5 COORDINATION

- A. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.
- Coordinate installation of identifying devices with locations of access panels and doors.
- C. Install identifying devices before installing acoustical ceilings and similar concealment.

1.6 CONSTRUCTION WASTE MANAGEMENT

A. Construction waste shall be managed in accordance with provisions of Section 017419 "Construction Waste Management and Disposal". Documentation shall be submitted to satisfy the requirements of that Section.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. W.H. Brady Co.
 - 2. Panduit Corp.
 - 3. Seton Name Plate Corp.
 - 4. Marking Services, Inc.
 - 5. or approved equivalent.

2.2 MATERIALS

- A. Color: Unless specified otherwise, conform with ASME A13.1.
- B. Plastic Nameplates: Laminated three-layer plastic with engraved black letters on light contrasting background color.
- C. Metal Tags: Brass, with stamped letters; tag size minimum 1-1/2 inch diameter with smooth edges.
- D. Plastic Pipe Markers: Factory fabricated, flexible, semi-rigid plastic, preformed to fit around pipe or pipe covering; minimum information indicating flow direction arrow and fluid being conveyed.
- E. Label Content: Include equipment's Drawing designation or unique equipment number, Drawing numbers where equipment is indicated (plans, details, and schedules), plus the Specification Section number and title where equipment is

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specified.

2.3 PIPE LABELS

- A. General Requirements for Manufactured Pipe Labels: Preprinted, color-coded, with lettering indicating service, and showing flow direction.
- B. Pretensioned Pipe Labels: Precoiled, semirigid plastic formed to cover full circumference of pipe and to attach to pipe without fasteners or adhesive.
- Self-Adhesive Pipe Labels: Printed plastic with contact-type, permanent-adhesive backing.
- D. Pipe Label Contents: Include identification of piping service using same designations or abbreviations as used on Drawings, pipe size, and an arrow indicating flow direction.
 - 1. Flow-Direction Arrows: Integral with piping system service lettering to accommodate both directions, or as separate unit on each pipe label to indicate flow direction.
- E. Lettering Size: At least 1-1/2 inches high.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Clean piping and equipment surfaces of substances that could impair bond of identification devices, including dirt, oil, grease, release agents, and incompatible primers, paints, and encapsulants.
- B. Clean to identification tag/equipment manufacturer's instructions.
- C. Prepare surfaces in accordance with Division 09 for stencil painting.

3.2 PIPE LABEL INSTALLATION

- A. Identify piping, concealed or exposed, with plastic pipe markers. Tags may be used on ½" or smaller diameter non-insulated piping. Identify service, flow direction, and pressure. Install in clear view and align with axis of piping.
- B. Locate pipe labels where piping is exposed or above accessible ceilings in finished spaces; machine rooms; accessible maintenance spaces such as shafts, tunnels, and plenums; and exterior exposed locations as follows:
 - 1. Each side of penetrations through walls, floors, ceilings, inaccessible enclosures,

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and at each obstruction.

- 2. Near major equipment items and other points of origination and termination.
- 3. Spaced at maximum intervals of 20 feet along each run.

3.3 PIPING IDENTIFICATION SCHEDULE

A. Pipe identification and color coding for general-use piping systems shall be in accordance with the following schedule:

Classification:	Band Color:	Stenciled Legend:
Industrial Sewer	Green	Industrial Sewer
illuustilai Sewei	Green	Industrial Sewel

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Classification:	Band Color:	Stenciled Legend:
		exposed on exterior of building, paint pipe to irection of DEN Project Manager.

PART 4 - MEASUREMENT

4.1 METHOD OF MEASUREMENT

A. No separate measurement shall be made for work under this Section.

PART 5 - PAYMENT

5.1 METHOD OF PAYMENT

A. No separate payment will be made for work under this Section. The cost of the work described in this Section shall be included in the Lump Sum Contract price.

END OF SECTION 220553

SECTION 220811 - COATINGS AND CORROSION

PART 1 - GENERAL

1.1 SUMMARY

A. Field applied protective membrane/liner for piping, equipment and all related materials for partial and fully deteriorated and/or damaged sewer piping by the Light Cured -In-Place Pipe process.

1.2 RELATED DOCUMENTS

A. Drawings, general and special conditions, Division 1 - General Requirements and other applicable technical specifications apply to work of this Section.

1.3 RELATED SECTIONS

- A. Section 220400 Basic Mechanical Requirements.
- B. Section 221316 Sanitary Waste and Vent Piping.

1.4 REFERENCED STANDARDS

A. Materials and workmanship shall conform to the latest issue of all industry standards, publications, or regulations referenced in this section and with the following references as applicable. Refer to Section 220400 for listing of issuing organizations or agencies.

B. Applicable Standards:

1. UL tested to ASTM D648 standards

a.

- 2. International Fire Code (IFC) with the Denver Amendments
- 3. International Building Code (IBC) with the Denver Amendments
- 4. IAPMO certified
- 5. NSF 14 standards
- 6. ASTM F1216 standard for the rehabilitation of existing pipelines
- 7. American Society for Testing and Materials (ASTM):
 - a. F1216 Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube.
 - b. ASTM D790 Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
 - c. ASTM D5813 Standard Specification for Cured-in-Place Thermosetting Resin

Sewer Pipe.

1.5 SUBMITTALS

- A. Shop Drawings shall be submitted in accordance with Division 1 General Requirements.
- B. Submit manufacturer's product data and application instructions for all coatings and linings.
 - 1. Liner tube.
 - 2. Sealant/Resin.
 - 3. Fittings, adapters, and specials.
- C. "As Built" Plans shall be provided in electronic format including Revit files and PDF documents.
- D. Certificates and Affidavits:
 - 1. Submit as specified in Division 1.
 - 2. Furnish the following prior to shipment or installation as applicable:
 - a. Affidavit of compliance with applicable standards for resins and tube materials.
 - b. Certification that the Contractor is a licensed installer of any patented process.
 - c. Certification that the liner thickness meets the minimum structural design criteria.
 - 3. Furnish the following after installation and testing:
 - a. Certified test results for hydraulic leak test of lined pipe.

1.6 EXTENT OF WORK

- A. Apply internal coating system for piping, including sides and all surfaces of piping which will contact the fluid.
- B. Examine all sewer piping where shown on plans. Where piping is found to be cracked or leaking, prepare piping for repair by high pressure water cleaning /and or approved mechanical method to achieve clean sound and profiled piping. Where piping cannot be repaired by Coating due to sloping issues or extensive damage, refer to Section 220131 SEWER PIPE POINT REPAIR AND OBSTRUCTION REMOVALS.

1.7 QUALITY ASSURANCE

- A. CoatingLiner Applicator's Experience and Certification
 - 1. Coating application personnel, whom have direct spray application responsibility, shall be certified by the manufacturer of the selected product.

1.8 MAINTENANCE MATERIALS

- A. Containers shall be tightly sealed and clearly labeled for identification.
- B. Delivery and storage of lining and other materials shall conform to requirements of the

manufacturer.

- C. Furnish required storage facilities.
- D. Handle lining materials in compliance with the manufacturer's recommendations.
- E. Damaged material will be unacceptable for installation.

1.9 DEFINITIONS

A. DFT: Minimum Dry Film Thickness, without any negative tolerance.

1.10 ABBREVIATIONS

MDFT	Minimum Dry Film Thickness
Mil	Thousandths of an Inch

PART 2 - PRODUCTS

2.1 GENERAL

- A. Lining materials shall be standard products produced by recognized manufacturers who are regularly engaged in production of such materials for essentially identical service conditions. Products must have five (5) years of case histories on similar steel pipe coating projects.
- B. Pipeline lining materials shall be the products of a single manufacturer, unless otherwise noted in this specification. Product substitutions during the project will not be considered or permitted.
- C. Lining applicator shall provide a monitoring system approved by the lining manufacturer that constantly records pipe and lining conditions during lining application. Recorded monitoring parameters shall include pipe temperature, line speed, surface preparation, holiday test and other parameters applicable to the type of lining.
- D. Substitute or "Or-Equivalent" Products for Coating Systems
 - 1. The CONTRACTOR shall furnish satisfactory documentation from the manufacturer of the proposed substitute or "or-equal" product that the material meets AWWA C222 and the property requirements listed in Section 2.2.D.6.c.
 - 2. If a proposed substitution requires changes in the WORK, the CONTRACTOR shall bear all such costs involved, as part of the WORK.

2.2

2.2 CURED-IN-PLACE(CIPP) MATERIAL:

A. ACCEPTABLE MANUFACTURERS:

- 1. Liner Tube:
 - a. Flowliner
 - b. Saertex
 - c. LMK
 - d. Permaliner
- 2. Tube:
 - a. The tube shall meet the requirements of ASTM F1216.
- 3. The tube shall have a uniform thickness that when compressed at installation pressure will equal the specified nominal tube thickness, with a -5% manufacturing tolerance allowed
- 4. The tube shall be fabricated to a size that when installed will tightly fit the internal circumference and length of the original pipe. Allowance should be made for circumferential stretching during insertion. The minimum length shall be that deemed necessary by the Contractor to effectively span the distance between respective access points, unless otherwise specified. The Contractor shall verify the lengths and diameters in the field before fabricating the tube. Individual insertion runs can be made over one or more cleanout sections as determined in the field by the Contractor. The Contractor will be allowed to insert only the length of liner that they can realistically install within the allowable working hours outlined in the Summary of Work and on the Contract Drawings. Under no circumstances will it be excusable for the Contractor to exceed these hours due to an incomplete length of insertion. Intermediate cleanouts will be reopened as directed by the Owner.
- 5. The outside layer of the tube (before insertion) shall be translucent plastic coated with flexible material that clearly allows inspection of the resin impregnation (wet-out) procedure. The plastic coating shall not be subject to delamination after curing of the CIPP.
- 6. The tube shall be homogenous across the entire wall thickness containing no intermediate or encapsulated elastomeric layers. No materials shall be included in the tube that is subject to delamination of the cured CIPP.
- 7. The tube can be reinforced with carbon or glass fiber material for added strength.
- 8. The wall color of the interior pipe surface of the CIPP after installation shall be light blue, light green or light brown so that a clear detail examination with closed circuit television inspection equipment may be made.

B. Resin:

- 1. The resin system shall meet the requirements of ASTM F1216 (latest revision). The resin shall be tinted so that adequate saturation can be readily observed.
- 2. The tube shall be impregnated with sufficient amount of resin to insure that the resin will be observed on the outer surface of the tube when squeezed. After the tube is cured, it shall show satisfactory evidence of a fully impregnated tube or the existence of excess resin on the outer surface.
- 3. The resin must be designed to cure properly with a selected curing method.

C. STRUCTURAL REQUIREMENTS:

- 1. Minimum Structural Standards. The cured pipe material (CIPP) shall conform to the following minimum structural standards:
 - a. Standard A conventional CIPP (6-inch through 42-inch) Flexural Strength (ASTM D790) 4,500 psi Modulus of Elasticity (ASTM D790) 400,000 psi
- 2. The CIPP design assumes no bonding to the original pipe wall.
 - a. Field verify the mean diameter, minimum diameter, and depth of cover
 - 1) Adjust the minimum liner tube wall thickness if the mean diameter or the depth of cover is greater than the value in the table above.
 - 2) Adjustments to the minimum liner table wall thickness shall be increases only.
 - Thicknesses less than indicated shall not be allowed.
 - 4) The minimum liner tube wall thickness represents the in-place, cured, wall thickness.
 - 5) The wall thickness will be measured in accordance with the applicable sections of ASTM Test Method D2122. Sufficient readings, a minimum of eight, will be made to ensure that the minimum thickness has been determined. A cylindrical anvil
 - Tubing micrometer accurate to +0.001 inch will be used. The minimum wall thickness tests will be performed by a Certified Independent Laboratory, approved by the District. All costs shall be borne by the Contractor.
- 3. The Manufacturer shall certify and provide structural calculations that the product at the thickness provided will adequately support all loads.
- 4. The layers of the cured CIPP shall be uniformly bonded. It shall not be possible to separate any two layers with a probe or point of a knife blade so that the layers separate cleanly or the probe or knife blade moves freely between the layers; nor shall separation of the layers occur during testing performed under the requirements of this Specification.

D. QUALITY CONTROL:

- 1. The Contractor will be allowed to work on and complete only one inversion run at a time per project. Prior to the start of the subsequent inversion run, the Contractor shall submit samples to a laboratory for report taken from the previous run. The laboratory report shall indicate, but not be limited to, the following properties:
 - a. Flexural Strength
 - b. Modulus of Elasticity
 - c. Thickness
- 2. Laterals and Services (TAPS) Reconnection:
 - The Contractor shall determine if a service connection is active prior to rehabilitation

of the sewer. Only active service connections and laterals shall be re-established. The Contractor shall be responsible for completing point repairs of any active service connection that is opened and misaligned. This point repair shall be as directed and approved by the Owner.

- 3. Sample Specimen for Thickness and Material Testing:
 - a. A minimum of three (3) specimens will be collected at each insertion, according to ASTM F1216.
 - b. The samples should be fabricated from material taken from the tube and the resin/catalyst system used and cured in a clamped mold placed in the down tube (hot water cure) or silencer (steam cure).
 - 1) The average of four (4) measurements taken around the periphery of the individual sample will be considered the thickness of the run. The inner and/or outer surface of the lining material should not be included in the measured structural thickness.
 - c. If the clamped mold samples are inconclusive or inadequate to represent the actual field conditions, additional samples will be collected at the expense of the contractor.
 - 1) Provide cored samples taken from the actual installed liner.
 - a) Repair liner per manufacturers' recommendation and approval of the Engineer.
 - 2) Ultrasonic testing of the wall thickness will be at the discretion of the Engineer.
 - Test per section 8.6.1, according to ASTM F1216.
 - d. If the deviation in thickness is less than five percent (5%), no adjustment will be required. If the deviation in thickness is measured to be between five percent and ten percent (5% 10%), then an adjustment of ten percent (10%) reduction of the liner unit bid cost will be applied. If the deviation in thickness is greater than ten percent (10%), the entire run will be rejected.
- 4. Materials Testing:
 - a. Materials testing must be done in a local lab so that the Owner may witness the testing procedures if necessary.
- 5. Wet-Out Station Location:
 - a. In order to facilitate proper inspection, the wet-out station shall be located so that the Owner may witness the wetting out procedures if necessary.
 - b. If a calibration hose is required to be used during the process of the installation of the Cured-In-Place-Plastic-Pipe, this calibration hose shall be wet and impregnated with sufficient amount of resin prior to inversion.
- 6. Allowable Pulling Force:
 - a. The Contractor shall inform the Owner as to the maximum allowable force that can

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be used in pulling the tube into the pipe (as recommended by Manufacturer) without rupturing or diminishing the diameter and/or the thickness of the tube. Such pulling force shall be monitored at all times during the insertion operation and the tube shall be rejected and removed if the allowable pulling force is exceeded.

- 7. Allowable Elongation of Flexible Tube:
 - a. Prior to insertion, the flexible tube shall be measured and marked equal to the insertion run (distance between cleanouts less one cleanout diameter). After the completion of insertion, the length of the flexible tube outside of the insertion run (face of the cleanout to the mark) shall be measured. This length or elongation shall not exceed five percent (5%) of the original length of measured flexible tube. In the event that this length is exceeded, the entire run length may be rejected and permanently discarded, the Owner may order an additional tube to be inserted at no cost to the Owner, or the Owner may accept the elongated tube, but reduce the price paid for the work by five percent (5%) for every percent elongation above the five percent (5%) allowable tolerance. The acceptance of one of these will be at the sole discretion of the Owner.

PART 3 - EXECUTION

- 3.1 CLEANING, PIPELINE INSPECTION, AND LINE OBSTRUCTION:
 - A. Cleaning of the Sewer Line:
 - 1. The Contractor shall be required to remove all internal debris from the sewer line.
 - 2. The cleaning operation shall remove any and all debris so that each joint pipe can be thoroughly inspected and successfully reconstructed. Pipe to be lined shall be cleared of protruding service connections, debris, or other obstructions that can hinder liner tube inversion.
 - 3. All sludge, dirt, sand, rocks, grease, and all other solid or semi-solid material resulting from the cleaning operation shall be removed at the downstream cleanout of the section being cleaned. Passing material from one cleanout section to another shall not be permitted.
 - 4. All such debris resulting from cleaning operations shall be removed from the site and disposed of in the proper manner. The Contractor shall bear all costs associated with proper disposal. Disposal of the debris shall be in accordance with all local, state, and federal regulations.
 - 5. All debris shall be removed from the downstream cleanout and the site no less often than at the end of each work day. No debris shall be left at the site unattended by the Contractor. Under no circumstances will the Contractor be allowed to accumulate debris beyond the stated time. In the event the Contractor leaves debris unattended at the site beyond the stated time, the Contractor will not be allowed to proceed with the work until the debris is properly removed.
 - 6. Contractor shall inform the Owner of their planned dump site during the Pre- Construction Meeting.
 - 7. During all sewer cleaning operations, satisfactory precautions shall be taken to protect the

sewer lines from damage that might be inflicted by improper use of cleaning equipment. Precautions shall be taken to ensure that the cleaning operation will not cause any damage or flooding to public and/or private property being served by the sewer line section involved. The Contractor shall bear full costs associated with any flooding or damage to basements or structures.

B. Inspection of Pipelines:

- 1. Inspections of pipelines shall be used for locating breaks, obstacles, and service conditions. All camera inspection must comply with Section 220130.16 Television Inspection of Sewer Pipelines.
- 2. The inspection of pipelines is also to determine active service connections and the addresses which they serve.
- 3. The interior of the pipeline shall be carefully inspected to determine the location of any conditions which may prevent proper installation of the CIPP into the pipelines, and it shall be noted so that these conditions can be corrected.
- 4. Video inspection reports shall be digital and submitted in DVD (preferred), CD, or other removable type of storage.
- 5. Video inspection reports shall be kept for later reference by the Owner.

C. Line Obstructions:

- 1. It shall be the responsibility of the Contractor to clear the line of obstructions such as solids and roots that will prevent the insertion of the CIPP.
- 2. If pre-installation inspection reveals an obstruction such as a protruding service connection, dropped joint, or a collapse that will prevent the inversion process, and it cannot be removed by conventional sewer cleaning equipment, then the Contractor shall record/document (with pictures/video) those locations for review by the EOR and DEN PMT to determine the best solution for repair. Such repairs shall be approved in writing by the Owner prior to the commencement of the work and shall be considered as a separate pay item.

3.2 CIPP INSTALLATION:

- A. CIPP installation shall be in accordance with ASTM F1216, Section 7, with the following requirements:
 - 1. Tube Impregnation Location:
 - a. The Contractor shall designate a location where the tube will be impregnated prior to installation. The Contractor shall notify the Owner of proposed "wet-outs" in order to inspect the materials and procedure. A resin and catalyst system compatible with the requirements of this method shall be used.
 - 2. Heat Source Gauging:

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a. The heat source shall be fitted with suitable monitors to gauge the temperature of the incoming and outgoing heat supply. Another such gauge shall be placed at the remote cleanout to determine the temperature at that location during cure. If air pressure and steam are used, Contractor shall follow all Manufacturer and OSHA safety requirements.

3. Finish:

a. The finished CIPP shall be continuous over the entire length of an insertion run between two cleanouts and be free, as commercially practicable, from visual defects such as foreign inclusions, dry spots, pinholes, and delamination. It shall also meet the leakage/pressure test requirements specified herein.

4. Required Pressures:

- a. Before the insertion process begins, the minimum pressure required to hold the tube tight against the existing conduit and the maximum allowable pressure so as not to damage the tube shall be provided by the tube manufacturer, and it will be the Contractor's responsibility to obtain and submit this information to the Owner.
- b. Once the insertion has started, the pressure shall be maintained between the minimum and maximum pressures until the operation has been completed. If air pressure is used for the operation, the equipment shall be fitted with a pressure gage accurate to 0.01 psi. Should the pressure deviate substantially from within the range of minimum and maximum pressures, the installed tube may be rejected. If rejected, the Contractor will remove and dispose of the tube at no cost to the Owner.
- c. Before the curing process begins, the pressure required to hold the flexible tube tight against the existing conduit shall be provided by the tube manufacturer and submitted to the Owner prior to any insertion process.
- d. Once the cure has started and dimpling for laterals is completed, the required pressure shall be maintained until the cure has been completed.
- e. A complete log of the pressure shall be maintained on the site and shall be furnished to the Owner after each inversion.

5. Resin Filling:

a. The plastic coating of the tube shall be translucent to allow visual proof that the resin has wet out the entire tube and that there are no dry areas. Vacuum shall be used to ensure the resin fills all dry areas.

B. Curing Methods

- 1. Complete curing process control sheet for every lining completed.
- 2. Control sheets shall provide required temperatures and time for different steps of curing process; initial cure, post cure, and cooling as outlined in ASTM F1216.
 - a. Initial cure may be considered completed when exposed portions of flexible tube pipe take a hard set and the temperature is adequate, as recommended by the manufacturer.
- 3. After installation, apply hot water or ultraviolet (UV) light as recommended by liner manufacturer. Do not use Steam.

- UV: If this method of curing is selected, material shall be a polyester needle felt a. fiberglass based CIPP liner impregnated with an isophthalic neopentyl glycol resin.
 - Curing parameters, such as curing speed, inner air pressure, and wattage, per the manufacturer.
 - ii. Optimal curing speed or travel speed of energized UV light sources is determined for each length of liner based on liner diameter, liner thickness, and exothermic reaction temperature.
 - iii. Invert liner into pipe with standard pressure drum.
 - iv. After completion of inversion process introduce light chain in liner and close ends with couplings.
 - v. Remove and discard inner film material after curing to provide optimal quality of final product.
 - vi. Control panel operating UV curing unit light chain may be pulled on a trailer attached to UV unit.
 - vii. Flushing of UV cured CIPP liner to reduce styrene residual is not required.

C. Cool Down:

The Contractor shall cool the hardened CIPP liner to a temperature below 100°F before relieving the pressure in the liner. Cool-down may be accomplished by the introduction of cool water or ambient air into the CIPP liner. Care should be taken to maintain pressure throughout the cure and cool-down period.

D. Branchline re-instatement:

Branch line reinstatement(s) to be completed by using an internal robotic cutter from within the lined pipe, utilizing closed circuit TV.

E. Finish:

The finished CIPP liner shall be free of resin dry spots and de-lamination. A wrinkle deflection of 5-10% is acceptable; this varies depending on the condition of the host pipe and the radius of any bends or fittings that may be in the host pipe. The CIPP liner shall not inhibit the post video inspection of the finished pipe.

INSPECTION: 3.3

A. Watertightness:

- 1. Leakage testing the CIPP shall be accomplished during cure while under a positive head.
- 2. CIPP products in which the pipe wall is cured while not in direct contact with the pressurizing fluid (e.g., a removable bladder) must be tested by an alternative method approved by the Owner.
- 3. Additional leakage testing including exfiltration or infiltration testing may be required if the finished product appears to have defects or if the leakage testing during installation is not witnessed.

B. Testing:

1. CIPP samples shall be prepared and tested in accordance with ASTM F1216. The test will be performed by a Certified Independent laboratory, approved by the Owner.

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 - 2. Tests results are to be submitted to the Engineer and all costs of tests shall be borne by the Contractor.
 - 3. Frequency of testing shall be in accordance to ASTM F1216 or as required by the Owner.
 - 4. Measure and record cured (finished) thickness.
 - a. Make a minimum of eight measurements at evenly spaced intervals around the circumference of the specimen.
 - b. Record the minimum, maximum, and average thickness results
 - 1) Deduct for any plastic coatings or CIPP layers not included in the structural design.
 - 5. Record short-term flexural (bending) Properties
 - a. Measure and record Flexural Strength
 - b. Measure and record Modulus of Elasticity
 - 1) Indicate flexural strength at 1st Microcrack (psi)
 - 2) Indicate strain at 1st Microcack (%)
 - 3) Indicate Flexural Yield Strength (psi)
 - 4) Indicate strain at Flexural Yield Strength (5)
 - 5) Provide Flexural Modulus (Tangent in psi)
 - 6. Record tensile properties

C. Video Inspection

- 1. Video inspection of the CIPP shall be in accordance with ASTM F1216, Section 8.4.2
- 2. The Contractor will provide Owner with a color DVD or compact disc. The DVD or CD will include both the before and after conditions, and restored connections with addresses each connection serves, in audio, on the DVD. Provide log and commentary by line station number. Label each DVD or compact disc to reference project, line, and location. Maintain a set of record drawings to correlate with log and line station number.

D. Reports:

1. Copies of all certified reports and logs of all tests and inspections conducted shall be submitted to the Owner.

E. Clean-up:

1. Upon acceptance of the installation work and testing, the Contractor shall reinstate the project area affected by this operation.

F. Patents:

1. The Contractor and the Contractor's supplier shall warrant and save harmless the District against any and all claims and potential litigation involving patent infringement and copyright violations and any loss thereof.

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G. Warranty:

- 1. The liner shall be certified by the manufacturer for specified material properties. The manufacturer shall warrant the liner to be free from defects in raw materials for five years from the date of installation. The Contractor shall warrant the CIPP installation for a period of two years. During the Contractor warranty period any defects which affect the integrity or strength of the pipe shall be repaired at the Contractor's expense in a manner mutually agreed by the Owner and the Contractor.
- 2. If a liner fails to perform, the Contractor shall be required to remove the failed liner at no additional cost. This shall include but not be limited to all material, excavation, backfilling, cutting, concrete, pipe, shoring, temporary pavement, permanent pavement, permits, bypass pumping, surface restoration and other incidental work required to remove the liner from the existing pipe. If removal is not feasible, or if removal will cause more harm than acceptable to the host pipeline, alternatives may be proposed by the Contractor to the Owner for review and approval. The integrity of the existing pipe where the liner was removed shall be rehabilitated by installing another liner or if this procedure is not feasible by installing a new pipe section. There shall be no direct payment for this work.

PART 4 - MEASUREMENT

- 4.1 METHOD OF MEASUREMENT
 - A. No separate measurement will be made for work under this Section.

PART 5 - PAYMENT

- 5.1 PAYMENT
 - A. No separate payment will be made for work under this section. The cost of the work described in this section shall be included in the Lump Sum Contract price.

END OF SECTION 220811

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SECTION 221316 - SANITARY WASTE AND VENT PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Pipe, tube, and fittings.
- B. Related Sections:
- C. Alternates: Refer to Division 01 Section 012300 "Alternates" for description of Work in this Section affected by Alternates.

1.3 PERFORMANCE REQUIREMENTS

- A. Components and installation shall be capable of withstanding the following minimum working pressure unless otherwise indicated:
 - 1. Soil, Waste, and Vent Piping: 10-foot head of water.
 - 2. Waste, Force-Main Piping: 50 psig.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
 - 1. Indicate valve data and ratings.
 - 2. Include data substantiating that materials comply with requirements.
- B. Shop Drawings: For sovent drainage system. Include plans, elevations, sections, and details.

1.5 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

1.6 CLOSEOUT SUBMITTALS

- A. As-Built Plans: Submit complete as-built plans of all Work, including interface with other Work, in accordance with requirements as specified in Section 013300 "Submittal Procedures".
- B. Maintenance Data: Include installation instructions, spare parts lists, exploded assembly views.

1.7 QUALITY ASSURANCE

- A. Piping materials shall bear label, stamp, or other markings of specified testing agency.
- B. Comply with NSF/ANSI 14, "Plastics Piping Systems Components and Related Materials," for plastic piping components. Include marking with "NSF-dwv" for plastic drain, waste, and vent piping and "NSF-sewer" for plastic sewer piping.
- C. Unless specified otherwise, all materials and equipment shall be of domestic (USA) manufacture and shall be of the best quality used for the purpose in commercial practice.

1.8 PROJECT CONDITIONS

- A. Interruption of Existing Sanitary Waste Service: Do not interrupt service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary service according to requirements indicated:
 - 1. Notify DEN Project Manager no fewer than fourteen (14)days in advance of proposed interruption of sanitary waste service.
 - 2. Do not proceed with interruption of sanitary waste service without DEN Project Manager's written permission.

1.9 REGULATORY REQUIREMENTS

- A. Perform Work in accordance with City and County of Denver plumbing code.
- B. Conform to code for installation of backflow prevention devices.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect, and handle products under provisions of Section 220400 "Basic Plumbing Requirements" and Division 01 requirements.
- B. Inspect materials for damage after delivery.
- C. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.
- D. Protect piping systems from entry of foreign materials by temporary covers, completing

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sections of the work, and isolating parts of completed system.

1.11 ENVIRONMENTAL REQUIREMENTS

A. Do not install underground piping when bedding is wet or frozen.

1.12 CONSTRUCTION WASTE MANAGEMENT

A. Construction waste shall be managed in accordance with provisions of Section 017419 "Construction Waste Management and Disposal". Documentation shall be submitted to satisfy the requirements of that Section.

PART 2 - PRODUCTS

2.1 PIPING MATERIALS

A. Comply with requirements in "Piping Schedule" Article for applications of pipe, tube, fitting materials, and joining methods for specific services, service locations, and pipe sizes.

2.2 HUBLESS, CAST-IRON SOIL PIPE AND FITTINGS

- A. Pipe and Fittings: ASTM A 888 or CISPI 301.
- B. CISPI, Hubless-Piping Couplings:
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. ANACO-Husky.
 - b. Dallas Specialty & Mfg. Co.
 - c. Fernco Inc.
 - d. Matco-Norca. Inc.
 - e. MIFAB, Inc.
 - f. Mission Rubber Company; a division of MCP Industries, Inc.
 - g. Stant.
 - h. Tyler Pipe.
 - or approved equivalent.
 - 2. Standards: ASTM C 1277 and CISPI 310.
 - 3. Description: Stainless-steel corrugated shield with stainless-steel bands and tightening devices; and ASTM C 564, rubber sleeve with integral, center pipe stop.
- C. Cast-Iron, Hubless-Piping Couplings:
 - Manufacturers. See Section 016000 "Product Requirements."

- 2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. MG Piping Products Company.
 - b. Charlotte Pipe.
 - c. or approved equivalent.
- 3. Standard: ASTM C 1277.
- 4. Description: Two-piece ASTM A 48/A 48M, cast-iron housing; stainless-steel bolts and nuts; and ASTM C 564, rubber sleeve with integral, center pipe stop.
- D. Cast-Iron Flanges: ASME B16.1, Class 125.
 - Flange Gasket Materials: ASME B16.21, full-face, flat, nonmetallic, asbestosfree, 1/8-inch maximum thickness unless thickness or specific material is indicated.
 - 2. Flange Bolts and Nuts: ASME B18.2.1, carbon steel unless otherwise indicated.

2.3 PVC PIPE AND FITTINGS

- A. Solid-Wall schedule 40 and schedule 80 PVC Pipe: ASTM D1785 and D2665, drain, waste, and vent.
- B. PVC Socket Fittings: ASTM D2464 and D2665, made to ASTM D3311, plenum-rated, drain, waste, and vent patterns and to fit Series PS 100 sewer and drain pipe.
- C. PVC Special Fittings: ASTM F409, drainage-pattern tube and tubular fittings with ends as required for application.
- D. PVC Pipe: ASTM D 3033 or D 3034, SDR 35.
 - 1. Fittings: PVC.
 - 2. Joints: ASTM F 477, elastomeric gaskets.
- E. Adhesive Primer: ASTM F 656.
- F. Solvent Cement: ASTM D 2564.
 - 1. PVC solvent cement shall have a VOC content of 510 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 - Solvent cement shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.4 SPECIALTY PIPE FITTINGS

- A. Transition Couplings:
 - General Requirements: Fitting or device for joining piping with small differences

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in OD's or of different materials. Include end connections same size as and compatible with pipes to be joined.

- 2. Fitting-Type Transition Couplings: Manufactured piping coupling or specified piping system fitting.
- 3. Unshielded, Nonpressure Transition Couplings:
 - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1) Dallas Specialty & Mfg. Co.
 - 2) Fernco Inc.
 - 3) Mission Rubber Company; a division of MCP Industries, Inc.
 - 4) Plastic Oddities; a division of Diverse Corporate Technologies, Inc.
 - 5) or approved equivalent.
 - b. Standard: ASTM C 1173.
 - c. Description: Elastomeric, sleeve-type, reducing or transition pattern. Include shear ring and corrosion-resistant-metal tension band and tightening mechanism on each end.
 - d. Sleeve Materials:
 - 1) For Cast-Iron Soil Pipes: ASTM C 564, rubber.
 - 2) For Plastic Pipes: ASTM F 477, elastomeric seal or ASTM D 5926, PVC.
 - 3) For Dissimilar Pipes: ASTM D 5926, PVC or other material compatible with pipe materials being joined.

PART 3 - EXECUTION

3.1 EARTH MOVING

A. Comply with requirements for excavating, trenching, and backfilling specified in Section 312000 "Earth Moving."

3.2 EXAMINATION

A. Verify that excavations are to required grade, dry, and not over-excavated.

3.3 PREPARATION

- A. Ream pipe and tube ends. Remove burrs.
- B. Remove scale and dirt, on inside and outside, before assembly.
- C. Prepare piping connections to equipment with flanges or unions.

3.4 PIPING INSTALLATION

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- A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on coordination drawings.
- B. Install piping to conserve building space and not interfere with use of space. Refer to Section 220400 "Basic Plumbing Requirements" for coordination requirements.
- C. Group piping whenever practical at common elevations.
- D. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
- E. Provide clearance for installation of insulation and access to valves and fittings.
- F. Install piping to permit valve servicing.
- G. Install piping at indicated slopes.
- H. Install piping free of sags and bends.
- I. Install fittings for changes in direction and branch connections.
- J. Make changes in direction for soil and waste drainage and vent piping using appropriate branches, bends, and long-sweep bends. Sanitary tees and short-sweep 1/4 bends may be used on vertical stacks if change in direction of flow is from horizontal to vertical. Use long-turn, double Y-branch and 1/8-bend fittings if two fixtures are installed back to back or side by side with common drain pipe. Straight tees, elbows, and crosses may be used on vent lines. Do not change direction of flow more than 90 degrees. Use proper size of standard increasers and reducers if pipes of different sizes are connected. Reducing size of drainage piping in direction of flow is prohibited.
- K. Install soil and waste drainage and vent piping at the following minimum slopes unless otherwise indicated:
 - 1. Building Sanitary Drain: 2 percent downward in direction of flow for piping NPS 3 and smaller; 1 percent [downward in direction of flow for piping NPS 4 and larger.
 - 2. Horizontal Sanitary Drainage Piping: 2 percent downward in direction of flow.
 - 3. Vent Piping: 1 percent] down toward vertical fixture vent or toward vent stack.
- L. Install cast-iron soil piping according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook," Chapter IV, "Installation of Cast Iron Soil Pipe and Fittings."
- M. Install aboveground PVC piping according to ASTM D 2665.
- N. Install underground PVC piping according to ASTM D 2321.
- O. Plumbing Specialties:
 - 1. Install drains in sanitary drainage gravity-flow piping. Comply with requirements

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for drains specified in Section 221319 "Sanitary Waste Piping Specialties."

- P. Do not enclose, cover, or put piping into operation until it is inspected and approved by authorities having jurisdiction.
- Q. Install sleeves for piping penetrations of walls, ceilings, and floors. Comply with requirements for sleeves specified in Section 220517 "Sleeves and Sleeve Seals for Plumbing Piping."
- R. Install sleeve seals for piping penetrations of concrete walls and slabs. Comply with requirements for sleeve seals specified in Section 220517 "Sleeves and Sleeve Seals for Plumbing Piping."

3.5 JOINT CONSTRUCTION

- A. Flanged Joints: Align bolt holes. Select appropriate gasket material, size, type, and thickness. Install gasket concentrically positioned. Use suitable lubricants on bolt threads. Torque bolts in cross pattern.
- B. Plastic, Nonpressure-Piping, Solvent-Cement Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:
 - 1. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements.
 - 2. ABS Piping: Join according to ASTM D 2235 and ASTM D 2661 Appendixes.
 - 3. PVC Piping: Join according to ASTM D 2855 and ASTM D 2665 Appendixes.

3.6 HANGER AND SUPPORT INSTALLATION

- A. Comply with requirements for pipe hanger and support devices and installation specified in Section 220529 "Hangers and Supports for Plumbing Piping and Equipment."
 - 1. Install carbon-steel pipe hangers for horizontal piping in noncorrosive environments.
 - 2. Install individual, straight, horizontal piping runs:
 - a. 100 Feet and Less: MSS Type 1, adjustable, steel clevis hangers.
- B. Support horizontal piping and tubing within 12 inches of each fitting, valve, and coupling.
- C. Rod diameter may be reduced one size for double-rod hangers, with 3/8-inch minimum rods.
- D. Install hangers for cast-iron soil piping with the following maximum horizontal spacing and minimum rod diameters:
 - 1. NPS 1-1/2 and NPS 2: 60 inches with 3/8-inch rod.

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- 2. NPS 3 (DN 80): 60 inches with 1/2-inch rod.
- 3. NPS 4 and NPS 5: 60 inches with 5/8-inchrod.
- 4. NPS 6 and NPS 8: 60 inches with 3/4-inch rod.
- 5. NPS 10 and NPS 12: 60 inches with 7/8-inch rod.
- 6. Spacing for 10-foot lengths may be increased to 10 feet. Spacing for fittings is limited to 60 inches.
- E. Install hangers for PVC piping with the following maximum horizontal spacing and minimum rod diameters:
 - 1. NPS 1-1/2 and NPS 2: 48 inches with 3/8-inch rod.
 - 2. NPS 3: 48 inches with 1/2-inch rod.
 - 3. NPS 4 and NPS 5: 48 inches with 5/8-inch rod.
 - 4. NPS 6 and NPS 8: 48 inches with 3/4-inch rod.
 - 5. NPS 10 and NPS 12: 48 inches with 7/8-inch rod.
- F. Support piping and tubing not listed above according to MSS SP-69 and manufacturer's written instructions.

3.7 CONNECTIONS

- A. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Provide new services to the extent indicated on the drawings. Before commencing work check invert elevations required for sewer connections, confirm inverts and ensure that these can be properly connected with slope for drainage and cover to avoid freezing.
- C. Connect soil and waste piping to exterior sanitary sewerage piping. Use transition fitting to join dissimilar piping materials.
- Connect drainage and vent piping to the following:
 Plumbing Specialties: Connect drainage and vent piping in sizes indicated, but not smaller than required by plumbing code.

3.8 IDENTIFICATION

A. Identify exposed sanitary waste and vent piping. Comply with requirements for identification specified in Section 220553 "Identification for Plumbing Piping and Equipment."

3.9 FIELD QUALITY CONTROL

- A. During installation, notify authorities having jurisdiction at least 24 hours before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction.
 - 1. Roughing-in Inspection: Arrange for inspection of piping before concealing or

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- closing-in after roughing-in and before setting fixtures.
- 2. Final Inspection: Arrange for final inspection by authorities having jurisdiction to observe tests specified below and to ensure compliance with requirements.
- B. Reinspection: If authorities having jurisdiction find that piping will not pass test or inspection, make required corrections and arrange for reinspection.
- C. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.

3.10 TESTING

- A. Perform all tests in the presence of the authorized City representative when required. Contractor shall provide inspector minimum 48-hour prior notice of test; also notify DEN Project Manager.
- B. Test soil, waste, and vent and roof drainage and drain systems with a minimum of 10 foot hydrostatic head or in accordance with local and state codes governing plumbing and drainage work.
- C. No piping or joint shall be left untested. All leaks shall be repaired and the piping system shall be re-tested until satisfactory results are obtained.
- D. Test sanitary drainage and vent piping according to procedures of authorities having jurisdiction or, in absence of published procedures, as follows:
 - 1. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired. If testing is performed in segments, submit separate report for each test, complete with diagram of portion of piping tested.
 - 2. Leave uncovered and unconcealed new, altered, extended, or replaced drainage and vent piping until it has been tested and approved. Expose work that was covered or concealed before it was tested.
 - 3. Roughing-in Plumbing Test Procedure: Test drainage and vent piping except outside leaders on completion of roughing-in. Close openings in piping system and fill with water to point of overflow, but not less than 10-foot head of water. From 15 minutes before inspection starts to completion of inspection, water level must not drop. Inspect joints for leaks.
 - 4. Finished Plumbing Test Procedure: After plumbing fixtures have been set and traps filled with water, test connections and prove they are gastight and watertight. Plug vent-stack openings on roof and building drains where they leave building. Introduce air into piping system equal to pressure of 1-inch wg. Use U-tube or manometer inserted in trap of water closet to measure this pressure. Air pressure must remain constant without introducing additional air throughout period of inspection. Inspect plumbing fixture connections for gas and water leaks.
 - 5. Repair leaks and defects with new materials and retest piping, or portion thereof, until satisfactory results are obtained.
 - 6. Prepare reports for tests and required corrective action.

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E. Pneumatic Leak Test:

1. General: Pneumatic leak tests shall only be used on piping with restricted access, piping exposed to freezing conditions, or where water leakage would damage critical DEN operational equipment. Contractor shall submit a written request for test in accordance with the Submittals paragraph of this specification Section.

2. Pneumatic Test Procedure:

- a. Contractor shall submit safety plan for pneumatic testing prior to test.
- b. General: Compressed gas poses the risk of sudden release of stored energy. For that reason, pneumatic testing shall be used only within the following limitations.
 - 1) The piping system does not contain cast iron pipe or plastic pipe subject to brittle failure.
 - 2) The system does not contain soldered or solvent cement joints over NPS 2.
 - The test pressure does not exceed 5 psig.
- c. Test Medium: The gas shall be nonflammable and nontoxic.
- d. Pneumatic Test Pressure:
 - 1) Except as limited in subparagraph 2) below, the test pressure shall not exceed 1.25 times the design pressure. Pressure shall be applied in several stages, allowing time for the system to reach equilibrium at each stage.
 - 2) The test pressure shall not exceed the maximum allowable pneumatic test pressure for any vessel, pump, valve, or other component in the system under test.
- e. Examination for Leakage: After the preliminary test, pressure shall be raised in stages of not more than 25% up to full pneumatic test pressure, allowing time for equalization of strains and detection of major leaks at each stage. Following the application of test pressure for at least 10 minutes, the pressure may be reduced to design pressure and examination shall be made for leakage of the piping. Leaks may be detected by soap bubble, halogen gas, scented gas, test gage monitoring, ultrasonic, or other suitable means. If leaks are found, pressure shall be vented, appropriate repair or replacement shall be made, and the pneumatic test repeated until no leakage is found.
- f. Contractor shall measure the surface temperature of the pipe for the duration of testing. The pneumatic test will be deemed successful only when the test pressure can be held at a constant pipe surface temperature for a period of no less than 10 continuous minutes. Record of the pipe temperatures and pressures during the duration of the test shall be submitted to the DEN Project Manager following completion of the test.
- F. Repair piping systems which fail required piping test, by disassembly and reinstallation, using new materials to extent required to overcome leakage. Do not use chemicals, stop-leak compounds, mastics, or other temporary repair methods.

- G. Drain test water from piping systems after testing and repair work that has been completed.
- H. Prepare written report of testing procedures and result and submit to DEN Project Manager.

3.11 CLEANING AND PROTECTION

- A. Clean interior of piping. Remove dirt and debris as work progresses.
- B. Protect drains during remainder of construction period to avoid clogging with dirt and debris and to prevent damage from traffic and construction work.
- C. Place plugs in ends of uncompleted piping at end of day and when work stops.

3.12 PIPING SCHEDULE

- A. Flanges and unions may be used on aboveground pressure piping unless otherwise indicated.
- B. Aboveground, soil and waste piping NPS 4 and smaller shall be any of the following: Hubless, cast-iron soil pipe and fittings; CISPI hubless-piping couplings; and coupled joints.
- C. Aboveground, soil and waste piping NPS 5 and larger shall be any of the following: Hubless, cast-iron soil pipe and fittings; CISPI hubless-piping couplings; and coupled joints.

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- Underground, soil, waste, and vent piping NPS 4 and smaller shall be any of the following:
 Solid wall PVC pipe, PVC socket fittings, and solvent-cemented joints.
- E. Underground, soil and waste piping NPS 5 and larger shall be any of the following:
 - 1. Solid-wall PVC pipe; PVC socket fittings; and solvent-cemented joints.

PART 4 - MEASUREMENT

4.1 METHOD OF MEASUREMENT

A. No separate measurement shall be made for work under this Section.

PART 5 - PAYMENT

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5.1 METHOD OF PAYMENT

A. No separate payment will be made for work under this Section. The cost of the work described in this Section shall be included in the Lump Sum Contract price.

END OF SECTION 221316

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SANITARY WASTE PIPING SPECIALTIES

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SECTION 221319 - SANITARY WASTE PIPING SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - Cleanouts.
 - 2. Floor drains.
 - 3. Trench drains.
 - 4. Miscellaneous sanitary drainage piping specialties.
 - 5. Ductile Iron and PVC Flexible Expansion Joint.

1.3 DEFINITIONS

A. PVC: Polyvinyl chloride plastic.

1.4 CLOSEOUT SUBMITTALS

- A. Record actual locations of equipment, cleanouts, backflow preventers.
- B. Operation and Maintenance Data: For drainage piping specialties to include in emergency, operation, and maintenance manuals.
 - 1. Include installation instructions, spare parts lists, exploded assembly views.
- As-Built Plans: Submit complete as-built plans of all Work, including interface with other Work, in accordance with requirements as specified in Section 013300 "Submittal Procedures".

1.5 QUALITY ASSURANCE

- A. Drainage piping specialties shall bear label, stamp, or other markings of specified testing agency.
- B. Comply with NSF 14, "Plastics Piping Components and Related Materials," for plastic sanitary piping specialty components.

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C. Manufacturers: For each product specified, provide components by same manufacturer throughout.

1.6 CONSTRUCTION WASTE MANAGEMENT

A. Construction waste shall be managed in accordance with provisions of Section 017419 "Construction Waste Management and Disposal". Documentation shall be submitted to satisfy the requirements of that Section.

PART 2 - PRODUCTS

2.1 CLEANOUTS

- A. Exposed Metal Cleanouts CO:
 - 1. ASME A112.36.2M, Cast-Iron Cleanouts:
 - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1) <u>Josam Company</u>.
 - 2) MIFAB, Inc.
 - 3) Smith, Jay R. Mfg. Co.
 - 4) Tyler Pipe.
 - 5) Watts Drainage Products.
 - 6) Zurn Plumbing Products Group.
 - 7) or approved equivalent.
 - 2. Standard: ASME A112.36.2M for cast iron for cleanout test tee.
- B. Metal Floor Cleanouts CO:
 - 1. ASME A112.36.2M, Cast-Iron Cleanouts:
 - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1) Josam Company.
 - 2) Oatey.
 - 3) Sioux Chief Manufacturing Co., Inc.
 - 4) Smith, Jay R. Mfg. Co.
 - 5) Tyler Pipe.
 - 6) Watts Drainage Products.
 - 7) Zurn Plumbing Products Group.
 - 8) or approved equivalent.

2.2 FLOOR DRAINS

A. Cast-Iron Floor Drains FD:

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- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Commercial Enameling Co.
 - b. Josam Company; Josam Div.
 - c. MIFAB, Inc.
 - d. Prier Products, Inc.
 - e. Smith, Jay R. Mfg. Co.
 - f. Tyler Pipe; Wade Div.
 - g. Watts Drainage Products.
 - h. Zurn Plumbing Products Group; Specification Drainage Operation.
 - i. <u>or approved equivalent.</u>
- 2. Standard: ASME A112.6.3.

2.3 MISCELLANEOUS SANITARY DRAINAGE PIPING SPECIALTIES

- A. Ductile-Iron Flexible Expansion Joints:
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. EBAA Iron, Inc.
 - b. Hays Fluid Controls; a division of ROMAC Industries Inc.
 - c. Star Pipe Products.
 - d. or approved equivalent.
 - Description: Compound, ductile-iron fitting with combination of flanged and mechanical-joint ends complying with AWWA C110 or AWWA C153. Include two gasketed ball-joint sections and one or more gasketed sleeve sections. Assemble components for offset and expansion indicated. Include AWWA C111, ductile-iron glands, rubber gaskets, and steel bolts.
 - a. Pressure Rating: 250 psig minimum.
 - b. Offset: 23 inches.
 - c. Expansion Required: 6 inches each direction, 12 inches total.
- B. PVC Flexible Expansion Joints:
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. EBAA Iron, Inc.
 - b. Hays Fluid Controls; a division of ROMAC Industries Inc.
 - c. Star Pipe Products.
 - d. or approved equivalent.
 - 2. Description: Solid core PVC construction with solvent weld ends. End connections compatible with ASTM D1785. Include two gasketed ball-joint

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sections and one or more gasketed sleeve sections. Assemble components for offset and expansion indicated. Include EPDM gaskets at ball and expansion joints.

- Pressure Rating: Non-pressure gravity flow piping. a.
- Offset: 8 inches. b.
- C. Expansion/Contraction Required: 4 inches each direction, 8 inches total.

PART 3 - EXECUTION

3.1 INSTALLATION

- Install expansion joints on vertical risers, stacks, and conductors if indicated. Α.
- В. Install cleanouts in aboveground piping and building drain piping according to the following, unless otherwise indicated:
 - Size same as drainage piping up to NPS 4. Use NPS 6 for larger drainage 1. piping unless larger cleanout is indicated.
 - Locate at each change in direction of piping greater than 135 degrees. 2.
 - Locate at minimum intervals of 50 feet for piping NPS 4 and smaller and 100 feet for larger piping.
 - Locate at base of each vertical soil and waste stack. 4.
- C. For floor cleanouts for piping below floors, install cleanout deck plates with top flush with finished floor.
- D. For cleanouts located in concealed piping, install cleanout wall access covers, of types indicated, with frame and cover flush with finished wall.
- E. Extend cleanouts to finished floor or wall surface. Lubricate threaded cleanout plugs with mixture of graphite and linseed oil. Ensure clearance at cleanout for rodding of drainage system.
- F. Install floor drains at low points of surface areas to be drained. Set grates of drains flush with finished floor, unless otherwise indicated.
- G. Position floor drains for easy access and maintenance. Set floor drains below elevation of surrounding finished floor to allow floor drainage. Set with grates depressed according to the following drainage area radii:
 - 1. Radius, 30 Inches or Less: Equivalent to 1 percent slope, but not less than 1/4inch total depression.
 - 2. Radius, 30 to 60 Inches: Equivalent to 1 percent slope.
 - 3. Radius, 60 Inches or Larger: Equivalent to 1 percent slope, but not greater than 1-inch total depression.
- Install floor-drain flashing collar or flange so no leakage occurs between drain and

adjoining flooring. Maintain integrity of waterproof membranes where penetrated. Install individual traps for floor drains connected to sanitary building drain, unless otherwise indicated.

I. Install expansion joints on vertical stacks and conductors. Position expansion joints for easy access and maintenance.

3.2 CONNECTIONS

- A. Comply with requirements in Section 221316 "Sanitary Waste and Vent Piping" for piping installation requirements. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Install piping adjacent to equipment to allow service and maintenance.

3.3 FIELD QUALITY CONTROL

- A. Tests and Inspections:
 - 1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.

3.4 PROTECTION

- A. Protect drains during remainder of construction period to avoid clogging with dirt or debris and to prevent damage from traffic or construction work.
- B. Place plugs in ends of uncompleted piping at end of each day or when work stops.

PART 4 - MEASUREMENT

4.1 METHOD OF MEASUREMENT

A. No separate measurement shall be made for work under this Section.

PART 5 - PAYMENT

5.1 METHOD OF PAYMENT

A. No separate payment will be made for work under this Section. The cost of the work described in this Section shall be included in the Lump Sum Contract price.

END OF SECTION 221319

TECHNICAL SPECIFICATIONS
23 HEATING, VENTILATING, AND AIRCONDITIONING(HVAC)
230505
SELECTIVE DEMOLITION FOR MECHANICAL

DENVER INTERNATIONAL AIRPORT TUNNEL SEWER REPAIRS CONTRACT NO. 202056250

SECTION 230505 - SELECTIVE DEMOLITION FOR MECHANICAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Removal of designated construction.
- B. Disposal of materials.
- C. Identification of utilities

1.3 RELATED SECTIONS

A. Section 220400 "Basic Plumbing Requirements."

1.4 ALTERNATES

A. Refer to Division 01 Section 012300 "Alternates" for description of Work in this Section affected by Alternates.

1.5 SUBMITTALS

A. "As Built" Plans: Submit complete as-built plans of all Work, including interface with other Work, in accordance with requirements as specified in Section 013300 "Submittal Procedures".

1.6 REGULATORY REQUIREMENTS

- A. Do not disable or disrupt building fire or life safety systems without written notice and written acceptance of DEN Project Manager and DEN Life Safety Team.
- B. Conform to procedures applicable when hazardous or contaminated materials are discovered.

TECHNICAL SPECIFICATIONS
23 HEATING, VENTILATING, AND AIRCONDITIONING(HVAC)
230505
SELECTIVE DEMOLITION FOR MECHANICAL

DENVER INTERNATIONAL AIRPORT TUNNEL SEWER REPAIRS CONTRACT NO. 202056250

1.7 SCHEDULING

A. Schedule Work to coordinate with work of other trades.

1.8 PROJECT CONDITIONS

- A. Conduct demolition to minimize interference with adjacent areas.
- B. Cease operations immediately if existing structure/piping embankment appears to be in danger and notify DEN Project Manager. Do not resume operations until directed.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 PREPARATION

- A. Provide, erect, and maintain temporarybarriers.as required for safety.
- B. Protect existing materials and systems, which are not to be demolished.

3.2 DEMOLITION

- A. Existing mechanical systems, including piping, , shall not be abandoned in place, unless specifically identified on the drawings which has been agreed to by DEN
- B. Demolish in an orderly and careful manner. Remove all unused piping, ductwork, or tubing back to source and cap.
- C. Remove demolished materials from site except where specifically noted otherwise. Do not burn or bury materials on site.
- D. Remove materials as Work progresses. Upon completion of Work, leave areas in tidy condition as it relates to the existing utility tunnel conditions.

PART 4 - MEASUREMENT

4.1 METHOD OF MEASUREMENT

A. No separate measurement shall be made for work under this Section.

TECHNICAL SPECIFICATIONS
23 HEATING, VENTILATING, AND AIRCONDITIONING(HVAC)
230505
SELECTIVE DEMOLITION FOR MECHANICAL

DENVER INTERNATIONAL AIRPORT TUNNEL SEWER REPAIRS CONTRACT NO. 202056250

PART 5 - PAYMENT

5.1 METHOD OF PAYMENT

A. No separate payment will be made for work under this Section. The cost of the work described in this Section shall be included in the Lump Sum Contract price.

END OF SECTION 230505

DENVER INTERNATIONAL AIRPORT TUNNEL SEWER REPAIRS CONTRACT NO. 202056250

SECTION 312319 - DEWATERING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes construction dewatering.
- B. Related Requirements:
 - 1. Section 013233 "Photographic Documentation" for recording preexisting conditions and dewatering system progress.
- C. Alternates: Refer to Division 01 Section 012300 "Alternates" for description of Work in this Section affected by Alternates.

1.3 ALLOWANCES

A. Dewatering observation wells are part of [dewatering] < Insert description > allowance.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at [Project site] [location and time as determined by DEN Project Manager] <Insert location>.
 - 1. Verify availability of Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - 2. Review condition of site to be dewatered including coordination with temporary erosion-control measures and temporary controls and protections.
 - 3. Review geotechnical report.
 - 4. Review proposed site clearing and excavations.
 - 5. Review existing utilities and subsurface conditions.
 - 6. Review observation and monitoring of dewatering system.

1.5 ACTION SUBMITTALS

A. Shop Drawings: For dewatering system.

DENVER INTERNATIONAL AIRPORT TUNNEL SEWER REPAIRS CONTRACT NO. 202056250

- 1. Include plans, elevations, sections, and details.
- 2. Show arrangement, locations, and details of wells and well points; locations of risers, headers, filters, pumps, power units, and discharge lines; and means of discharge, control of sediment, and disposal of water.
- 3. Include layouts of piezometers and flow-measuring devices for monitoring performance of dewatering system.
- 4. Include written plan for dewatering operations including sequence of well and well-point placement coordinated with excavation shoring and bracings and control procedures to be adopted if dewatering problems arise.
- 5. Include Shop Drawings signed and sealed by the qualified professional engineer responsible for their preparation.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For [Installer] [land surveyor] [and] [professional engineer].
- B. Photographs or videotape, sufficiently detailed, of existing conditions of adjoining construction and site improvements that might be misconstrued as damage caused by dewatering operations.
- C. Field quality-control reports. Before starting excavation, submit test results and computations demonstrating that dewatering system is capable of meeting performance requirements.
- D. Existing Conditions: Using [photographs] [or] [video recordings], show existing conditions of adjacent construction and site improvements that might be misconstrued as damage caused by dewatering operations. Submit before Work begins.

E. CLOSEOUT SUBMITTALS

- F. As-Built Plans: Submit complete as-built plans of all Work, including interface with other Work, in accordance with requirements as specified in Section 013300 "Submittal Procedures".
 - 1. Identify locations and depths of capped wells and well points and other abandoned-in-place dewatering equipment.

1.7 QUALITY ASSURANCE

- A. A. Regulatory Requirements: Comply with water disposal requirements of authorities having jurisdiction.
- B. Installer Qualifications: An experienced installer that has specialized in design of dewatering systems and dewatering work.

DENVER INTERNATIONAL AIRPORT TUNNEL SEWER REPAIRS CONTRACT NO. 202056250

1.8 FIELD CONDITIONS

- A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted in writing by DEN Project Manager and then only after arranging to provide temporary utility services according to requirements indicated.
- B. Project-Site Information: A geotechnical report has been prepared for this Project and is available for information only. The opinions expressed in this report are those of a geotechnical engineer and represent interpretations of subsoil conditions, tests, and results of analyses conducted by a geotechnical engineer. Owner is not responsible for interpretations or conclusions drawn from this data.
 - 1. Make additional test borings and conduct other exploratory operations necessary for dewatering according to the performance requirements.
 - 2. The geotechnical report is referenced elsewhere in Project Manual.
- C. Survey Work: Engage a qualified land surveyor or professional engineer to survey adjacent existing buildings, structures, and site improvements; establish exact elevations at fixed points to act as benchmarks. Clearly identify benchmarks and record existing elevations.
 - 1. During dewatering, regularly resurvey benchmarks, maintaining an accurate log of surveyed elevations for comparison with original elevations. Promptly notify Architect if changes in elevations occur or if cracks, sags, or other damage is evident in adjacent construction.

1.9 CONSTRUCTION WASTE MANAGEMENT

A. Construction waste shall be managed in accordance with provisions of Section 017419 "Construction Waste Management and Disposal". Documentation shall be submitted to satisfy the requirements of that Section.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Dewatering Performance: [Design], furnish, install, test, operate, monitor, and maintain dewatering system of sufficient scope, size, and capacity to control hydrostatic pressures and to lower, control, remove, and dispose of ground water and permit excavation and construction to proceed on dry, stable subgrades.
 - 1. Design dewatering system, including comprehensive engineering analysis by a qualified professional engineer.
 - 2. Continuously monitor and maintain dewatering operations to ensure erosion control, stability of excavations and constructed slopes, prevention of flooding in excavation, and prevention of damage to subgrades and permanent structures.
 - 3. Prevent surface water from entering excavations by grading, dikes, or other means.

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- 4. Accomplish dewatering without damaging existing buildings, structures, and site improvements adjacent to excavation.
- 5. Remove dewatering system when no longer required for construction.
- B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning dewatering. Comply with water- and debris-disposal regulations of authorities having jurisdiction.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by dewatering operations.
 - 1. Prevent surface water and subsurface or ground water from entering excavations, from ponding on prepared subgrades, and from flooding site or surrounding area.
 - 2. Protect subgrades and foundation soils from softening and damage by rain or water accumulation.
- B. Install dewatering system to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.
 - 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from DEN Project Manager and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.
- C. Provide temporary grading to facilitate dewatering and control of surface water.
- D. Protect and maintain temporary erosion and sedimentation controls, which are specified in Section 015000 "Temporary Facilities and Controls," during dewatering operations.

3.2 INSTALLATION

- A. Install dewatering system utilizing wells, well points, or similar methods complete with pump equipment, standby power and pumps, filter material gradation, valves, appurtenances, water disposal, and surface-water controls.
 - 1. Space well points or wells at intervals required to provide sufficient dewatering.
 - 2. Use filters or other means to prevent pumping of fine sands or silts from the subsurface.
- B. Place dewatering system into operation to lower water to specified levels before excavating below ground-water level.

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- C. Provide sumps, sedimentation tanks, and other flow-control devices as required by authorities having jurisdiction.
- D. Provide standby equipment on-site, installed and available for immediate operation, to maintain dewatering on continuous basis if any part of system becomes inadequate or fails.

3.3 OPERATION

- A. Operate system continuously until drains, sewers, and structures have been constructed and fill materials have been placed or until dewatering is no longer required.
- B. Operate system to lower and control ground water to permit excavation, construction of structures, and placement of fill materials on dry subgrades. Install sufficient dewatering equipment to drain water-bearing strata above and below bottom of foundations, drains, sewers, and other excavations.
 - 1. Do not permit open-sump pumping that leads to loss of fines, soil piping, subgrade softening, and slope instability.
 - 2. Reduce hydrostatic head in water-bearing strata below subgrade elevations of foundations, drains, sewers, and other excavations.
 - 3. Maintain piezometric water level a minimum of 60 inches below bottom of excavation.
- C. Dispose of water removed by dewatering in a manner that avoids endangering public health, property, and portions of work under construction or completed. Dispose of water and sediment in a manner that avoids inconvenience to others.
- D. Remove dewatering system from Project site on completion of dewatering. Plug or fill well holes with sand or cut off and cap wells a minimum of 36 inches below overlying construction.
- E. Damages: Promptly repair damages to adjacent facilities caused by dewatering operations.

3.4 FIELD QUALITY CONTROL

- A. Observation Wells: Provide observation wells or piezometers, take measurements, and maintain at least the minimum number indicated; additional observation wells may be required by authorities having jurisdiction.
 - 1. Observe and record daily elevation of ground water and piezometric water levels in observation wells.
 - 2. Repair or replace, within 24 hours, observation wells that become inactive, damaged, or destroyed. In areas where observation wells are not functioning properly, suspend construction activities until reliable observations can be made. Add or remove water from observation-well risers to demonstrate that observation wells are functioning properly.

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- 3. Fill observation wells, remove piezometers, and fill holes when dewatering is completed.
- B. Survey-Work Benchmarks: Resurvey benchmarks regularly monthly during dewatering and maintain an accurate log of surveyed elevations for comparison with original elevations. Promptly notify DEN Project Manager if changes in elevations occur or if cracks, sags, or other damage is evident in adjacent construction.
- C. Provide continual observation to ensure that subsurface soils are not being removed by the dewatering operation.
- D. Prepare reports of observations.

3.5 PROTECTION

- A. Protect and maintain dewatering system during dewatering operations.
- B. Promptly repair damages to adjacent facilities caused by dewatering.

PART 4 - MEASUREMENT

4.1 METHOD OF MEASUREMENT

A. No separate measurement shall be made for work under this Section.

PART 5 - PAYMENT

5.1 METHOD OF PAYMENT

A. No separate payment will be made for work under this Section. The cost of the work described in this Section shall be included in the Lump Sum Contract price.

END OF SECTION 312319

DENVER INTERNATIONAL AIRPORT CONCOURSE B TUNNEL SEWER REPAIRS

Design Contract No. 201732415-11 Construction Contract No. 202056250

> 8900 Pena Boulevard Denver, CO 80249

Volume No. 02 ISSUE FOR CONFORMED DOCUMENTS

12/22/20



PCL Construction Services, Inc. Contract No. 202056250-00

PLUMBING SCOPE OF WORK.

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RS&H
4992 SOUTH III STER STREET

RS&H
4982 SOUTH ULSTER STREET
SUITE 1100
DENVER, CO 80237

THE CE GROUP
P.O. BOX 4
SEVERANCE, COLORADO 80546

THE CEGROUP
CONTACT, MARK DISPOSABIO

MECHANICAL ENGINEER

CODE INFORMATION

APPLICAGE CODES

APPLICAGE CODES

2018 INTERPRETIVEM PLANING CODES

2018 INTERPRETIVEM PLANING CODES

2018 INTERPRETIVE PLANING CODES

EIRE PESISTIVE REQUIREMENTS AND ASSEMBLIES

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COCCUPANT LOAD.

NOW

PROJECT SHEET LIST

SHEET # DRAWING TITLE

00008 COVER SHEET
41008 SITE MAP
50018 STRUCTURAL GENERAL NOTES AND DE
PO1018 UTLITY TURNEL PLUMEND GENERO PLAN
PO1028 UTLITY TURNEL PLUMEND GENERO PLAN
FO1028 UTLITY TURNEL PLUMEND GENERO PLAN

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CITY & COUNTY of DENVER DENVER INTERNATIONAL AIRPORT







| SEAR RECORD |

COVER SHEET

G000B

CITY & COUNTY of DENVER DENVER INTERNATIONAL AIRPORT







ERNATIONAL AIRPORT TUNNEL SEWER REPAIRS \Box CONCOURSE DENVER

8900 Pena Boulevard

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SITE MAP

A100B

REIN-UNCAMENT, ETC. AND TO MUTET TO. SENDEMENT.

SEE DETAIL THIS SHEET FOR ANCHOR EMBEDMENT.

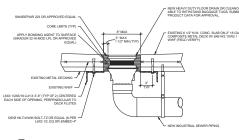
A ASSUMED DECK PROFILE = 6 1/2" N.W. CONC. SLAB ON 2" 18 GA. COMPOSITE METAL DECK W/ 6X6-W2.1XW2.1

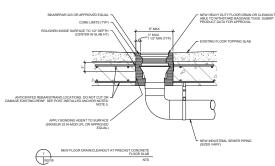
MANGE FIRIT OFFER'S MON DOTTEY PORTISEET AND OWNER OF ANY DISCREPANCES.

ANCHORS INTO CONCRETE OVER METAL DECK LIMITATIONS

1 1/2" = 1'-0"

EXISTING SLAB ON GRADE NEW SLAB ON GRADE SKID RESISTANT COATING (SEE CONCRETE SPECS) - REFER TO NOTES: 1. SEE PLUMBING DRAWINGS FOR PORTIONS OF SLAB ON GRADE TO BE SAWCUT AND REM. 2. REPLACE SLAB IN KIND (MATCH EXISTING SLAB THICKNESS AND REINFORCEMENT). 3. PROVIDE CCU TO MATCH EXISTING JOINTS. SLAB ON GRADE NEW TO EXISTING 1 1/2" = 1'-0"





DESIGN PER THE 2018 INTERNATIONAL BUILDING CODE, 2018 INTERNATIONAL EXISTING BUILDING CODE, AND THE 2019 DENVER BUILDING CODE.



GENERAL NOTES

- THE STRUCTURAL NOTES SHALL GOVERN IN MATTERS COVERED ON THE STRUCTURAL DRAWINGS. SEE PROJECT SPECIFICATION AND OTHER DRAWINGS FOR FURTHER REQUIREMENTS. TOTAL PROJECT DETINITION WILL BE PROVIDED BY COMBINING PROJECT SPECIFICATIONS, ARCHITECTURAL, STRUCTURAL, MECHANICAL, PLIMBING, AND ELECTRICAL DRAWING PACKAGES.
- 3. THE CONTRACTOR SHALL TAKE ALL MEASURES NECESSARY TO PROTECT THE STRUCTURE AND ANY PERSONNEL DURNO CONSTRUCTION SUCH MEASURES SHOULD INCLUDE, BIT NOT BE LIMITED TO TEMPORARY BRACING AND SHORING OF DEAD LOADS, CONSTRUCTION LOADS, WITH LOADS, WITH LOADS, EVEN LOADS, EVE
- FOR TYPICAL DETAILS SHOWN BUT NOT BE REFERRED TO EXCEPT HEREIN, CONFORM TO ALL OF THE REQUIREMENTS OF THESE DETAILS TO THE SAME EXTENT AS IF REFERRED TO BY DETAIL NUMBER.

POST-INSTALLED ANCHOR NOTES:

- BASIS OF DESIGN (BOD) ANCHOR PRODUCTS ARE THOSE INDICATED ON THE CONSTRUCTION DOCUMENTS SUBSTITUTION REQUESTS FOR ANCHARS OTHER THAN BOD CONSTRUCTION DOCUMENTS SUBSTITUTION REQUESTS FOR ANCHARS OTHER THAN BOD CALCULATIONS BOOKED AND SEALE DE A PROPESSIONAL IS ENDIGET DEMONSTRATING THAT THE SUBSTITUTED ANCHOR PRODUCT MEETS THE SPECIFIC PERFORMANCE REQUIREMENTS OF THE BOD ANCHOR PRODUCT.
- CONTRACTOR SHALL CONTACT FOR WRITTEN APPROVAL PRIOR TO INSTALLING INSTALLED ANCHORS FOR MISSING OR MISPLACED CAST-IN-PLACE ANCHORS.
- NO REINFORCEMENT SHALL BE CUT TO INSTALL POST-INSTALLED ANCHORS. DEFECTIVE HOLES SHALL BE GROUTED WITH CEMENTITIOUS GROUT. CONTRACTOR SHALL LOCATE
- PROVIDE CONTINUOUS SPECIAL INSPECTION FOR ALL ANCHORS, AS REQUIRED BY THE APPLICABLE EVALUATION REPORTS AND BUILDING CODES.
- 7. ANCHORS SHALL BE HOT-DIPPED GALVANIZED.
- BASIS OF DESIGN (BOD) IS DEWALT SNAKE+ INTERNALLY THREADED SCREW ANCHOR (ICC-ES ESR-2272) AND DEWALT POWER-STUD+SD2 (ICC ES ESR-2502).

CONCRETE AND REINFORCING STEEL:

- ALL CONCRETE SHALL BE IN COMPLIANCE WITH THE BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE ACI 318-14.
- UNLESS OTHERWISE SHOWN ON DRAWINGS, MINIMUM COVER FOR REINFORCING SHALL BE AS FOLLOWS:
- ALL REINFORCING SHALL BE HELD SECURELY IN POSITION WITH STANDARD ACCESSORIES IN CONFORMANCE WITH THE CURRENT EDITIONS OF THE CRSI MANUAL OF STANDARD PRACTICE
- PROVIDE CORNER BARS AT ALL WALL INTERSECTIONS. CORNER BARS SHALL BE THE SAME SIZE AS THE LARGER INTERSECTING BARS.
- 5. ALL WALL STEEL SHALL BE CONTINUOUS WHERE POSSIBLE.
- SPLICES IN REINFORCING, WHERE PERMITTED, SHALL BE AS FOLLOWS UNLESS OTHERWISE NOTED REINFORCING STEEL.

 WELDED WIRE FARRIC.

 WIRE SPACING PLUS 2*
- SEE ARCHITECTURAL, MECHANICAL, PLUMBING, FIRE PROTECTION AND ELECTRICAL PLANS FOR CAST-IN-PLACE BOLTS, INSERTS, ANCHORS, ETC AND FOR ALL SLAB LEAVE-OUTS, SLOPES,
- 8. WELDED REINFORCEMENTS SHALL CONFORM TO AWS D1.4/D1.4M.
- 9. ALL HOOKS IN REINFORCING BARS SHALL BE AN ACI STANDARD HOOK, UNLESS OTHERWISE NOTED 10. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 3/4", UNLESS OTHERWISE NOTED.

- 12. NO PIPES OR DUCTS SHALL BE PLACED IN STRUCTURAL CONCRETE UNLESS SPECIFICALLY DETAILED. SEE ARCHITECTURAL AND MECHANICAL DRAWINGS FOR LOCATION OF SLEEVES, MOULDS, FLOOR HINGES, ETC TO BE CAST INTO THE CONCRETE.



CITY & COUNTY of DENVER DENVER

INTERNATIONAL

AIRPORT

8900 Pena Boulevard Denver, CO 80249

RS&H
ISSUE RECORD
NO. BY PURPOSE DATE CK
SCALE: As indicate
DATE: 12/22/2
DRAWN BY:
CHECKED BY:
FAA AIP NO:
DESIGN CONTRACT NO. 201732415-1
CONST. CONTRACT NO. 20205625
VOLUME NO.
SHEET TITLE
STRUCTURAL GENERAL NOTES
AND DETAILS

S001B



LIVE LOADS (PER RECORD DRAWINGS):
 CONCOURSES A, B AND C



STRUCTURAL STEEL (PER AISC 360-10): STEEL PIPES	ASTM AS3, GRADE B
CHANNELS	ASTM A36
PLATES	ASTM A36, UON
ANGLES	ASTM A36
BOLTS	ASTM F3125 GR A32
ANCHOR BOLTS/RODS	ASTM F1554 (GRADI
ALL OTHER STEEL	ASTM A36



- THE DRAWINGS REPRESENT THE FINISHED STRUCTURE, UNLESS OTHERWISE INDICATED. THEY DO NOT REPRESENT THE METHOD OF CONSTRUCTION.
- CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS OF EXISTING SITE THAT ARE AFFECTED BY NEW WORK BEFORE PROCEEDING WITH FABRICATION AND CONSTRUCTION

P-ABBREVIATIONS

PLUMBING SYMBOLS SYMBOL DESCRIPTION INDUSTRIAL SEWER ABOVE FLOOR OR GRADE , IS INDUSTRIAL SEWER BELOW FLOOR OR GRADE 0 **8** - 3 CLEANOUT **o**FCO FLOOR CLEANOUT

STANDARD REFERENCE						
SYMBOL	DESCRIPTION					
(a)	KEY NOTE					
$\bigoplus_{\mathbb{R}}$	NORTH ARROW					
1 A101	VIEW REFERENCE / CALLOUT					
•	CONNECT TO EXISTING					

GENERAL NOTES:

- THESE DESIGN DOCUMENTS ARE IN COMPLIANCE WITH THE 2019 DEN DESIGN STANDARDS MANUAL WITH DEVIATIONS AND VARIANCES AGREED TO WITH DEN IN IDEN OF THE SHARED BEDARD CONTINUE THAT WE DEVIATED.
- TO WITH DESTROYS NEW SEPARA CONTRICTION PROJECTS OF SHOWN IN LIGHT LINE WISHINGTS. SEPSITION IS SHOWN IN LIGHT LINE WISHINGTS. SEPSITION IS SHOWN IN LIGHT LINE WISHINGTS AND ARE SHOWN FOR LOCATIONS OF DESTROYS WORK FRETNENT TO NEW WORK. CONTRACTOR SHALL REQUEST IN WRITING, PRIOR TO BID, CLARPICATION OF ANY INFORMATION OF THESE DOCUMENTS.

 3. THIS IS A GENERAL LEGEND SHEET. NOT ALL SYMBOLS ARE USED ON DRAWNED.
- ALL PIPING TO BE SLOPED AT 1/4"/12" (2%) PER DEN DSM UNLESS OTHERWISE INDICATED PER DEN APPROVED DESIGN VARIANCE.
- OTHERWISE INDICATED FEH DEN APPROVED DESIGN VARIANCE.

 CONTRACTORS SHALL EXERGES CAUTION IN THE DEMOLITION OF ANY EXISTING INDIGITIES CAUTION THE DEMOLITION OF ANY EXISTING INDIGITIES TO BE RE-OUTED SHALL BE RE-CONNECTED TO THE ESSITING PIPMS SYSTEMS TO MAINTAIN CONTINUED SERVICE. ANY MULL PIPMS THAT IS INDIVIDED TO REMAIN] SHALL BE REPLACED WITHOUT COST TO THE OWNER. CLOSELY COORDINATE DEMOLITION OF WITH THE WITHOUT PROMISE.
- CONTACT DEN PMT IF SOIL CONTAMINANTS ARE DISCOVERED VISUALLY AND/OR FROM ODOR, REMEDIATION AND/OR REMOVAL IS TO BE DETERMINED WITH DEN ENVIRONMENTAL.
- REFERENCE BID FORM FOR ALL ALTERNATE UNIT ITEMS AND PRICING.
- PLUMBING CONTRACTOR TO COORDINATE ALL THE REQUIREMENTS FOR SAW CUTTING AND CORE DRILLING FOR NEW FLOOR DRAINS. FLOOR CLEAN OUTS. AND PIPING AS NEEDED.
- PLOOR CHANNS, FLOOR CLEAN DOIS, AND PHINKS AS NEEDEL.

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 CONTRACTOR TO PERFORM SURVEY AND VERIFY ALL INVERT
 ELEVATIONS RELATIVE TO THE EXSTING UTLITY TUNNEL DRIT
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- WHERE EXISTING "CONTAMINATED" DIRTIMATERIAL IS REMOVED FROM THE SITE, THERE IS NO REQUIREMENT FOR REPLACEMENT UNDER THIS SCOPE OF WORK

LAYOUT HATCH LEGEND

DEMOLITION: THE PIPES WITHIN THE HATCH ARE TO BE DISCONNECTED AND REMOVED FOR THIS PROJECT.

EXCAVATION: THE AREAS DEFINED BY SHADING REPRESENT HAND DIGGING.



SAWCUT: THE AREAS WITH THIS PATTERN REPRESENT

APPLICABLE CODES

CONTRACTORS SHALL INSTALL ALL WORK IN ACCORDANCE WITH APPLICABLE FEDERAL AND STATE REGULATIONS, THE 2018 INTERNATIONAL CODES AND THE 2019 DENVER AMENDMENTS TO THE INTERNATIONAL CODES.

QUALIFICATION NOTES:

THE SEWER SYSTEM IN THE SCOPE OF THIS PROJECT IS REFERRED TO AS INDUSTRIAL SEWER PER DIRECTION FROM DEN.

ALL EXISTING FLOOR DRAINS, AREA DRAINS, TRENCH DRAINS, FIRE DRAIN VALVE DRAINS AND FLOOR CLEAN OUTS ARE TO BE CLEANED PRIOR TO ANY INSTALLATIONS, EXISTING FIXTURES ARE TO BE CLEANED THOROUGHLY USING JETTING.

THE EXPECTED SLAB HEAVE FOR EACH CONCOURSE IS BASED ON THE GEOTECHNICAL REPORT PREPARED BY KUIMAR & ASSOCIATES, INC. SUBMITTED TO SEN ON AUGUST A, 2017. SEE TABLE BELOW TAKEN FROM THE GEOTECHNICAL REPORT SHOWING THE EXPECTED SLAB HEAVE (BASED ON 15 FEET OF WITHIN) USED FOR THE BASIS OF

CONCOURSE	SLAB HEAVE IN INCHES

PLUMBING FIXTURE SCHEDULE								
	FIXTURE FIXTURE ROUCH-IN PIPE SIZE (INCHES)							
PLAN CODE	FIXTURE TYPE	LOCATION	MANUFACTURER	MODEL	SIZE	WASTE	VENT	REMARKS
(N) FD-1	FLOOR DRAIN	WEST BAGGAGE TUNNEL	ZURN	Z511	VARIOUS	VARIOUS	-	DURA-COAT CAST IRON, ROUND HEAVY-DUTY SLOTTED GRATE
(N) FCO-1	FLOOR CLEANOUT	WEST BAGGAGE TUNNEL	ZURN	Z1402	VARIOUS	4"	-	DURA-COAT CAST IRON, ROUND HEAVY-DUTY



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AIR RNATIONAL TUNNEL Ш \Box Ш ONCOURS DENVER Denver, CO 80249

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P001B

P-KEYNOTE LEGEND IAIN IN WEST BAGGAGE TUNNEL FLOOR AND CAP PIPE BELOW, COVER PORTION OF FLOOR WHEI

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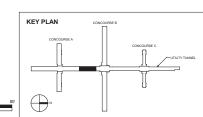
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UTILITY TUNNEL PLUMBING DEMO PLAN - AREA 101B

PD101B



-W1 -W0.6 -EW -E0.6

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P-KEYNOTE LEGEND



SIGNER OF RECORD

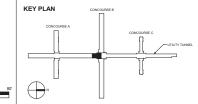


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PD102B



P-KEYNOTE LEGEND THE ARCHITECTURAL BLOOGROUND SHOWS THE LEVEL ADOVE FOR REFERENCE FOR MODERNING THE MODERNING THE ACCORDANCE ADMINISTRATION OF THE WINDOWS AND ARCHITECTURAL BLOOGROUND AS SHOWN OF THE WILLIAM THE ACCORDANCE AND ARCHITECTURAL BLOOGROUND AS A SHOWN AND NOTED ON THE DRAWNING. THE EXACT LOCATION AND DRIBBOOKS OF THE TESTICAL AND EXISTING AUGUSTRUL SERVER PIPMOL IS UTILITY THE AND CASE THAT A THE UTILITY THAT AND A THE ACCORDANCE AND AND A SHOWN AS THE ADMINISTRATION OF THE ADMINISTRATION OF THE ADMINISTRATION OF THE ACCORDANCE AND A THE ACCORDANCE AND A

GENERAL NOTE



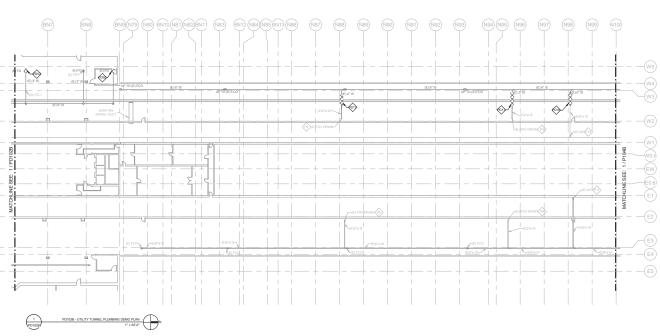
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NAL AIRPORT SEWER REPAIRS

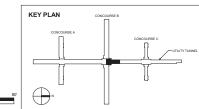
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CONCOURSE 8900 Pena Boulevard Denver, CO 80249



PD103B



P-KEYNOTE LEGEND N. AND DISCONNECT PORTION OF (E) 3° IS PIPING BELOW GROUND. REFERENCE P104B FOR TIE INTO EXISTING CATION.

MEMOVE AND DISCONNECT (E) 8" IS ELBOW AND (E) 8" IS LATERAL ABOVE EMBANKMENT. CHIP OUT AND REMOVE
DRITIONS OF THE CONCRETE EMBANKMENT AS NEEDED TO PROVIDE ROOM FOR (N) 8" PIPE. REFERENCE PIDAB FOR CITY & COUNTY of DENVER DENVER INTERNATIONAL AIRPORT





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UTILITY TUNNEL PLUMBING DEMO PLAN - AREA 104B

PD104B

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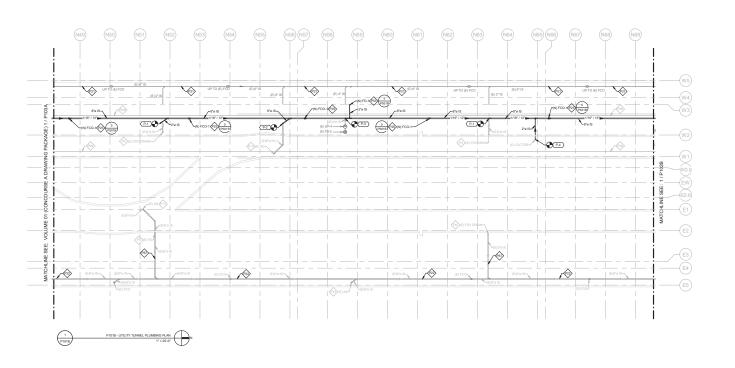
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	P-KEYNOTE LEGEND
KEY VALUE	KEYNOTE TEXT
P4	(E) 2" IS FROM (E) FDV DRAIN SERVING WEST BAGGAGE TUNNEL ABOVE.
P5	(E) 2" IS FROM (E) FD SERVING EAST BAGGAGE TUNNEL ABOVE.
P6	(E) 2" IS FROM (E) FDV DRAIN SERVING EAST BAGGAGE TUNNEL.
P11	(E) 6" IS FROM (E) AD SERVING AGTS TUNNEL ABOVE.
P12	(E) 6" IS FROM (E) AD SERVING WEST BAGGAGE TUNNEL ABOVE.
P13	(E) 6" IS FROM (E) AD SERVING EAST BAGGAGE TUNNEL ABOVE.
P21	ABANDON BURIED PIPE IN PLACE AND FILL WITH GYPCRETE (TYP). REFERENCE SPECIFICATION SECTION 033000 CAST-IN-PLACE CONCRETE.
P22	BURIED PIPE TO REMAIN, ALL CONNECTED PIPMO AND CONNECTED FOXTURES ARE TO BE CLEANED USINO JETTIMO AN WIGOS GOOPED PAR DO ALTERNATE OCT OP POYONGE CIPP LINER IN ALL PIPME MAINS BURIED IN EAST EMBANAMENT LOCATED BELOW THE EAST BAGGAGE TUNNEL PER ADD ALTERNATE. DO NOT PROVIDE CIPP LINER IN BRANCH PIPES. KEEP ALL BRANCH PIPE OPERATIONAL/ENSIGNE ALL BRANCH LINES ARE RE-INSTANCE.
P25	(N) 4" FCO TO BE EXTENDED TO LEVEL ABOVE. X-RAY FLOOR PRIOR TO ANY CORE DRILLING OF SLAB TO CONFIRM/AVO EXISTING FLOOR SLAB REINFORCEMENT.
P49	EDGE OF TRENCH LOCATED IN UTILITY TUNNEL.
P53	INSTALL (N) FD-1 IN THE WEST BAGGAGE TUNNEL ABOVE. X-RAY FLOOR PRIOR TO ANY SAW CUTTING OF SLAB TO CONFIRMIAVOID EXISTING FLOOR SLAB REINFORCEMENT.
P67	(E) BRANCH PIPING TO REMAIN, DO NOT LINE WITH CIPP.

	P101B TIE IN SCHEDULE						
TIE IN DISCIPLINE	TIE IN	SYSTEM	AREA	TIE IN DESCRIPTION			
Р	1	IS	101B	CONNECT (E) 2° IS SERVING (E) FDV DRAIN ON LEVEL ABOVE TO (N) 2° IS.			
Р	2	IS	101B	CONNECT (E) 6" IS SERVING (E) AD ON LEVEL ABOVE TO (N) 6" IS.			
Р	3	IS	101B	CONNECT (E) 3° IS SERVING (E) SP TO (N) 3° IS.			
Р	4	IS	101B	CONNECT (E) 2" DRAIN SERVING (E) GUTTER IN UTILITY TUNNEL TO (N) 2" IS. ROUTE (N) 2" IS BETWEEN CABLE TRAY AND UTILITY PIPES.			



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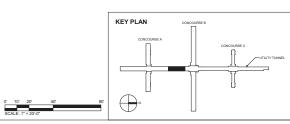


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P101B



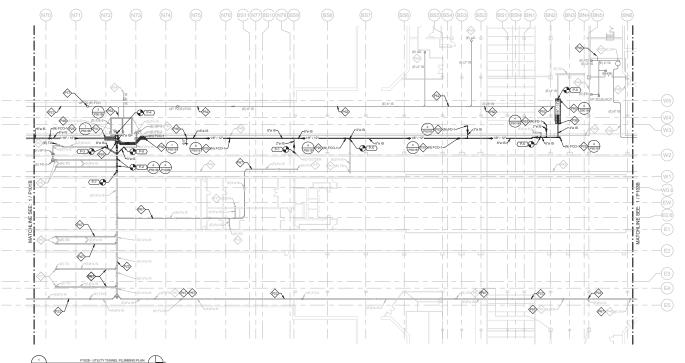
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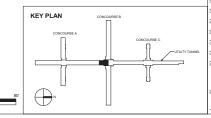
	GENERAL NOTE:
DIRECTIVE FROM DE UTILITY TUNNEL ARE AREA OF THE UTILITY LOCATION AND DIME TAKEN FROM AS-BUI UTILITY PIPE AND CA HOWEVER ALLOWAN COORDINATED IN TH	BACKGROUND SHOWS THE LEVEL ABOVE FOR REFERENCE FER BECAUSE ACCURATE ARCHITECTURE BACKGROUNDS SHOWING THE LINAWALABLE. THE OUTLINE OF THE TRENCH WHICH IS THE WALKGRE LINAWALABLE. THE OUTLINE OF THE TRENCH WHICH IS THE WALKGRE LINAWALABLE. THE PROMISE THE PROMISE THE PROMISE THE TRANS THE THE TRENCH THE TRENCH THE PROMISE LINAWALABLE. THE TRANSPORT OF THE TRENCH THE TRANSPORT OF THE PROMISE SEE FOR THE ELEMENTS HAVE BEEN MADE AND HAVE BEEN SPATIALLY MODIL. GENERAL CONTRICTOR TO CONFIRM JALLONE AND THE TRANSPORT OF THE CONFIRM LINAWALABLE.

P102B TIE IN SCHEDULE						
TIE IN DISCIPLINE	TIE IN	SYSTEM	AREA	TIE IN DESCRIPTION		
Р	1	IS	102B	CONNECT (E) 2" DRAIN SERVING (E) GUTTER IN UTILITY TUNNEL TO (N) 2" IS. ROUTE (N) 2" IS BETWEEN CABLE TRAY AND UTILITY PIPES.		
P	2	IS	1028	CONNECT (E) 8" CAST IRON IS RISER TO (N) 12" PVC IS ABOVE GRADE.		
Р	3	IS.	102B	CONNECT (E) 8" CAST IRON IS LATERAL TO (N) 8" IS LATERAL.		
Р	4	IS	102B	REMOVE AND REPLACE (E) 12" COUPLING AND CONNECT (N) 12" COUPLING AND (N) PVC 12" IS TO (E) 12" IS. REFERENCE DETAIL 3/P501B FOR SPECIFICS.		
Р	- 5	IS.	102B	CONNECT (E) 2" IS SERVING (E) FD ON LEVEL ABOVE TO (N) 2" IS.		
P	6	IS.	102B	CONNECT (E) 6" IS TO (N) 6" IS.		
Р	7	IS	102B	CONNECT (E) 12" CAST IRON IS EXITING WALL TO (N) 12" IS ABOVE GRADE. ROUTE (N) 12" IS BETWEEN GROUND AND (E) UTILITY PIPES AT 1/16"/12" SLOPE.		
Р	8	IS	102B	CONNECT (E) 3" IS TO (N) 3" IS. ROUTE (N) 3" IS BETWEEN CABLE TRAY AND UTILITY PIPE.		

	P-KEYNOTE LEGEND	C
KEY VALUE	KEYNOTE TEXT	1
		1—
P1	(E) 2" IS FROM (E) FD SERVING WEST BAGGAGE TUNNEL ABOVE.	1
P3	(E) 8" IS FROM (E) TD SERVING WEST BAGGAGE TUNNEL ABOVE.	٠
P5	(E) 2" IS FROM (E) FD SERVING EAST BAGGAGE TUNNEL ABOVE.	IN.
P7	(E) 8" IS FROM (E) TD SERVING EAST BAGGAGE TUNNEL ABOVE.	1
P8	(E) 8" IS FROM (E) TD SERVING AGTS TUNNEL ABOVE.	1
P17	(E) 3" IS FROM (E) FD SERVING AGTS TUNNEL ABOVE.	1
P21	ABANDON BURIED PIPE IN PLACE AND FILL WITH GYPCRETE (TYP). REFERENCE SPECIFICATION SECTION 033000 CAST-IN-PLACE CONCRETE.	
P22	BURIED PIPE TO REMAIN ALL CONNECTED PIPMO AND CONNECTED FIXTURES ARE TO SE OLEANED USING JETTING AND WIGO SCOPPE OPER ADD ALTERNATE GC TO PROVIDE CIPP LINER IN ALL PIPM MANS BURIED IN EAST BEMANNEMENT LOCATED BELOW THE EAST BAGGAGE TUNNEL PER ADD ALTERNATE. DO NOT PROVIDE CIPP LINER IN BRANCH PIPES. KEEP ALL BRANCH LINES ARE RE-INSTRUCK.	
P24	(E) 8" FROM DS TO (E) DIW SETTLING PONDS.	1 '
P25	(N) 4" FCO TO BE EXTENDED TO LEVEL ABOVE. X-RAY FLOOR PRIOR TO ANY CORE DRILLING OF SLAB TO CONFIRM/AVOID EXISTING FLOOR SLAB REINFORCEMENT.	1
P26	(E) PIPE TO REMAIN IN SERVICE.	1
P27	E SUMP PUMP TO REMAIN.	1
P31	BURY INI 8" IS AT THIS LOCATION, ROUTE DUCTILE IRON FLEX JOINT BELOW GROUND.	1
P32	BURY (N) 6" IS AT THIS LOCATION, ROUTE DUCTILE IRON FLEX JOINT BELOW GROUND.	DESIGN
P36	MAINTAIN A MINIMUM 4"-0" OF UNDESTRUCTED AREA BETWEEN ALL NEW WORK AND (E) CONDITIONS FOR SERVICE ACCESS, TYP, THROUGHOUT TUNNEL.	1
P39	ROUTE (N) 4" IS BELOW GRADE BEAM, KEEP TOP OF PIPE TIGHT TO GRADE BEAM.	1
P40	LINE -20' OF (E) 4" IS WITH CIPP LINER, REFER TO REFERENCE SHEET R101B FOR (E) PLUMBING IN THIS AREA.	1
P46	FLOOR IN EAST BAGGAGE TUNNEL IS HEAVED PROHIBITING PROPER DRAINAGE FOR THIS (E) FD.	1 .
P47	REMOVE DEBRIS COVERING (E) FD IN EAST BAGGAGE TUNNEL ENSURE (E) FD IS CLEANED EXTENSIVELY.	1 /
P48	LINE (E) 12° IS WITH CIPP LINER.	1
P49	EDGE OF TRENCH LOCATED IN UTILITY TUNNEL.	1 1
P52	(E) PIPE TO REMAIN IN PLACE AS-IS. DO NOT FILL (E) PIPE WITH GYPCRETE.	1
P53	INSTALL (N) FD-1 IN THE WEST BAGGAGE TUNNEL ABOVE: X-RAY FLOOR PRIOR TO ANY SAW CUTTING OF SLAB TO	1
P54	E) 2 IS FROM (E) AD SERVING WEST BAGGAGE TUNNEL ABOVE.	1
P57	BURY IN 12' IS AT THIS LOCATION, PROVIDE IN 12' DUCTILE IRON FLEX JOINT IN LATERAL ABOVE GROUND.	1
P67	FIRE REACH PIPING TO REMAIN DO NOT LINE WITH CIPP	1
P72	CONNECT (E) 12" IS TO INI 12" IS ROUTE INI 12" IS ABOVE GROUND BELOW (E) UTILITY PIPES.	1—
P73	CONNECT (E) 8" IS RISERS TO (N) 12" IS LATERAL ABOVE GROUND.	1
P77	PARTIAL FILL PIPE WITH CONCRETE AND ALLOW TO SET PRIOR TO FILLING ABANDONED UPSTREAM PIPING WITH GYPCRETE. INTENT IS TO CREATE A PLUG TO PREVENT GYPCRETE FLOWING INTO EXISTING DOWNSTREAM PIPING TO THE PORMING OF STATION TRATES TO PREMAIN MATCHISE?	1

PHOTO OF (E) PIPING EAST OF DS-2





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UTILITY TUNNEL PLUMBING PLAN -AREA 102B

P102B

EP ALL BRANCH PIPE OPERATIONALIENSURE ALL BRANCH LINES ARE RE-INSTATED.

4° FCO TO BE EXTENDED TO LEVEL ABOVE. X-RAY FLOOR PRIOR TO ANY CORE DRILLING OF SLAB TO CONFI

P103B TIE IN SCHEDULE TIE IN DESCRIPTION

KEY PLAN



22992

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P103B



	2	PHOTO OF (E) PIPING EAST OF DS-2 (SIMILAR TO PIPIN OUTSIDE DS-	3
$^{-}$	P104B	NT	8

GENERAL NOTE

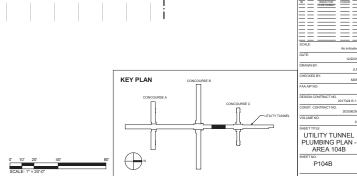
				P-KEYNOTE LEGEND		
KEY VALUE	KEYNOTE TEXT					
P1	(E) 2" IS FRO	M (E) FD SER	VING WES	T BAGGAGE TUNNEL ABOVE.		
P3	(E) 8" IS FRO	M (E) TD SER		T BAGGAGE TUNNEL ABOVE.		
P4				NG WEST BAGGAGE TUNNEL ABOVE.		
P6				NG EAST BAGGAGE TUNNEL.		
P7				T BAGGAGE TUNNEL ABOVE.		
P8		E) 8° IS FROM (E) TD SERVING AGTS TUNNEL ABOVE.				
P11			D SERVING AGTS TUNNEL ABOVE. PIPE IN PLACE AND FILL WITH GYPCRETE (TYP). REFERENCE SPECIFICATION SECTION 033000			
P21	CAST-IN-PLA	ACE CONCRET	E.			
P22	VIDEO SCOR	PED PER ADD ELOW THE EA	ALTERNA ST BAGGA	IECTED PIPING AND CONNECTED FORTURES ARE TO BE CLEANED USING JETTING AND TE, GC TO PROVIDE CIPP LINER IN ALL PIPE MANNS BURIED IN EAST EMBAINMENT IGE TUNNEL PER ADD ALTERNATE. DO NOT PROVIDE CIPP LINER IN BRANCH PIPES. NALIENSURE ALL BRANCH LINES ARE RE-INSTATED.		
P24	(E) 8" FROM	DS TO (E) DIV	SETTLIN	G PONDS.		
P25		O BE EXTEND		/EL ABOVE. X-RAY FLOOR PRIOR TO ANY CORE DRILLING OF SLAB TO CONFIRM/AVOID MENT.		
P32	BURY (N) 6"	IS AT THIS LO	CATION, F	OUTE DUCTILE IRON FLEX JOINT BELOW GROUND.		
P33	INSTALL 6" FLEX JOINT IN VERTICAL ABOVE GROUND.					
P36	MAINTAIN A ACCESS. TY	AIN A MINIMUM 4"-0" OF UNOBSTRUCTED AREA BETWEEN ALL NEW WORK AND (E) CONDITIONS FOR SERVICE IS. TYP. THROUGHOUT TUNNEL.				
P44	REPLACE (E	E (E) FCO COVER. 12" IS WITH CIPP LINER.				
P48	LINE (E) 12" IS WITH CIPP LINER.					
		DOE OF TRENCH LOCATED IN UTILITY TUNNEL.				
P57		URY (N) 12" IS AT THIS LOCATION. PROVIDE (N) 12" DUCTILE IRON FLEX JOINT IN LATERAL ABOVE GROUND.				
P67		BRANCH PIPING TO REMAIN. DO NOT LINE WITH CIPP.				
P72		ONNECT (E) 12" IS TO (N) 12" IS. ROUTE (N) 12" IS ABOVE GROUND BELOW (E) UTILITY PIPES.				
P73	CONNECT (8) 8" IS RISERS	3 TO (N) 12	Y IS LATERAL ABOVE GROUND.		
			Р	104B TIE IN SCHEDULE		
TIE IN DISCIPLINE	TIE IN	SYSTEM	AREA	TIE IN DESCRIPTION		
Р	- 1	IS	104B	CONNECT (E) 12" CAST IRON IS EXITING WALL TO (N) 12" IS ABOVE GRADE ROUTE (N) 12" IS BETWEEN GROUND AND UTILITY PIPES AT 1/16"/12" SLOPE.		
Р	2	IS	104B	CONNECT (E) 3" IS SERVING (E) SP-7 IN UTILITY TUNNEL TO (N) 3" IS.		
Р	3	IS	104B	CONNECT (E) 8" IS RISER TO (N) 12" IS LATERAL ABOVE GRADE.		
P	- 5	IS	104B	CONNECT (E) 6" IS SERVING (E) AD ON LEVEL ABOVE TO (N) 6" IS.		
P	- 6	IS	104B	CONNECT (E) 2" IS SERVING (E) FDV DRAIN ON LEVEL ABOVE TO (N) 2" IS.		
Р	7	IS	104B	CONNECT (E) 6" IS SERVING (E) SP-8 IN UTILITY TUNNEL AND (E) FD IN WEST BAGGAGE TUNNEL TO (N) 6" IS BELOW GROUND.		
Р	8	IS	104B	CONNECT (E) 8" IS RISER SERVING (E) TO IN THE WEST BAGGAGE TUNNEL ABOVE TO (N) 8" IS. DO NOT ROUTE (N) 8" IS LATERAL ABOVE EMBANKMENT.		
P	9	IS	104B	CONNECT (E) 8" (S TO (N) 8" (S.		

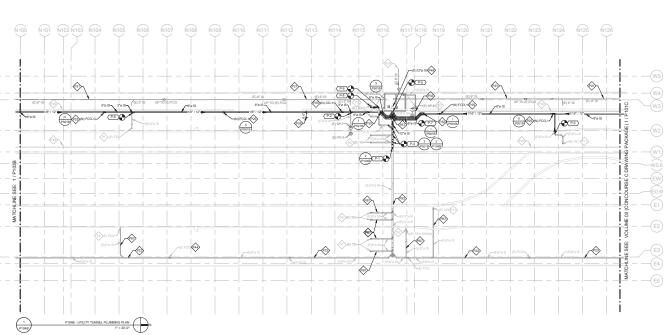
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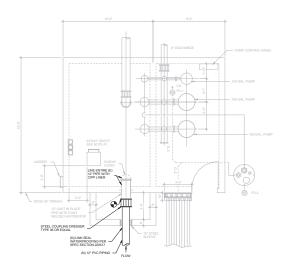
P104B

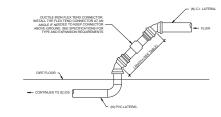
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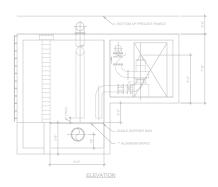




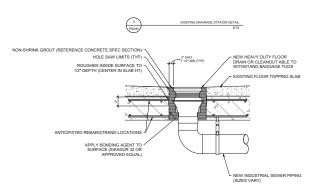


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	EXPANSION JOINT INFORMATION						
SIZE	DEFLECTION (PER BALL)	LENGTH	OFFSET	LINEAR TRAVEL (COMPRESSION)	LINEAR TRAVEL (EXTENSION)		
6"	15°	49.2"	8*	4"	4"		
8"	15"	51.18*	8*	4"	4"		



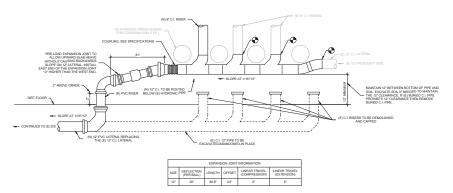


NOTE: LIGHT LINEWEIGHT AND TEXT IN THIS DETAIL IS TAKEN FROM DOCUMENTS DATED 3/31/33 AND IS USED FOR REFERENCING THE EXISTING DRAINAGE STATION. CONSTRUCTION. HEAVY LINEWEIGHT AND TEXT SHOWS NEW CONSTRUCTION FOR EACH DRAINAGE STATION.

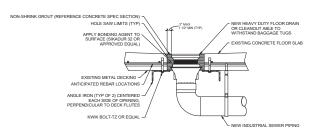


DETAIL SHOWN HERE FOR REFERENCE ONLY. REFERENCE STRUCTURAL DRAWINGS AND SPECIFICATIONS FOR MORE INFORMATION









DETAIL SHOWN HERE FOR REFERENCE ONLY. REFERENCE STRUCTURAL DRAWINGS AND SPECIFICATIONS FOR MORE INFORMATION.



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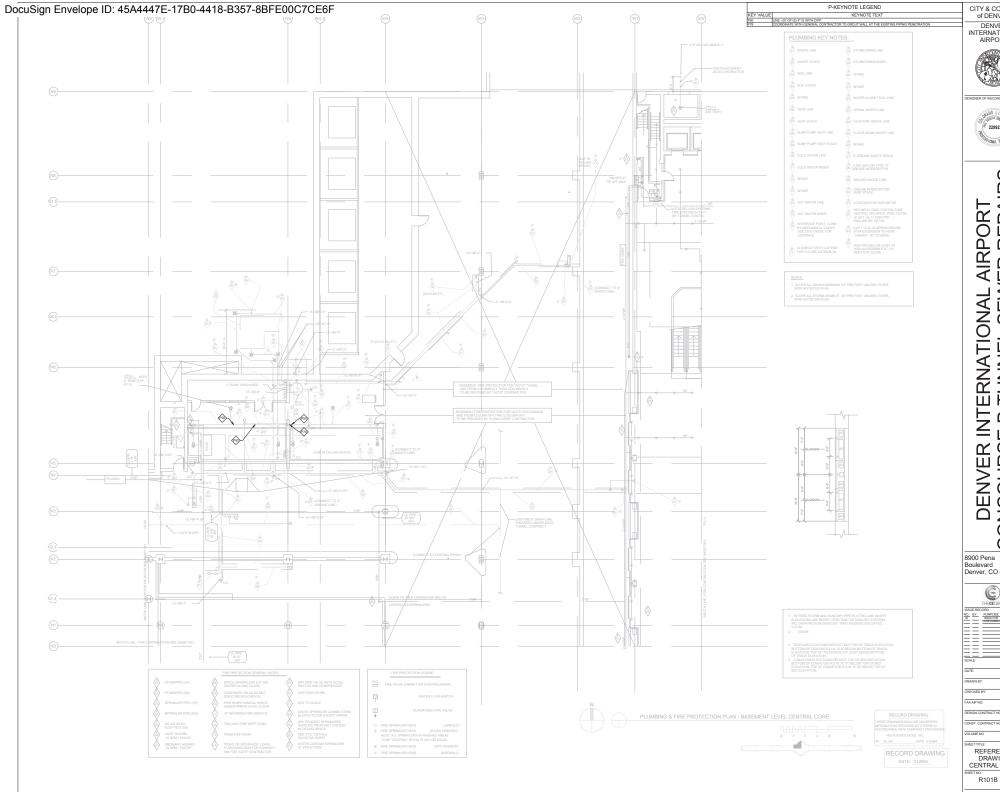




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	JLD
CHECKED BY:	MDR
FAA AIP NO:	
	201732415-11
CONST. CONTRACT NO.	202056250
VOLUME NO.	02
SHEET TITLE	_
PLUMBIN	١G
DETAIL	0

P501B



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REFERENCE DRAWING CENTRAL CORE

DENVER INTERNATIONAL AIRPORT CONCOURSE C TUNNEL SEWER REPAIRS

Design Contract No. 201732415-11 Construction Contract No. 202056250

Volume No. 03 ISSUE FOR CONFORMED **DOCUMENTS**

12/22/20



ARCHITECT

4582 SOUTH ULSTER STREET SUITE 1100 DENVER, CO 80237 **RS&H**

E THECEGROUP

MECHANICAL ENGINEER

CODE INFORMATION

PROJECT SHEET LIST

COVER SHEET

G000C

PLUMBING SCOPE OF WORK:

AIRPORT



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SEWER REPAIRS **ERNATIONAL** TUNNEL CONCOURS DENVER

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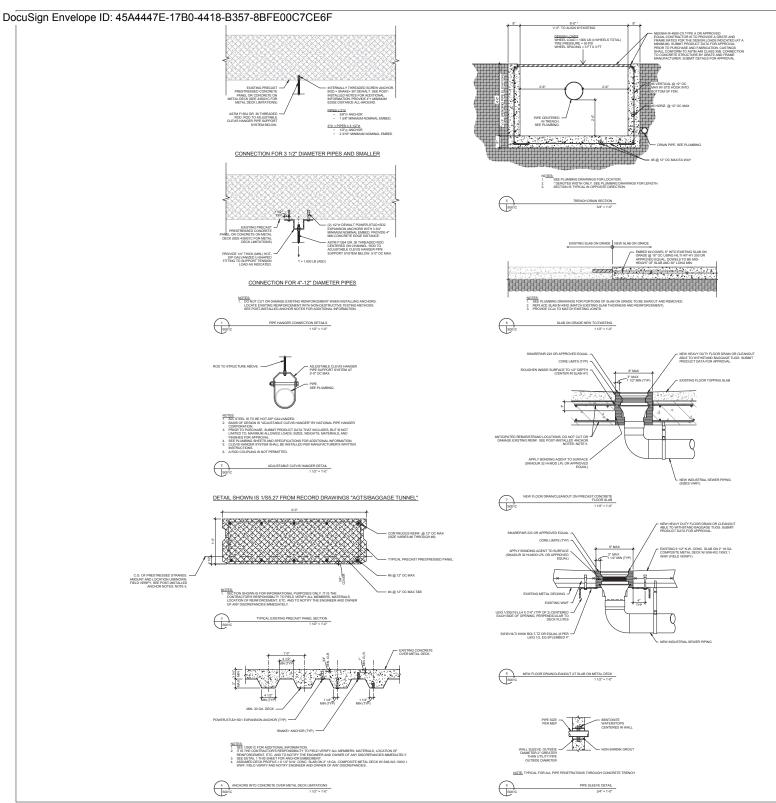
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ISIGN CONTRACT NO. 20173241 DNST: CONTRACT NO. 20205

SHEETTITLE SITE MAP

A100C



DESIGN CRITERIA

MATERIAL PROPERTIES 1. STRUCTURAL STEEL (PER AISC 360-10 STEEL PIPES CHANNELS PLATES ANGLES

CONCRETE (PER ACI 318-14):
 ALL CONCRETE

DESIGN PER THE 2018 INTERNATIONAL BUILDING CODE, 2018 INTERNATIONAL EXISTING BUILDING CODE, AND THE 2019 DENVER BUILDING CODE.

LIVE LOADS (PER RECORD DRAWINGS):
 CONCOURSES A. B AND C

ASTM A38
ASTM A38, UON
ASTM A38, UON
ASTM A38
ASTM F3125 GR A325
ASTM F1554 (GRADE:
ASTM A38



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INTERNATIONAL

AIRPORT



GENERAL NOTES

- THE DRAWINGS REPRESENT THE FINISHED STRUCTURE, UNLESS OT THEY DO NOT REPRESENT THE METHOD OF CONSTRUCTION.
- FOR TYPICAL DETAILS SHOWN BUT NOT BE REFERRED TO EXCEPT HEREIN, CONFORM TO ALL OF THE REQUIREMENTS OF THESE DETAILS TO THE SAME EXTENT AS IF REFERRED TO RY DETAIL IN IMPRE
- CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS OF EXISTING SITE THAT ARE AFFECTED BY NEW WORK REFORE PROCEEDING WITH FARRICATION AND CONSTRUCTION

POST-INSTALLED ANCHOR NOTES:

- LIGHT THE SUBSTRUCTION COLUMN TO THE SUBSTRUCTION OF THE SUBSTRUCTION OCCUMENTS. SUBSTRUCTION SUBSTRUCTION OCCUMENTS. SUBSTRUCTION SUBSTRUCTION OCCUMENTS. SUBSTRUCTION OCCUMENTS. SUBSTRUCTION OF SUBSTRUCTIO
- CONTRACTOR SHALL CONTACT EOR FOR WRITTEN APPROVAL PRIOR TO INSTALLING POS' INSTALLED ANCHORS FOR MISSING OR MISPLACED CAST-IN-PLACE ANCHORS.
- NO REINFORCEMENT SHALL BE CUT TO INSTALL POST-INSTALLED ANCHORS. DEFECTING HOLES SHALL BE GROUTED WITH CEMENTITIOUS GROUT. CONTRACTOR SHALL LOCATE
- PROVIDE CONTINUOUS SPECIAL INSPECTION FOR ALL ANCHORS, AS REQUIRED BY THE APPLICABLE EVALUATION REPORTS AND BUILDING CODES.
- 7. ANCHORS SHALL BE HOT-DIPPED GALVANIZED.

CONCRETE AND REINFORCING STEEL:

- ALL CONCRETE SHALL BE IN COMPLIANCE WITH THE BUILDING CODE REQUIREM STRUCTURAL CONCRETE ACI 318-14.
- 2. UNLESS OTHERWISE SHOWN ON DRAWINGS, MINIMUM COVER FOR REINFORCING SHALL BE AS FOLLOWS:
- ALL REINFORCING SHALL BE HELD SECURELY IN POSITION WITH STANDARD ACCESSORIES IN CONFORMANCE WITH THE CURRENT EDITIONS OF THE CRISI MANUAL OF STANDARD PRACTICE DIRRING THE PLACING OF THE CONCRETE.
- PROVIDE CORNER BARS AT ALL WALL INTERSECTIONS. CORNER BARS SHALL BE THE SAME SIZE AS THE LARGER INTERSECTING BARS.
- 5. ALL WALL STEEL SHALL BE CONTINUOUS WHERE POSSIBLE.
- . SEE ARCHITECTURAL, MECHANICAL, PLIMBING, FIRE PROTECTION AND ELECTRICAL PLANS FOR CAST-IN-PLACE BOLITS, INSERTS, ANCHORS, ETC AND FOR ALL SLAB LEAVE-OUTS, SLOPES, DEPRESSIONS, SLEEVES, ETC.
- 8. WELDED REINFORCEMENTS SHALL CONFORM TO AWS D1.4/D1.4M.
- 9. ALL HOOKS IN REINFORCING BARS SHALL BE AN ACI STANDARD HOOK, UNLESS OTHERWISE NOTED
- 10. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 34*, UNLESS OTHERWISE NOTED.



9100 Pena Boulevard Denver, CO 80249



AND DETAILS

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P-ABBREVIATIONS

PLLIMBING SYMBOLS SYMBOL DESCRIPTION EXISTING PIPING INDUSTRIAL SEWER ABOVE FLOOR OR GRADE ------0 CLEANOUT OFCO FLOOR CLEANOUT

STANDARD REFERENCE					
SYMBOL	DESCRIPTION				
	KEYNOTE				
\bigoplus	NORTH ARROW				
A101	VIEW REFERENCE / CALLOUT				
•	CONNECT TO EXISTING				

GENERAL NOTES:

- THESE DESIGN DOCUMENTS ARE IN COMPLIANCE WITH THE 2019 DEN DESIGN STANDARDS MANUAL WITH DEVIATIONS AND VARIANCES AGREED TO WITH DEN DURING THE SEWER REPAIR CONTINUATION PROCESSES.
- NEW WORK IS SHOWN BY HEAVY LINE WEIGHTS. EXISTING IS SHOWN IN LIGHT LINE WEIGHTS AND ARE SHOWN FOR REFERENCE. CONTRACTOR SHALL FIELD VERIFY EXACT LOCATIONS OF EXISTING WORK PERTINENT TO NEW WORK. CONTRACTOR SHALL REQUEST
- THIS IS A GENERAL LEGEND SHEET. NOT ALL SYMBOLS ARE USED ON DRAWINGS.
- ALL PIPMOT DE BLOPED AT 19712 (7%) PER DEN DOM UNLESS OTHERWISE ROCALTIO FED DIOL APPROVED DESIGN WARRACE. AND ADMINISTRATION OF THE PROPERTY OF THE PROPERTY
- CONTACT DEN PMT IF SOIL CONTAMINANTS ARE DISCOVERED VISUALLY AND/OR FROM COOR, REMEDIATION AND/OR REMOVAL IS TO BE DETERMINED WITH DEN ENVIRONMENTAL.
- REFERENCE BID FORM FOR ALL ALTERNATE UNIT ITEMS AND PRICING.
- HOLDRU.

 PULMENC CONTRACTOR TO COORDINATE ALL THE
 REQUIREMENTS POR SAW CUTTING AND CORE DRILLING FOR NEW
 FLOOR GROWN, FLOOR CLEAN CUTTING AND PRIVAT AN MEETED.

 PRIOR TO ANY FARRICATIONNESTILLATION OF PRIVAT SYSTEMS.
 ELEVATIONS REALTHY TO THE SENSING UTLITY THANKEL DIST
 FLOOR AND CONFRONMEDIATE THE PROPOGED PPE SLOPES
 MOICHAED ON THE DRAWINGS CAN BE ACHIEVED.
- INDICATED ON THE DISVISIONS GAN BE ACHIEVED.

 CONTROCTOR TO COORDINATE ALL REQUIRED TRAFFIC CONTROLS WITHIN THE BAGGAGE TUNNELS WHERE NEW FLOOR DRAINSCLEANOUTS ARE TO BE PROVIDED, OR EXISTING FLOOR DRAINSCLEANOUT REPAIRS ARE INDICATED.
- DIVANDICLEARUDI HELFARIS ARE INDICATED OR THESE DIVISION 22 DRAWINGS, DIRTIMATERIAL THAT WAS REMOVED (TO FACILITATE THE REMOVAL OF THE NOCATED EXISTIND PIPMS) SHALL BE USED, UNLESS THE EXCAVATED DIRTIMATERIAL IS DEEMED TO BE "CONTAMANTED" AND REQUIRED TO BE REMOVED.

WHERE EXISTING CONTAMINATED DIRTMATERIAL IS REMOVED FROM THE SITE. THERE IS NO REQUIREMENT FOR REPLACEMENT UNDER THIS SCOPE OF WORK.

LAYOUT HATCH LEGEND OBABLIC DESCRIPTION

DEMOLITION: THE PIPES WITHIN THE HATCH ARE TO BE DISCONNECTED AND REMOVED FOR THIS PROJECT.

EXCAVATION: THE AREAS DEFINED BY SHADING REPRESENT HAND DIGGING.

APPLICABLE CODES

QUALIFICATION NOTES:

THE SEWER SYSTEM IN THE SCOPE OF THIS PROJECT IS REFERRED TO AS INDUSTRIAL SEWER PER DIRECTION FROM DEN.

ALL EXISTING FLOOR DRAINS, AREA DRAINS, TRENCH DRAINS, FIRE DRAIN VALVE DRAINS AND FLOOR CLEAN GUTS ARE TO BE CLEANED PRIOR TO ANY INSTALLATIONS. EXISTING FIXTURES ARE TO BE CLEANED THOROUGHLY USING JETTING.

I HOMOLUGH, Y USINO, JE I I NO.

THE EXPECTES SAB HEAVE FOR EACH CONCOURSE IS BASED ON THE GEOTECHNICAL REPORT PREPARED BY KUMAR & ASSOCIATES, INC. SIGMITTED TO DEN ON AUGUSTE, 2017, SET TABLE BELOW TAKEN BY A STATE OF THE SABS OF DESIGN FOR EACH CONCOURSE AS AGREED TO BY DEN.

CONCOURSE	SLAB HEAVE IN INCHES
	440

PLUMBING FIXTURE SCHEDULE								
		FIXTURE			FIXTURE ROUCH-IN PIPE SIZE (INCHES)			
PLAN CODE	FIXTURE TYPE	LOCATION	MANUFACTURER	MODEL	SIZE	WASTE	VENT	REMARKS
(N) FD-1	FLOOR DRAIN	WEST BAGGAGE TUNNEL	ZURN	Z511	VARIOUS	VARIOUS	-	DURA-COAT CAST IRON, ROUND HEAVY-DUTY SLOTTED GRATE
(N) FCO-1	FLOOR CLEANOUT	WEST BAGGAGE TUNNEL	ZURN	Z1402	VARIOUS	4"		DURA-COAT CAST IRON, ROUND HEAVY-DUTY

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SEWER REPAIRS POR AIR RNATIONAL TUNNEL

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ONCOURS **DENVER**



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P-KEYNOTE LEGEND CITY & COUNTY of DENVER DENVER INTERNATIONAL AIRPORT





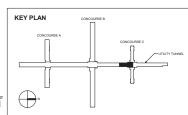


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UTILITY TUNNEL PLUMBING DEMO PLAN - AREA 101C PD101C



P-KEYNOTE LEGEND S LOCATION.

DEMOLISH (E) 2" DRAIN THAT DRAINS TO FLOOR, REFERENCE P102B FOR THE TIE INTO

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CITY & COUNTY of DENVER







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UTILITY TUNNEL PLUMBING DEMO PLAN - AREA 102C PD102C



KEY PLAN



CITY & COUNTY of DENVER

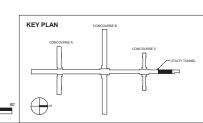


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PD103C



-W1)
-W0.6
-EW)
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P-KEYNOTE LEGEND

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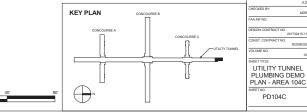




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PD104C



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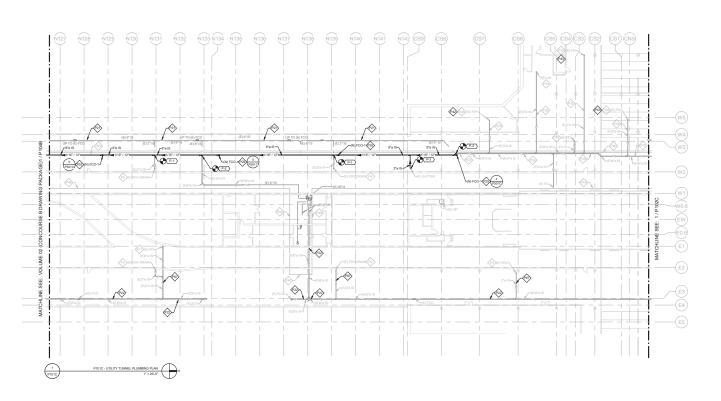
P101C TIE IN SCHEDULE

CONNECT (E) 2" IS SERVING (IS) FOV DISMAN ON LEVEL ABOVE TO (N) 2" IS.

CONNECT (E) 2" DRAM SERVING (E) 4" STO (N) 6" S

CONNECT (E) 2" DRAM SERVING (E) GUTTER IN LITELY TUNNEL TO (N) 2" IS. ROUTE (N)
2" IS SETWEEN CABLE TRAY AND UTILITY PPES.



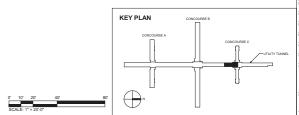


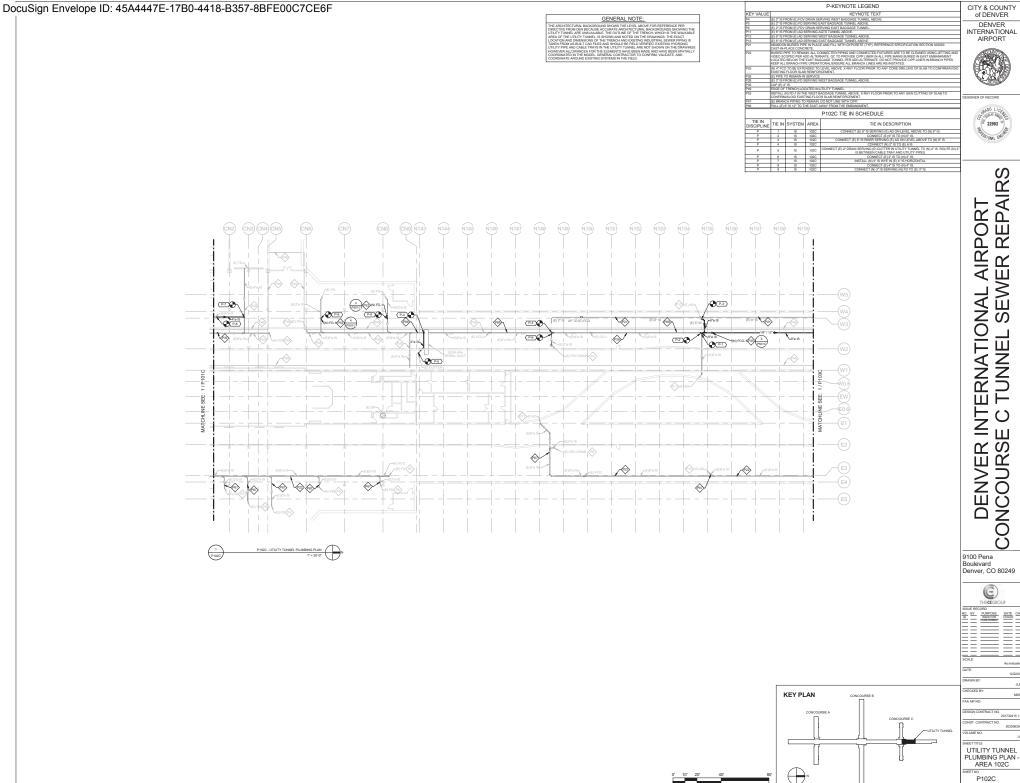
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P101C





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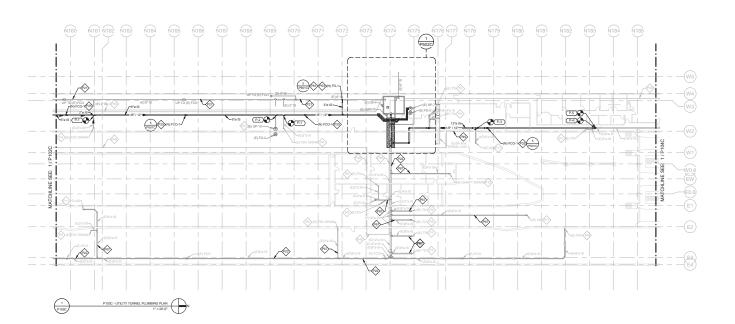
	P-KEYNOTE LEGEND
KEY VALUE	KEYNOTE TEXT
P1	(E) 2" IS FROM (E) FD SERVING WEST BAGGAGE TUNNEL ABOVE.
P3	(E) 8" IS FROM (E) TD SERVING WEST BAGGAGE TUNNEL ABOVE.
P4	(E) 2" IS FROM (E) FDV DRAIN SERVING WEST BAGGAGE TUNNEL ABOVE.
P6	(E) 2" IS FROM (E) FDV DRAIN SERVING EAST BAGGAGE TUNNEL.
P7	(E) 8" IS FROM (E) TD SERVING EAST BAGGAGE TUNNEL ABOVE.
P8	(E) 8" IS FROM (E) TD SERVING AGTS TUNNEL ABOVE.
P9	(E) 2" IS FROM (E) FD SERVING AGTS TUNNEL ABOVE.
P11	(E) 6" IS FROM (E) AD SERVING AGTS TUNNEL ABOVE.
P19	(E) 6" IS FROM SHAFT DRAIN SERVING SHAFT IN AGTS TUNNEL
P21	ABANDON BURIED PIPE IN PLACE AND FILL WITH GYPCRETE (TYP). REFERENCE SPECIFICATION SECTION 033000 CAST-IN-PLACE CONCRETE.
P22	BURIED PIPE TO REMAIN ALL CONNECTED PIPMO AND CONNECTED FIXTURES ARE TO BE CLEANED USING JETTING VIDEO SCOPED PER ADD ALTERNATE GC TO PROVIDE CIPP LINER IN ALL PIPE MANS BURIED IN EAST EMBANNISH. LICCATED BELOW THE EAST BAGGAGE TUNNEL PER ADD ALTERNATE. DO NOT PROVIDE CIPP LINER IN BRANCH PIP LEEP ALL BRANCH LINES ARE RE-MISTOR OF PIPE OF THE MEDICAL PROVIDE CIPP LINER IN BRANCH PIPE OF THE PIPE PIPE OF THE PIPE PIPE PIPE PIPE PIPE PIPE PIPE PI
P25	(N) 4" FCO TO BE EXTENDED TO LEVEL ABOVE. X-RAY FLOOR PRIOR TO ANY CORE DRILLING OF SLAB TO CONFIRM EXISTING FLOOR SLAB REINFORCEMENT.
P27	(E) SUMP PUMP TO REMAIN.
P49	EDGE OF TRENCH LOCATED IN UTILITY TUNNEL.
P53	INSTALL (N) FD-1 IN THE WEST BAGGAGE TUNNEL ABOVE. X-RAY FLOOR PRIOR TO ANY SAW CUTTING OF SLAB TO CONFIRMIAVOID EXISTING FLOOR SLAB REINFORCEMENT.
P67	(E) BRANCH PIPING TO REMAIN. DO NOT LINE WITH CIPP.
P81	CONFIRM (N) FD-1 LOCATION WITH DEN PRIOR TO INSTILLATION.

KEY PLAN

PRIOR TO INSTILLATION.	00/100
	STATE OF
BC TIE IN SCHEDULE	₹ 225
TIE IN DESCRIPTION	TOPESSION
CONNECT (E) 2" IS SERVING (E) FDV DRAIN ON LEVEL ABOVE TO (N) 2" IS.	7010
CONNECT (E) 3" IS SERVING (E) SP-10 TO (N) 3" IS.	
CONNECT (E) 6° IS TO (N) 12° IS IN LATERAL.	

(N) 2" IS RISER TO (N) 12" IS.

CONNECT THE (E) 6" IS DIAGONAL TO THE (N) 12" IS LATERAL. ROUTE (N) 12" IS





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DocuSign Envelope ID: 45A4447E-17B0-4418-B357-8BFE00C7CE6F P-KEYNOTE LEGEND GENERAL NOTE THE MONITORINA BACKING ON DISCHAIN THE LIVEL ABOVE FOR REFERENCE FIRE THE CHIEF CONTROL BACKING ON THE LIVEL ABOVE FOR REFERENCE FIRE THE CHIEF CONTROL BACKING THE CHIEF CONT KEY PLAN

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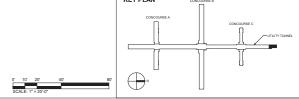


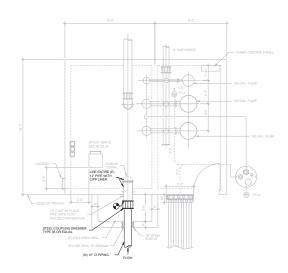
ERNATIONAL AIRPORT TUNNEL SEWER REPAIRS **DENVER INTERNATIONAL** \circ CONCOURSE

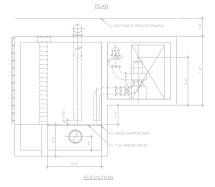
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P104C

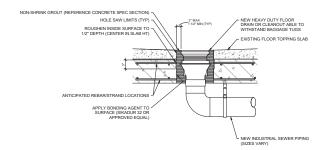






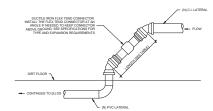
NOTE: LIGHT LINEWEIGHT AND TEXT IN THIS DETAIL IS TAKEN FROM DOCUMENTS DATED 3/31/93 AND IS USED FOR REFERENCING THE EXISTING DRAINAGE STATION CONSTRUCTION. HEAVY LINEWEIGHT AND TEXT SHOWS NEW CONSTRUCTION FOR EACH DRAINAGE STATION.





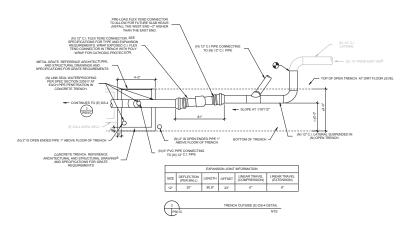
DETAIL SHOWN HERE FOR REFERENCE ONLY. REFERENCE STRUCTURAL DRAWINGS AND SPECIFICATIONS FOR MORE INFORMATION

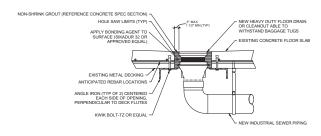




		EXPANS	EXPANSION JOINT INFORMATION				
SIZE	DEFLECTION (PER BALL)	LENGTH	OFFSET	LINEAR TRAVEL (EXTENSION)			
6"	15°	49.2"	8"	4"	4"		







DETAIL SHOWN HERE FOR REFERENCE ONLY. REFERENCE STRUCTURAL DRAWINGS AND SPECIFICATIONS FOR MORE INFORMATION



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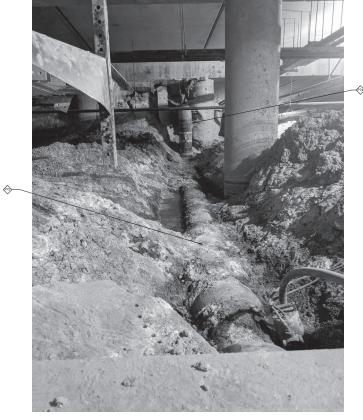
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ISSUE RECORD NO. BY PURPOSE DATE CKI. TO TRANSPORT 122200 CONSTRUCTOR 122200
SCALE: As indicated DATE: 12/22/20
DRAWN BY: JLD
CHECKED BY: MDR
FAA AIP NO:
201732415-11 CONST. CONTRACT NO.
202058250 VOLUME NO.
SHEET TITLE
PLUMBING DETAILS
P501C

GENERAL NOTE

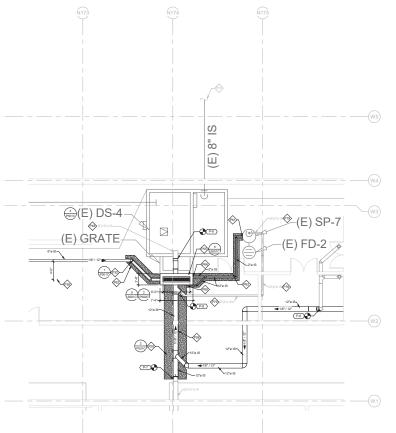
P-KEYNOTE LEGEND

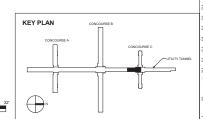
	P103C ENLARGED VIEW TIE IN SCHEDULE								
N LINE	TIE IN	SYSTEM	AREA	TIE IN DESCRIPTION					
	- 6	IS.	103C	CONNECT (E) 8° IS TO (N) 12° IS ABOVE GRADE.					
	7	IS	109C	CONNECT (E) 12" CAST IRON IS ELBOW TO (N) 12" CAST IRON IS RISER: SUSPE 12" LATERAL IN OPEN TRENCH.					











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ENLARGED VIEWS

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DENVER INTERNATIONAL AIRPORT **CONCOURSE A TUNNEL SEWER REPAIRS**

Design Contract No. 201732415-11 Construction Contract No. 202056250

8700 Pena Boulevard

Volume No. 01 ISSUE FOR CONFORMED **DOCUMENTS**

12/22/20



ARCHITECT

4582 SOUTH ULSTER STREET SUITE 1100 DENVER, CO 80237 **RS&H**

E THECEGROUP

MECHANICAL ENGINEER CODE INFORMATION

PLUMBING SCOPE OF WORK:



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> SEWER REPAIRS POR **ERNATIONAL** TUNNEL Ш

COVER SHEET

G000A

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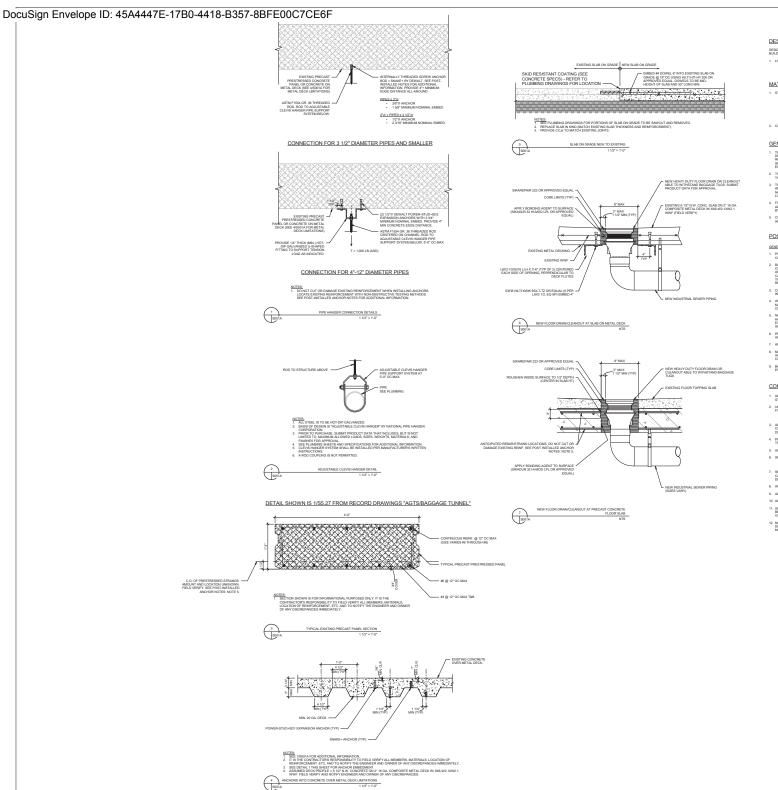
NAL AIRPORT SEWER REPAIRS **ERNATIONAL** TUNNEL CONCOURSE DENVER

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SITE MAP

A100A



DESIGN CRITERIA

DESIGN PER THE 2018 INTERNATIONAL BUILDING CODE, 2018 INTERNA BUILDING CODE, AND THE 2019 DENVER BUILDING CODE.

MATERIAL PROPERTIES



GENERAL NOTES

- THE STRUCTURAL NOTES SHALL GOVERN IN MATTERS COVERED ON THE STRUCTL DRAWINGS. SEE PROJECT SPECIFICATION AND OTHER DRAWINGS FOR FURTHER REQUIREMENTS. TOTAL PROJECT DETENTION WILL BE PROVIDED BY COMBINING P SPECIFICATIONS, ARCHITECTURAL, STRUCTURAL, MECHANICAL, PLUMBING, AND ELECTRICAL DRAWING PACKAGE.
- THE DRAWINGS REPRESENT THE FINISHED STRUCTURE, UNLESS OTHERWISE INDICATED. THEY DO NOT REPRESENT THE METHOD OF CONSTRUCTION.
- THE CONTRACTOR SHALL TAKE ALL MEASURES NECESSARY TO PROTECT THE STRI. AND ANY PERSONNEL DURING CONSTRUCTION. SUCH MEASURES SHOULD INCLUDE

POST-INSTALLED ANCHOR NOTES:

- BASIS OF DESIGN (BOD) ANCHOR PRODUCTS ARE THOSE INDICATED ON THE CONSTRUCTION DOCUMENTS. SUBSTITUTION REQUESTS FOR ANCHORS OTHER THAN BOD ANCHORS SHALL BE SUBMITTED TO THE EOR FOR WINTER APPROVIAL PROVIDE CALCULATIONS SIGNED AND SEALED BY A PROFESSIONAL ENGINEER DEMONSTRATHAT THE SUBSTITUTED AND/OR PRODUCT MEETS THE SPECIFIC PERFORMANCE REQUIREMENTS OF THE BOD ANCHOR PRODUCT.
- CONTRACTOR SHALL CONTACT EOR FOR WRITTEN APPROVAL PRIOR TO INSTALLING POST. INSTALLED ANCHORS FOR MISSING OR MISPLACED CAST-IN-PLACE ANCHORS.
- ANCHORS SHALL BE INSTALLED PER MANUFACTURER'S WRITTEN INSTRUCTIONS, CONTAC MANUFACTURER FOR TRAINING FOR PROPER ANCHOR INSTALLATION, SUBMIT TRAINING CERTIFICATE DOCUMENTATION FOR WORKERS INSTALLAND POST-INSTALLED ANCHORS.

- PROVIDE CONTINUOUS SPECIAL INSPECTION FOR ALL ANCHORS, AS REQUIRED BY THE APPLICABLE EVALUATION REPORTS AND BUILDING CODES.
- 7. ANCHORS SHALL BE HOT-DIPPED GALVANIZED.
- MECHANICAL ANCHORS SHALL HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ACI 3552 AND ICC-ES ACI 93 FOR CRACKED AND UNCRACKED CONCRETE.
- BASIS OF DESIGN (BOD) IS DEWALT SNAKE+ INTERNALLY THREADED SCREW ANCHOR (ICC-ES ESR-2272) AND DEWALT POWER-STUD+802 (ICC-ES ESR-2502).

CONCRETE AND REINFORCING STEEL:

- ALL CONCRETE SHALL BE IN COMPLIANCE WITH THE BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE ACI 318-14.
- UNLESS OTHERWISE SHOWN ON DRAWINGS, MI FOLLOWS:
- PROVIDE CORNER BARS AT ALL WALL INTERSECTIONS. CORNER BARS SHALL BE THE SAME SIZE AS THE LARGER INTERSECTING BARS.
- 5. ALL WALL STEEL SHALL BE CONTINUOUS WHERE POSSIBLE
- 2 ALL HALL SHELL SHALL BE CUNTROLOGY WHERE POSSIBLE

 SHALES IN REPORTACING WHERE PROTEINES, SHALL BE AS FOLLOWS UNLESS OTHERWISE NOT
 REPORTACING STEEL.

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 SHE ARCHITECTURAL MICHARICAL LEARNING REPORTECTION OF SECTIONAL PLANS FOR
 OMET SHALLOGY SHAND SHAND SHAND SHAND SHAND SHAND SHAND SHAND
 OPPRESSIONS, SHELLOWS, STEEL AND FOR ALL SHABLEAVE-CUTS, SLOPES,
 OPPRESSIONS, SHELPHS, STEEL

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 THE SHAND SHAND
- 8. WELDED REINFORCEMENTS SHALL CONFORM TO AWS D1.4/D1.4M.
- 9. ALL HOOKS IN REINFORCING BARS SHALL BE AN ACI STANDARD HOOK, UNLESS OTHERWISE NOTED 10. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 314", UNLESS OTHERWISE NOTED.
- NO PIPES OR DUCTS SHALL BE PLACED IN STRUCTURAL CONCRETE UNLESS SPECIFICALLY DETAILED. SEE ARCHITECTURAL AND MECHANICAL DRAWINGS FOR LOCATION OF SLEEVES MOULDS, FLOOR HINGES, ETC TO BE CAST INTO THE CONCRETE.

ALL CONCRETE SHALL BE DESIGNED BY AN APPROVED LABORATORY, AND THE DESIGN MIX SHALL
BE SUBMITTED TO THE ARCHITECT/ENGINEER FOR REVIEW. AND APPROVAL OBTAINED PRIOR TO

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REPAIRS POR AIR SEWER TIONAL TUNNEL RNA. Ш \triangleleft Ш ONCOURS α Ш DENVI 8700 Pena Boulevard Denver, CO 80249

ISSUE RECORD
NO. BY PURPOSE DATE CKD
TO TRANSPORT 199250
TO TRANSPORT 199250

STRUCTURAL GENERAL NOTES AND DETAILS S001A

P-ABBREVIATIONS

PLUMBING SYMBOLS SYMBOL DESCRIPTION INDUSTRIAL SEWER ABOVE FLOOR OR GRADE , IS INDUSTRIAL SEWER BELOW FLOOR OR GRADE 0 **8**2 CLEANOUT OFCO FLOOR CLEANOUT

s	TANDARD REFERENCE
SYMBOL	DESCRIPTION
	KEYNOTE
$\bigoplus^{\mathbb{N}}$	NORTH ARROW
1 A101	VIEW REFERENCE / CALLOUT
•	CONNECT TO EXISTING

GENERAL NOTES:

- THESE DESIGN DOCUMENTS ARE IN COMPLIANCE WITH THE 2019 DEN DESIGN STANDARDS MANUAL WITH DEVIATIONS AND VARIANCES AGREED TO WITH DEN DURING THE SEWER REPAIR CONTINUATION PROCESSES.
- TO WITH DEN DURING THE SEWEN HEI-PAR CONTINUAL INDIVIDUAL SHOWN BY HEAVY LINE WEIGHTS. EXISTING IS SHOWN IN LIGHT LINE WEIGHTS AND ARE SHOWN FOR REFERENCE CONTRACTOR SHALL FILED VERRY EXACT. LOCATIONS OF EXISTING WORK PERTINENT TO NEW WORK. CONTRACTOR SHALL REQUEST IN WISTING, PRIOR TO BID. CLARFICATION OF ANY INFORMATION OF THESE DOCUMENTS.
- THIS IS A GENERAL LEGEND SHEET. NOT ALL SYMBOLS ARE USED ON DRAWINGS.
- ALL PIPING TO BE SLOPED AT 1/4*/12* (2%) PER DEN DSM UNLESS OTHERWISE INDICATED PER DEN APPROVED DESIGN VARIANCE.
- CONTRACTORS SHALL EXERCISE CAUTION IN THE DEMOLITION OF ANY EXISTING ROUSTRIAL SEWER PIPMS, PIPMS INDICATED TO BE REACULTED SHALL BE RECONNECTED TO THE EXISTING PIPMS SYSTEMS TO MANTAIN CONTINUES SERVICE. ANY ALL PIPMS THAT IS INALIVERTURY REMOVED (THAT IS INTENDED TO REMAIN) SHALL BE REPLACED WITHOUT COSTTO THE OWNER. CLOSELY COORDINATE DEMOLICITION WORK WITH NEW WORK PACKAGES.
- CONTACT DEN PMT IF SOIL CONTAMINANTS ARE DISCOVERED VISUALLY AND/OR FROM ODOR: REMEDIATION AND/OR REMOVAL IS TO BE DETERMINED WITH DEN ENVIRONMENTAL.
- REFERENCE BID FORM FOR ALL ALTERNATE UNIT ITEMS AND PRICING.
- PRIOR TO ANY FABRICATION INSTILLATION OF PIPING SYSTEMS, CONTRACTOR TO PERFORM SURVEY AND VERBY ALL INVEST ELEVATIONS RELATIVE TO THE EXISTING UTILITY TUNNEL DRT FLOOR AND CONFRINAVALIDATE THE PROPOSED PIPE \$LOPES INDICATED ON THE DRAWINGS CAN BE ACHEVED.
- CONTRACTOR TO COORDINATE ALL REQUIRED TRAFFIC CONTROLS WITHIN THE BAGGAGE TUNNELS WHERE NEW FLOOR DRAINSICLEANOUTS ARE TO BE PROVIDED, OR EXISTING FLOOR DRAINSICLEANOUT REPAIRS ARE INDICATED.
- DRAMS/LEAWOUT REPAIRS ARE RIDICATED.

 I. WHERE BADCELING IS INDICATED ON THESE DIVISION 22
 DRAWWIGS, DRITAMITERSH, THAT WAS REMOVED (TO FACILITATE
 THE REMOVAL, OF THE RIDICATED EXTEND PPRIOR) SHALL BE
 CONTAMINATED AND RECURRED TO BE REMOVED.

 "OWN TAMINATED" AND RECURRED TO BE REMOVED.

 WHERE BUSING "CONTAMINATED" DRITAMITERSH IS REMOVED.
 FROM THE SITE, THERE IS NO REQUIREMENT FOR REPLACEMENT
 HORD THIS SOOPE OF WORK.

LAYOUT HATCH LEGEND

DEMOLITION: THE PIPES WITHIN THE HATCH ARE TO BE DISCONNECTED AND REMOVED FOR THIS PROJECT.

EXCAVATION: THE AREAS DEFINED BY SHADING REPRESENT HAND DIGGING.

APPLICABLE CODES

CONTRACTORS SHALL INSTALL ALL WORK IN ACCORDANCE WITH APPLICABLE FEDERAL AND STATE REGULATIONS, THE 2018 INTERNATIONAL CODES AND THE 2019 DENVER AMENDMENTS TO THE INTERNATIONAL CODES.

QUALIFICATION NOTES:
THE SEWER SYSTEM IN THE SCOPE OF THIS PROJECT IS REFERRED TO AS INDUSTRIAL SEWER PER DIRECTION FROM DEN.

AS INDUSTRIAL SEMBER PER DIRECTION PHON DEED.

AL EXISTING FLOOR DRAINS, AREA DRAINS, TRENCH DRAINS, FIRE DRAIN MALVE DRAINS AND FLOOR CLEAN QUTS ARE TO BE CLEANED PRIOR TO ANY INSTALLATIONS, EXISTING FIXTURES ARE TO BE CLEANED THOROUGHLY USING JETTING.

THE EXPECTED SLAB HEAVE FOR EACH CONCOURSE IS BASED ON THE GEOTECHNICAL REPORT PREPARED BY SUMAR & ASSOCIATES, INC. SIGMITTED TO DEN ON AUGUST 6, 2017, SET PAIGE BELOW TAKEN, SIGMITTED TO DEN ON AUGUST 6, 2017, SET PAIGE BELOW TAKEN, HEAVE (BASED ON 15 FEET OF WETTING) USED FOR THE BASIS OF DESIGN FOR EACH CONCOURSE AS ADRICED TO BY DEN.

CONCOURSE	SLAB HEAVE IN INCHES

PLUMBING FIXTURE SCHEDULE								
			FIXTURE			FIXTURE ROUCH-IN	PIPE SIZE (INCHES)	
PLAN CODE	FIXTURE TYPE	LOCATION	MANUFACTURER	MODEL	SIZE	WASTE	VENT	REMARKS
(N) FD-1	FLOOR DRAIN	WEST BAGGAGE TUNNEL	ZURN	Z511	VARIOUS	VARIOUS	-	DURA-COAT CAST IRON, ROUND HEAVY-DUTY SLOTTED GRATE
(N) FCO-1	FLOOR CLEANOUT	WEST BAGGAGE TUNNEL	ZURN	Z1402	VARIOUS	4*	-	DURA-COAT CAST IRON, ROUND HEAVY-DUTY



CITY & COUNTY of DENVER DENVER INTERNATIONAL AIRPORT







SEWER REPAIRS AIRPORT RNATIONAL TUNNEL Ш ⋖ Ш ONCOURS **DENVER** Denver, CO 80249

8700 Pena Boulevard

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SUE RECORD D. BY PURPOSE DATE CKD SUE FOR (1922)
CALE: 12" = 1'-0"
12/22/20
12/22/20 RAWN BY: JLD
12/22/20 RAWN BY: JLD HECKED BY: MDR
12/22/20 RAWN BY: JLD HECKED BY:
12/22/20 RAWN BY: JLD HECKED BY: MDR AA AIP NO: ESIGIN CONTRACT NO. 201732415-11
12/22/20 RAWN BY: JLD HECKED BY: MDR AA AIP NO: ESIGN CONTRACT NO.

PLUMBING GENERAL NOTES P001A

P-KEYNOTE LEGEND NECT PORTION OF (E) 8" IS LATERAL AND PORTION OF RISER. REFER

DENVER INTERNATIONAL AIRPORT

CITY & COUNTY of DENVER





NAL AIRPORT SEWER REPAIRS **ERNATIONAL** TUNNEL **DENVER INT** CONCOURSE A

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P-KEYNOTE LEGEND





CITY & COUNTY of DENVER

DENVER INTERNATIONAL AIRPORT

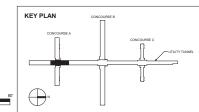


NAL AIRPORT SEWER REPAIRS **ERNATIONAL** TUNNEL **DENVER INT** CONCOURSE A

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UTILITY TUNNEL PLUMBING DEMO PLAN - AREA 102A PD102A



P-KEYNOTE LEGEND CITY & COUNTY of DENVER DENVER INTERNATIONAL AIRPORT





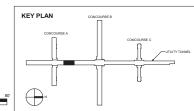


NAL AIRPORT SEWER REPAIRS DENVER INTERNATIONAL CONCOURSE A TUNNEL SEW

8700 Pena Boulevard Denver, CO 80249



UTILITY TUNNEL PLUMBING DEMO PLAN - AREA 103A PD103A



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	P-KEYNOTE LEGEND							
KEY VALUE	KEYNOTE TEXT							
P1	(E) 2" IS FROM (E) FD SERVING WEST BAGGAGE TUNNEL ABOVE.							
P3	(E) 8" IS FROM (E) TD SERVING WEST BAGGAGE TUNNEL ABOVE.							
P4	(E) 2" IS FROM (E) FDV DRAIN SERVING WEST BAGGAGE TUNNEL ABOVE.							
PS PS	(E) 2" IS FROM (E) FD SERVING EAST BAGGAGE TUNNEL ABOVE.							
P6	(E) 2" IS FROM (E) FDV DRAIN SERVING EAST BAGGAGE TUNNEL.							
P7	(E) 8" IS FROM (E) TD SERVING EAST BAGGAGE TUNNEL ABOVE.							
P8	(E) 8" IS FROM (E) TD SERVING AGTS TUNNEL ABOVE.							
P21	ABANDON BURIED PIPE IN PLACE AND FILL WITH GYPCRETE (TYP). REFERENCE SPECIFICATION SECTION 033000 CAST-IN-PLACE CONCRETE.							
P22	BURED PIPE TO REMAIN ALL CONNECTED PIPMO AND CONNECTED FOTURES ARE TO BE CLEANED USING JETTING VIDEO SCOPED PAR DO A TERRANTE GC TO PROVIDE CIPP LINER IN ALL PIPE MANNS BURIED IN EAST EMBANIOMIN LOCATED BELOW THE EAST BAGGAGE TUNNEL PER ADD ALTERNATE. DO NOT PROVIDE CIPP LINER IN BRANCH PIPI KEEP ALL BRANCH LINES ARE RE-MISTOR OF THE PIPME TO THE PIPME TO THE PIPME TO THE PIPME THE PIPME TO T							
P23	ABANDON PIPE IN PLACE, DO NOT FILL WITH GYPCRETE.							
P24	(E) 8" FROM DS TO (E) DIW SETTLING PONDS.							
P25	(N) 4" FCO TO BE EXTENDED TO LEVEL ABOVE. X-RAY FLOOR PRIOR TO ANY CORE DRILLING OF SLAB TO CONFIRM/ EXISTING FLOOR SLAB REINFORCEMENT.							
P27	(E) SUMP PUMP TO REMAIN.							
P30	ROUTE (N) 3" IS BETWEEN MAINTENANCE ACCESS BEAMS.							
P32	BURY (N) 6" IS AT THIS LOCATION. ROUTE DUCTILE IRON FLEX JOINT BELOW GROUND.							
P36	MAINTAIN A MINIMUM 4-0" OF UNOBSTRUCTED AREA BETWEEN ALL NEW WORK AND (E) CONDITIONS FOR SERVICE ACCESS. TYP. THROUGHOUT TUNNEL.							
P48	LINE (E) 12" IS WITH CIPP LINER.							

	PORTIONS OF (E) 8" PIPES ARE TO BE DEMOED. REFERENCE PD101A FOR MORE DEMO INFORMATION.						
	TIE INTO THE THREE (E) 8" IS PIPES NORTH OF THE COLUMN SHOWN IN THE PHOTO. PROVIDE A NEW PIPING MANIFOLI ABOVE THE (E) UTILITY PIPES.						
	BURY THE (N) 8" IS MANIFOLD RISER BETWEEN THE TWO (E) UTILITY PIPES AT THE LOCATION OF THE OF THIS DEMOLISHED 8" RISER.						
	PARTIAL FILL PIPE WITH CONCRETE AND ALLOW TO SET PRIOR TO FILLING ABANDONED UPSTREAM PIPING WITH GYPCRETE. INTENT IS TO CREATE A PLUG TO REVENT GYPCRETE FLOWING INTO EXISTING DOWNSTREAM PIPING TO THE DRAINAGE STATION THAT IS TO REMAIN "ACTIVE".						
	P101A TIE IN SCHEDULE						
ME	E TIE IN ID SYSTEM AREA TIE IN DESCRIPTION						

CONNECT (E) 2" IS SERVING (E) FD ON LEVEL ABOVE TO (N) 2" IS CONNECT (E) 8" IS LATERAL TO (N) 8" IS LATERAL. ROUTE (N) 8" IS AS UTILITY PIPE AND OFFSET (N) 8" IS AS NEEDED. DINNECT (E) 12" CAST IRON IS BELOW GRADE TO (N) 12" IS RISER. ROU UTLITY PIPE AND OFFSET (N) IS 18 AS NEEDED.

CONNECT (S) 12" CAST FROM 8 SELOW AGABLE TO (N) 12" S RIBER FOUTE (N) 12"

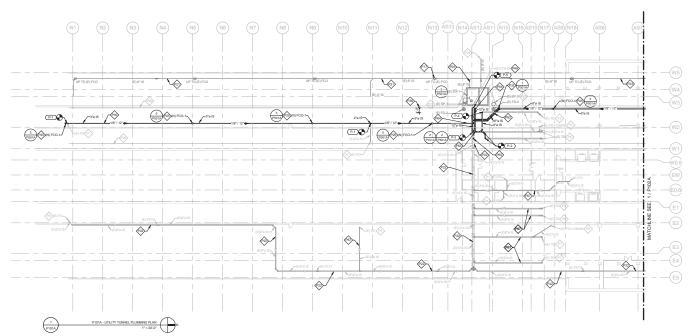
IS RIBERS BETWEEN (S) UTLITY PIPES

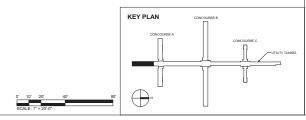
CONNECT (E) 8" IS TO (N) IF IS ROUTE (N) IS SET WEEN CABLE TRAY AND UTLIT (P) IPE

REMOVE AND BEPLACE (E) 12" COLPUND AND CONNECT (N) 12" COUPLING AND (I)

PUC 12" IS TO (E) 12" IS REFERENCE DETAIL 30" 501 A FOR SPECIFICS.







SEWER REPAIRS AIRPORT ERNATIONAL TUNNEL **DENVER INT** CONCOURSE A

CITY & COUNTY of DENVER

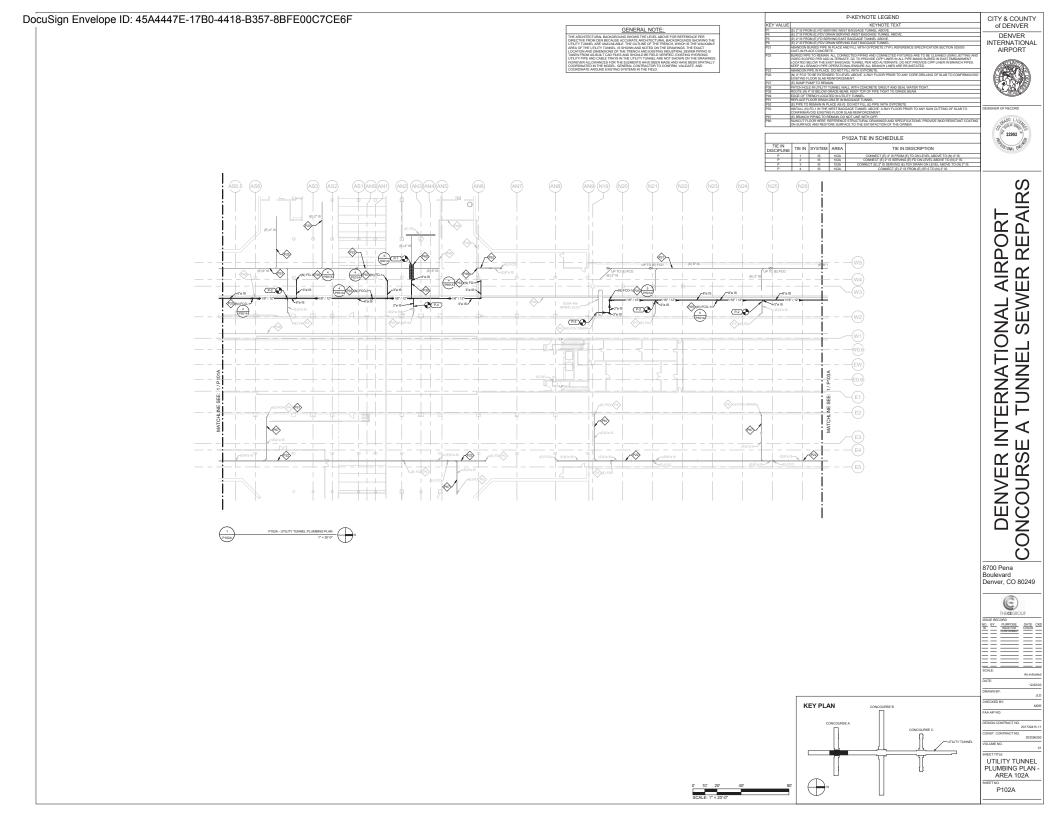
DENVER INTERNATIONAL AIRPORT

8700 Pena Boulevard Denver, CO 80249



UTILITY TUNNEL PLUMBING PLAN -AREA 101A

P101A



GENERAL NOTE:

THE ADMITCHIAM, BACKGROUND DOWN THE LIVEL ABOVE FOR REPRENCE FOR THE ADMITCHIAM, BACKGROUND DOWN THE LIVEL ABOVE FOR REPRENCE FOR THE HIRLY WHO'S IN THE WALAGES.

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P-KEYNOTE LEGEND

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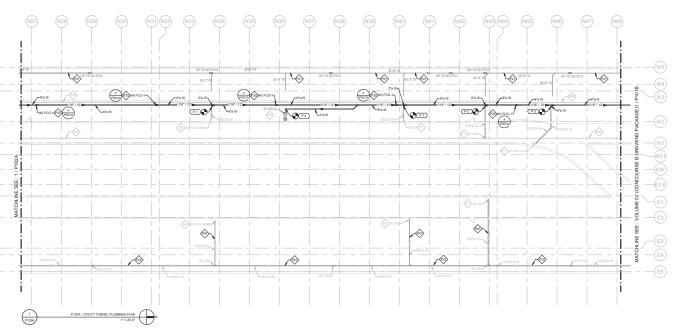
P103A TIE IN SCHEDULE							
TIE IN DISCIPLINE	TIE IN	SYSTEM	AREA	TIE IN DESCRIPTION			
P	1	IS	103A	CONNECT (E) 2" IS SERVING (E) FD ON LEVEL ABOVE TO (N) 2" IS.			
P	2	IS	103A	CONNECT (E) 6" IS SERVING (E) AD ON LEVEL ABOVE TO (N) 6" IS.			
P	3	IS	103A	CONNECT (E) 6" IS SERVING (E) FDV DRAIN ON LEVEL ABOVE TO (N) 6" IS.			



CITY & COUNTY of DENVER

DENVER INTERNATIONAL AIRPORT

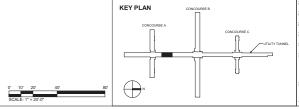


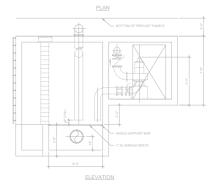


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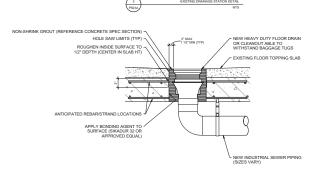


P103A



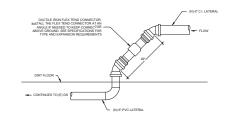


NOTE: LIGHT LINEWEIGHT AND TEXT IN THIS DETAIL IS TAKEN FROM DOCUMENTS DATED 3/31/93 AND IS USED FOR REFERENCING THE EXISTING DRAINAGE STATION CONSTRUCTION. HEAVY LINEWEIGHT AND TEXT SHOWS NEW CONSTRUCTION FOR EACH DRAINAGE STATION.



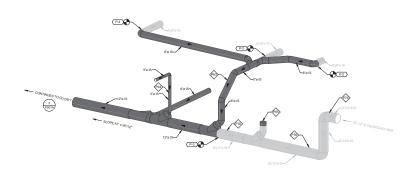
DETAIL SHOWN HERE FOR REFERENCE ONLY, REFERENCE STRUCTURAL DRAWINGS AND SPECIFICATIONS FOR MORE INFORMATION





	EXPANSION JOINT INFORMATION							
SIZE	DEFLECTION (PER BALL)	LENGTH	OFFSET	LINEAR TRAVEL (COMPRESSION)	LINEAR TRAVEL (EXTENSION)			
6"	15"	49.2"	8"	4*	4*			



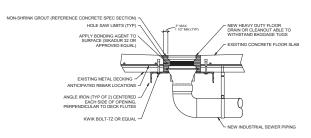


	P-KEYNOTE LEGEND				
KEY VALUE	KEYNOTE TEXT				
P63	PROVIDE (N) 8" PVC FLEX-TEND CONNECTOR AT THIS LOCATION. INSTALL (N) FLEXIBLE CONNECTOR AT A 45" ANGLE.				
P64	INSTALL A 3" PVC FLEX-TEND CONNECTOR IN VERTICAL RISER ABOVE GRADE AT THIS LOCATION.				
P65	CAP (E) 8" IS RISER STUB.				
P76	(E) 12" PIPE TO REMAIN. PIPE IS TO BE CLEANED USING JETTING AND VIDEO SCOPED PER ADD ALTERNATE. GC TO PROVIDE CIPP LINER IN THIS 12" PIPES. DO NOT PROVIDE CIPP LINER IN BRANCH PIPES.				

ISOMETRIC TIE IN SCHEDULE						
TIE IN DISCIPLINE TIE IN ID SYSTEM AREA		AREA	TIE IN DESCRIPTION			
Р	2	IS	101A	CONNECT (E) 8" IS LATERAL TO (N) 8" IS LATERAL ROUTE (N) 8" IS ABOVE (E) UTILITY PIPE AND OFFSET (N) 8" IS AS NEEDED.		
Р	3	IS	101A	CONNECT (E) 12" CAST IRON IS BELOW GRADE TO (N) 12" IS RISER. ROUTE (N) 12" IS RISER BETWEEN (E) UTILITY PIPES		
P	4	IS	101A	CONNECT (E) 8" IS TO (N) 8" IS. ROUTE (N) 8" IS BETWEEN CABLE TRAY AND UTILITY PIPE		

	EXPANSION JOINT INFORMATION					
SIZE	DEFLECTION (PER BALL)	LENGTH	OFFSET	LINEAR TRAVEL (COMPRESSION)	LINEAR TRAVEL (EXTENSION)	
3"	13"	42.1°	8"	4"	4"	
8"	15"	51.2°	8"	4"	4"	
12"	20°	80.8"	23"	6"	6"	





DETAIL SHOWN HERE FOR REFERENCE ONLY. REFERENCE STRUCTURAL DRAWINGS AND SPECIFICATIONS FOR MORE INFORMATION



CITY & COUNTY of DENVER DENVER INTERNATIONAL AIRPORT







SEWER REPAIRS AIRPORT



EXHIBIT K



INVITATION FOR BID

TUNNEL SEWER REPAIRS
CONTRACT NO. 202056250

November 20, 2020

PCL Construction Services, Inc. Contract No. 202056250-00

INVITATION FOR BID (IFB)

Airport Office Building (AOB)
Denver International Airport (DEN)
8500 Pena Boulevard, Room 8810
Denver, Colorado 80249-6340

Contract Administrator (CA): Paul Gilchrist

E-Mail: contract.procurement@flydenver.com

Invitation for Bid #: 202056250

BIDS MUST BE RECEIVED BY: December 22, 2020 2:00PM MST

Schedule of Activities

This projected schedule is an estimated timeline and is subject to change at the sole discretion of the City. All times listed in this document are understood to be Denver local time (Mountain Time Zone).

Event	Date
IFB Advertisement	November 20, 2020
Pre-Bid Conference	December 1, 2020 at 10:00AM MST
Last Date to Submit Written Questions	December 10, 2020 by 2:00PM MST
Bid Opening	December 22, 2020 at 2:00PM MST

Pre-Bid Conference –MANDATORY

A mandatory Pre-Bid Conference will be held virtually via a Microsoft Teams Meeting at 10:00 AM LOCAL TIME on Tuesday, December 1, 2020. Please click on the following link to access the meeting.

Mandatory Pre-Bid Conference Link

At this conference, DEN representatives will explain the opportunity and answer questions regarding this IFB, including any written questions submitted to DEN prior to the conference.

IFB Questions

DEN will not answer any telephone inquiries about this IFB. Written questions are due by 2:00 PM LOCAL TIME on December 10, 2020 and shall be submitted electronically via the Rocky Mountain E-Purchasing System (BidNet) website. **DEN requires all questions to be submitted individually on this site.** All questions and answers will be posted on the BidNet website at the link below following the deadline for submittal of questions.

https://www.bidnetdirect.com/colorado/cityandcountyofdenverdepartmentofaviation

Bid Submittal Location

The Bid shall be prepared in accordance with the Instructions to Bidders as described in Section IV of this IFB. Bidders shall submit their Bid and all required forms via DEN's Rocky Mountain E-Purchasing

System's (BidNet's) website:

https://www.bidnetdirect.com/colorado/cityandcountyofdenverdepartmentofaviation. Bids are due by 2:00 PM LOCAL TIME on December 22, 2020.

Minority and Women-Owned Business Enterprise Participation

Article III, Division 3 of Chapter 28 of the D.R.M.C. states the Director of the Division of Small Business Opportunity has the authority to establish a project goal for expenditures contracted by the City and County of Denver. The specific goal for this project is:

18% Minority and Women-Owned Business Enterprise (MWBE) Participation

Project goals must be met with certified participants as set forth in Section 28-60, D.R.M.C. or through the demonstration of a sufficient good faith effort under Section 28-62 D.R.M.C.

General Statement of Work

Airport Infrastructure Management (AIM) is requesting to bid services to relocate existing underground plumbing to above ground in the Utility Tunnel area from South of Concourse A to North of Concourse C at Denver International Airport (DEN). Work also includes adding floor drains and flexible connectors, fixing leaking pipes, and rerouting and lining existing underground pipe in the area under the East Baggage Tunnel.

The driving need for this project is that many of the centrally located sewer lines at DEN are not draining due to soil heaving. This is causing backups in drains and standing water in the baggage tunnels which has been recognized as a safety concern. Currently, DEN Maintenance must frequently unclog these drainage lines.

Prequalification

Each bidder must be prequalified in one of the following categories: 1E(2) Sewer Rehabilitation, 1E(4). Piped Sewer, 2B. General Buildings – Occupied Buildings, and 2C. Active High Security Facility Renovation at or above the \$9,000,000.00 monetary level in accordance with the City's Rules and Regulations Governing Prequalification of Contractors. Each bidder must have submitted a prequalification application a minimum of ten (10) calendar days prior to the response due date. Applications must be submitted via email to pw.prequal@denvergov.org. To view the Rules and Regulations and to obtain a prequalification application, please visit our website at www.denvergov.org/prequalification.

BID SUBMITTAL REQUIREMENTS

The following is a checklist for reference when compiling the Bid submission. The documents listed below are required:

- □ Bid Forms all complete and signed
 - Bid Letter filled out completely and acknowledge all addenda
 - Bid Data Forms all forms completed and submitted
 - Disclosure of Legal & Administrative Proceedings & Financial Conditions
 - Form W-9
 - Certificate of Good Standing
 - Bid Bond
- □ DSBO Forms
 - Commitment to MWBE Participation
 - Letter(s) of Intent
 - List of Proposed Subcontractors, Subconsultants, and/or Suppliers (1A)
- □ Diversity Survey
 - Diversity and Inclusiveness in City Solicitations (online survey include the completed survey with your Bid submission)
- Financial Forms
 - Schedule of Prices/Values and Quantities

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I. CITY, AIRPORT AND PROJECT OVERVIEW

The values of equity, diversity, inclusivity, and sustainability are inherent to Denver's strategy to develop and maintain prosperous communities. Consequently, these values are imbedded into all of Denver's procurement processes to ensure competitive procurement that offers equitable opportunities for all potential bidders, including greater contracted participation for minority, women-owned, and small businesses to ensure Denver's long-term economic, social, and environmental health. It is the City's expectation that all successful bidders demonstrate their commitment to City values through their procurement responses and post contract and/or lease activities.

Each procurement opportunity is to be approached with ethical and honest behavior. The City will solicit, evaluate, and award contracts based upon the Bidder's approach, proven experience, ability to perform work, costs, and pricing.

The City's values may be demonstrated through but are not limited to: (a) workforce expansion; (b) utilization of minority, women-owned, and small business community separate from required certified goals; and (c) environmental sustainability.

In accordance with procedures described herein, you are hereby invited to submit a Bid for the subject project, which is described in the Technical Specifications and Drawings incorporated herein. The work under this Contract is anticipated to start on or about Q2, 2021 and has a scheduled duration of approximately one (1) year. The Bid must be prepared and submitted in accordance with the requirements and procedures contained in this IFB document and the City's, including DEN's, ordinances, rules, policies, and procedures. Compliance with these requirements by the Bidder is mandatory and is a condition of responsiveness. Any failure to satisfy these requirements will be a sufficient basis for the City and County of Denver's Department of Aviation, also known as Denver International Airport, (DEN or City) to disqualify the Bidder. The City shall not be liable for any of the Bidder's expenses associated with its preparation of the Bid or DEN's consideration of it. The Bidder, if selected, shall not include any such expenses as part of its fee for performing the Scope of Work.

II. ADMINISTRATIVE INFORMATION

II-1 <u>Issuing Office</u>

The City and County of Denver's Department of Aviation (City or DEN), by the Contract Services Department (DEN Contract Services). This IFB is governed by the City's ordinances and Procurement Rules in effect at the time of its issuance. DEN Contract Services is the sole point of contact concerning this IFB. All communication must be done through the Contract Services Department.

II-2 <u>Introduction and Acceptance of IFB Terms</u>

The Bidder, by submitting its Bid, acknowledges that it understands and will agree to the Sample Contract and corresponding Exhibits and the Scope of Work, and that the Bidder shall be able to perform as required. Acknowledgement of this condition shall be indicated by the signature of the Bidder on the Bid Letter, which is attached hereto and incorporated here in as Attachment 1, or an officer of the Bidder legally authorized to execute contractual obligations. A submission in response to this IFB acknowledges acceptance by the Bidder of all terms and conditions as set forth herein. The Bidder shall identify clearly and thoroughly any variations between its Bid and this IFB. Failure to do so shall be deemed a waiver of any rights to subsequently modify the terms of performance, except as outlined or specified in this IFB.

II-3 Means of Communication

During the solicitation process for this IFB, all communication between the Contract Services Department and Bidders will be via postings on DEN's Rocky Mountain E-Purchasing System's (BidNet's) website:

https://www.bidnetdirect.com/colorado/cityandcountyofdenverdepartmentofaviation

The Contract Services Department will post notices, which include, but are not limited to, any modifications to administrative or performance requirements, answers to inquiries received, clarifications to requirements, addenda, and the announcement of the apparent successful bidder. It is the responsibility of each potential Bidder to monitor the BidNet website regularly in order to be aware of changes, communications and/or addenda to bids.

DEN will not be held responsible for misinformation received from private plan holders. Please use the DEN BidNet website to obtain solicitation information for the airport.

II-4 Interpretation of Bid Documents

The Bidder may request, in writing, a clarification or interpretation of any aspect of the IFB documents. Such requests must be made in writing in WORD format (no PDFs) or in the body of an email by the due date and time specified in the Schedule of Activities listed on page 2. DEN shall post all questions and answers on the DEN BidNet Website following the deadline for submittal of questions. DEN will not accept or respond to oral inquiries except for those made at the Pre-Bid Conference. The only 'official' responses are those that are posted to the DEN BidNet Website for this IFB.

II-5 Addenda

DEN reserves the right to revise the IFB documents at any time up to the time set for submission of the Bids. Any such revision(s) shall be described in an addendum to the IFB and shall be posted on the DEN BidNet Website at the following link:

https://www.bidnetdirect.com/colorado/cityandcountyofdenverdepartmentofaviation

If DEN determines that the addendum may require significant changes to the Scope of Work, the deadline for submitting the Bids may be postponed by the number of days that DEN determines will allow Bidders sufficient time to revise their Bids. Any new submittal deadline date for delivering Bids to DEN shall be included in the addendum.

Bidders must acknowledge in the Bid submission that they received all addenda to the Bid documents (see Attachment 2, Part 1). Failure to acknowledge receipt of addenda may disqualify the Bid.

II-6 **DEN Website**

It shall be conclusively presumed that the Bidder did, before submitting a Bid, read all addenda, posted decisions and other information items relevant to the IFB which appeared on the DEN BidNet Website to see if addenda have been issued or may also contact the DEN Contract Administrator, Paul Gilchrist, by email at contract.procurement@flydenver.com.

Please visit the DEN BidNet Website at the following link which contains such services and information as:

https://www.bidnetdirect.com/colorado/cityandcountyofdenverdepartmentofaviation

- A. Advertisements for RFQs, RFPs and IFBs
- B. Status of RFQs, RFPs and IFBs
- C. Project addenda
- D. Incidental project information is available for viewing and printing, which includes:
 - a. Plan holder's list
 - b. Pre-Bid Conference attendance list
 - c. Questions and Answers

Incidental project information listed in item D., above, will only be available online at the DEN BidNet Website and will not be mailed.

II-7 Withdrawal of Bid

A Bidder may withdraw its Bid by submitting to DEN a written request signed by the Bidder's authorized representative. The withdrawal of a Bid does not prejudice the right of the Bidder to submit future Bids.

II-8 Rights of DEN

DEN reserves the right to waive any informality or irregularity in any proposal it receives and to be the sole judge of the merits of the proposals it receives. Minor informalities are matters of form rather than substance evident from the response or insignificant mistakes that can be waived or corrected without prejudice to other proposers; that is, the effect on price, quantity, quality, delivery, or contractual conditions is negligible." The Contract Administrator may waive such informalities or allow any proposer to correct them depending on which is in the best interest of DEN. If a proposer is allowed to correct an informality, the proposer will be notified of the allotted time to correct the minor informality by DEN's Contract Administrator. Failure to correct the minor informality by the Proposer may result in their proposal being deemed non-responsive.

II-9 Minority Business Enterprise and Women Business Enterprise Participation (or DBE, if applicable)

Article III, Divisions 1 and 3 of Chapter 28, Denver Revised Municipal Code (D.R.M.C.), referred to in these Bid Documents as the "MWBE Ordinance" and any Rules or Regulations promulgated pursuant thereto apply to this Project and are incorporated into these Bid Documents by reference. Under the MWBE Ordinance, the Director of DSBO ("Director") has the authority to establish participation goals on contracts for construction, reconstruction, remodeling, professional and design work with the City and County of Denver. The participation goal is stated in the Notice of Invitation for Bids found herein. In order to comply with the bid requirements of the MWBE Ordinance, or any additional requirements, a bidder shall either meet the established participation goal or, in the alternative, demonstrate that the bidder has demonstrated sufficient good faith efforts to meet the goal in accordance with the MWBE Ordinance. A bidder's failure to comply with the MWBE Ordinance, any Rules or Regulations promulgated pursuant thereto, or any additional requirement contained herein shall render the bid non-responsive and shall constitute cause for rejection. Failure by the contractor awarded the contract to comply with MWBE Ordinance requirements during the performance of the contract is a material breach of the contract, which may result in the imposition of sanctions on the Contractor, as deemed appropriate by DSBO. Copies of the MWBE Ordinance and its accompanying Rules and Regulations are available for the use and review of bidders from DSBO. As well as additional MWBE Guidance which can be found here: https://www.denvergov.org/dsbo.

Meeting Established Goal

1. All MWBEs listed for participation toward meeting the goal must be properly certified by the City on or before the date bids are opened. The MWBE(s) must be certified in the NAICS code(s) that coincide with the scope of work the identified firm will be performing to count towards the participation goal. DSBO maintains an MWBE Directory ("Directory"), which is a current list of MWBEs certified by the City. A copy of the Directory is located at the DSBO web site at https://www.denvergov.org/dsbo. Bidders are encouraged to use the Directory to assist in identifying MWBEs for the work and supplies required for the Project. Bidders are reminded that changes may be made to the Directory at any time in accordance with the City's MWBE Ordinance. Procedures established to administer this program and a current copy of the Directory must always be used in preparing a bid. MWBE certification or listing in the Directory is not a representation or warranty by the City regarding the qualifications of any listed MWBE.

- 2. If a bidder is participating in a joint venture with a certified MWBE firm, bidders must submit the Joint Venture Agreement to the DSBO <u>at least ten (10) business days prior to the bid opening</u>. The Joint Venture must be approved prior to the bid opening by the DSBO. Approval by the DSBO includes determining the amount the Joint Venture will count towards the participation goal.
- 3. Each bidder shall submit Bid Form pages entitled Commitment to MWBE Participation, 1A-List of Proposed Subcontractors, Subconsultants, and/or Suppliers, and Letter(s) of Intent for all tiers with the bid at the time of bid opening. DSBO will evaluate each bid to determine responsiveness of the bid with regard to MWBE Ordinance requirements. An MWBE Prime Bidder must submit a Letter of Intent for itself for self-performed work. The MWBE Letter of Intent evidences the Bidder's understanding that the Bidder has or will enter into a contractual relationship with the MWBE or that the Bidder's subcontractor(s), subconsultant(s), and/or supplier(s) will do so. Bidders are urged to carefully review these Letters of Intent before submission to the City to ensure the documents are properly completed and executed by the appropriate parties. Only the MWBEs identified and the precise levels of participation listed for each, at the time of bid opening, will be considered in determining whether the bidder has met the designated participation goal. Additional, participation submitted after bid opening will not be considered in determining responsiveness.
 - a. In determining whether a bidder's committed level of participation meets the stated MWBE goal, DSBO shall base its calculation of applicable dollar amounts and percentages on the total base bid amount. If a bid contains alternates, participation contained in any alternate will not count towards satisfaction of the Participation goal at time of bid opening. However, should any designated alternate be selected by the City for inclusion in the contract ultimately awarded, the MWBE goal percentage level submitted at time of bid opening, on the base bid, will also apply to the selected alternates and must be maintained through the remaining term of the contract on the total contract amount, including any alternate work. Therefore, bidders are urged to consider participation in preparing bids for designated alternates.
 - b. In utilizing the MWBE participation of a Supplier the following will count towards satisfaction of the goal:
 - i. If the materials or supplies are obtained from a MWBE manufacturer, count one hundred percent (100%) of the cost of the materials or supplies toward the participation goal.
 - ii. Only sixty percent (60%) of the value of the commercially useful function performed by MWBE Regular Dealers shall count toward satisfaction of the participation goal.

- iii. Only the bona fide commissions earned by such Manufacturer Representatives or Brokers for its performance of a commercially useful function will count toward meeting the participation goals. The bidder must separate the bona fide brokerage commissions from the actual cost of the supplies or materials provided to determine the actual dollar amount of participation that can be counted towards meeting the goal.
- c. Any agreement between a bidder and an MWBE in which the bidder requires that the MWBE not provide subcontracting quotations to other bidders is prohibited and shall render a bidder's bid nonresponsive. D.R.M.C. 28-68(f)

Good Faith Effort

If the bidder has not fully met the participation goal as provided in D.R.M.C. Section 28-62, then it shall demonstrate that it has made good faith efforts to meet such goal. The bidder shall furnish to the Director, with the bid at time of bid opening by the City a detailed statement of its good faith efforts to meet the participation goal established by the Director. The statement of good faith efforts shall include a specific response to address each of the categories, as outlined in the MWBE Ordinance, D.R.M.C. Section 28-62, and any additional criteria that the Director may establish by rule or regulation consistent with the purposes of the MWBE Ordinance. A bidder may include any additional information it believes may be relevant. Good faith efforts must be demonstrated to be substantive and not merely for formalistic compliance with the MWBE Ordinance. The scope and adequacy of the efforts will be considered in determining whether the bidder has achieved a good faith effort. Failure of a bidder to show good faith efforts shall render its overall good faith effort showing insufficient and its bid nonresponsive.

II-10 Certification of Independent Price and Work Determination

By submission of this Bid, each Bidder, and in the case of a joint Bid, each party thereto, certified, that, in connection with this procurement:

- a. Prices and specific work processes in this Bid have been arrived at independently, without consultation, communication or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or with any competitor, or with any party contracted by DEN to design and/or manage all or part of the program or work of which this IFB is a part;
- b. Unless otherwise required by law, the prices quoted and specific work processes described in this Bid have not been knowingly disclosed by the Bidder and will not knowingly be disclosed by the Bidder prior to opening, directly or indirectly to any other bidder or to any competitor or to any party contracted by DEN to design and/or manage all or part of the program or work of which this IFB is a part; and
- c. No attempt has been made or will be made by the Bidder to induce any other person or firm to submit or not to submit a Bid for the purpose of restricting competition.

Further, each person signing Attachment 1, Part 1 Bid Letter, for this Bid certified that:

- d. He/She is the person in the Bidder's organization responsible for the decision as to the prices being offered herein and that he/she has not participated, and will not participate, in any action contrary to subsection (a) through (c) above; or
- e. He / She is not the person in the Bidder's organization responsible for the decision as to the prices being offered herein but that he/she has been authorized in writing to act as agent for the persons responsible for such decision in certifying that such persons have not participated, and will not participate, in any action contrary to subsections (a) through (c), above, and as their agent does hereby so certify; and he/she has not participated, and will not participate, in any action contrary to subsections (a) through (c), above.

A Bid will not be considered for award where subsections (a), (c), (d) or (e), above, have been deleted or modified. Where (b) above has been deleted or modified, the Bid will not be considered for award unless the Bidder furnishes with the Bid a signed statement which sets forth in detail the circumstances of the disclosure and the Chief Executive Officer (CEO), or its designee, determines that such disclosure was not made for the purpose of restricting competition.

II-11 Designation of Subcontractors

The Bidder shall describe the qualifications of each subcontractor which it intends to use and the percentage and scope of the work which will be assigned to each of them. Resumes for the subcontractor's key personnel must be included.

Bidders who submit a Bid in response to this IFB are precluded from participation as a subcontractor with any other Bidders who submit a Bid for this IFB. However, subcontractors may be named on more than one (1) Bid.

II-12 Payment

Appropriate clarifications and additions to the Scope of Work may be made during negotiations with the successful Bidder. It is the intent of DEN to enter into a Contract in which the Bidder will be paid pursuant to the terms of the Contract.

II-13 Disclosure of Legal and Administrative Proceedings and Financial Condition

- A. The Bidder shall submit (at time of submittal) a statement which shall disclose all legal or administrative proceedings that involve a civil claim in excess of Fifty Thousand Dollars (\$50,000) in which the Bidder, its principals or key personnel were a party in the last five years. The Bidder shall include in the statement:
 - 1. The caption of the action naming all parties;
 - 2. The case number, jurisdiction and the date the action was filed;
 - 3. A brief description of the action, the amount of the claim and whether the action involved performance under any public or private construction contract; and
 - 4. The outcome or disposition of the action.

- B. The Bidder shall submit (at time of submittal) a statement which shall disclose whether Bidder has filed for protection under the laws of the U. S. Bankruptcy Code within the last ten (10) years.
- C. The Bidder shall submit (at time of submittal) a statement as to whether the Bidder, its principals or key employees presently, or in the past, are or have been involved in any debarment or suspension proceedings. Please include a description of any proceedings which prohibited or limited the Bidder from bidding or entering into any contract with any federal, state or local government entity. Include a brief description of the reason(s) for such action having been taken, the effective dates thereof and the governmental agency.
 - If the Bidder is a partnership or joint venture, please include a statement disclosing the information listed in subparagraph A and B, above, for each partner or joint venturer. If the Bidder is fifty percent (50%) or greater owned by another entity or individual, please include a statement disclosing the above information for such entity or individual.
- D. The Bidder shall submit (at time of submittal) a statement as to whether the Bidder, its principals or key employees have been convicted of any crime related embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, tax evasion, receiving stolen property, fraud, unfair trade practices, violation of state of federal antitrust statutes, or other law indicating a lack of business integrity or business honesty or have been convicted of any other felony in any jurisdiction within the last five (5) years. Include the current status of any such principal or key employees.
- E. The Bidder shall submit (at time of submittal) its Dun & Bradstreet identification number if applicable. If the Bidder is a partnership or joint venture, it must submit the Dun & Bradstreet identification number for each partner of a joint venture.
- F. If the Bidder is a publicly held company, it shall submit (at the time of submittal) a list of any holders of ten percent (10%) or more of its stock.
- G. During contract negotiations, the Bidder may be asked to submit the following:
 - 1. An audited statement of overhead rates, payroll taxes and operating (profit) margin used to calculate hourly billing rates for DEN and approval. If the Bidder does not have audited overhead rates, an Exhibit E, Submittal 2 shall be prepared for each entity without audited overhead rates. This statement shall cover the Bidder's most recently completed fiscal year and shall be signed by a certified public accountant as a Certified Audited Statement in which the accountant expresses his or her opinion as to the fairness with which the statement represents the Bidder's financial position, results of operations and changes in financial position.
 - 2. If the Bidder is a partnership or joint venture, a Certified Audited Statement is required for each partner or joint venture. If the Bidder does not have audited overhead rates, an

Exhibit E, Submittal 2 shall be prepared for each entity without audit overhead rates. If any individual owns thirty-two percent (32%) or more of the Bidder, a Certified Audited Statement is required for each such individual or if a Certified Audited Statement is not available, then the individual must supply copies of his or her federal tax returns for the prior two (2) years.

- 3. If a Bidder is a small business as defined by the United States Small Business Administration, the Bidder may elect to submit copies of its Federal tax return for the prior two (2) years and prepare an Exhibit E, Submittal 2 in lieu of a Certified Audited Statement.
- 4. A signed statement certifying that no material or significant changes have occurred since the date of completion of the Certified Audited Statement, or the filing of the Federal tax return and the date of the Bid.

II-14 Insurance Requirements

Bidder shall adhere to all insurance requirements stated in Attachment 4, which are attached hereto and incorporated herein by reference.

II-15 Governmental Immunity

Bidders and subcontractors understand and agree that the City, its officers, officials and employees are relying on, and do not waive or intend to waive by any provisions of this Contract, the monetary limitations or any other rights, immunities and protections provided by the Colorado Governmental Immunity Act, §§ 24-10-101 - 120, C.R.S., or otherwise available to the City, its officers, officials and employees.

II-16 **Security**

After receiving an executed contract, the Bidder shall be deemed a Contractor of DEN. The Contractor (or subcontractor) requiring access to the Controlled Area, Sterile Area or Secured Area shall become a "Participant" in the Airport Security Program and remain in good standing in order to retain Airport Security privileges.

Participant guidelines are outlined in Rules and Regulations Governing the Denver Municipal Airport System Rules and Regulations Part 20. A Contractor must be sponsored by an Air Carrier, Tenant or by the City. Once a Contractor company has been sponsored, they must designate an Authorized Signatory.

The sponsorship establishes that a Contractor (or subcontractor) has legitimate business at the Airport. All construction Contractors must submit a Participant Sponsorship form signed by their sponsor. A company sponsoring a Participant shall immediately notify Airport Security when any sponsorship is terminated.

A subcontractor company working under its own entity must be sponsored by a Contractor company. The subcontracting company must designate its own Authorized Signatory(ies).

Each Participant shall designate an Authorized Signatory to ensure the Participant's compliance with the Airport Security Program and act as the point of contact between the Participant and Airport Security. The Authorized Signatory shall be designated in writing to Airport Security by the Participant.

The Authorized Signatory is responsible for signing and verifying all information on the Denver International Airport Fingerprinting and Badging applications. All submitted applications must be an original. It is the Authorized Signatory's responsibility to ensure that Airport Security maintains valid contact information. The Authorized Signatory must maintain a current and valid Airport Identification Badge (ID Badge).

The security status of the Airport is subject to change without notice. Should the security status of the Airport change at any time during the term of the Contract, a written notice shall be issued to the Contractor, detailing all applicable security modifications. The Contractor must take immediate steps to comply with those security modifications.

The Contractor shall return to DEN, upon Contract completion or termination, or upon demand by DEN, all access keys and Airport ID Badges issued to it by DEN to Controlled Areas, Sterile Areas or Secured Areas of the Airport. If the Contractor fails to return any such Airport ID Badge(s) or Airport Security Key(s) at Contract completion or termination or upon demand by the DEN, the Contractor shall be liable to the DEN for all DEN's costs, including the DEN's labor costs for re-coring doors and any other work which is required to prevent compromise of any Airport Security system. In order to collect such costs hereunder, the DEN may withhold funds in such amount from any amounts due and payable to the Contractor under the Contract.

Airport Security must be immediately notified if an Airport ID badge or security key is lost or stolen and must be notified immediately upon the termination of an individual's employment. Pursuant to 49 CFR Part 1520.04-10(d) a fee shall be assessed against any employer who fails to return an Airport ID badge or security keys upon the termination of an individual's employment, transfer, or completion of a project or contract. An additional fee may be requested to cover the administrative cost of processing a lost badge or security key.

|-17 Airport Identification (ID) Badge Requirements

All individuals employed at the Airport with Secured Area access, or working in the Terminal, Concourses or Parking and Ground Transportation facilities, must obtain an Airport ID Badge. Airport ID Badges will be issued by Airport Security. All Airport ID Badges shall be and remain the property of the Airport. The Airport ID Badge must be surrendered on demand to Airport Operations and/or a Contract Security Guard. An individual employed by more than one (1) company, or changing employers, must obtain an Airport ID Badge for each company. Badge color indicates general areas and levels of authorization in relationship with direct support of an individual's job function. Badge color does not determine access. The respective classes of Airport ID Badges, indicated by badge color and associated driving endorsement icon, describe driving privileges in direct correlation with job function.

The individual must complete an application, on a form prepared and currently approved by Airport Security. Two (2) valid forms of identification must be presented with the application, one of which must be a government-issued photo identification. The second form of identification must verify proof of citizenship (i.e., birth certificate or legal residency with work authorization). All information regarding the individual's name, age, gender and other vital statistics on both forms of identification must be consistent and verifiable.

A Denver International Airport Fingerprinting and Badge Application, Security Threat Assessment (STA) and Criminal History Record Check (CHRC) must be completed for everyone requesting an Airport ID Badge. Denver International Airport Fingerprinting and Badge Applications are available from the Airport Security Office. Allow adequate time for processing of the Security Threat Assessments (STA) and Criminal History Record Check (CHRC).

The individual must view a training film on Denver Municipal Airport System Rules and Regulations as they pertain to overall security and pass a corresponding test to assure understanding of the Rules and Regulations.

If the individual requests driver authorization, a valid driver's license must be presented, and the individual must view a training film on Denver Municipal Airport System Rules and Regulations as they pertain to overall Movement of Vehicles in the Secured Area and pass a corresponding test to assure understanding of the Rules and Regulations.

A construction orientation specific to the project must be conducted. A designated time for this session must be coordinated with Planning and Development and Airport Operations.

A lost or stolen Airport ID Badge must be immediately reported to Airport Security. For a replacement Airport ID Badge, a new Denver International Airport Fingerprinting and Badge Application must be completed and signed by the Company(s) Authorized Signatory. A non-refundable fee must be paid for a replacement Airport ID Badge.

If for any reason the Airport ID Badge becomes inoperable or damaged, the Airport ID Badge holder shall return that badge to Airport Security, and a replacement badge will be issued. A replacement fee may be assessed should the damage be attributable to the negligence of the employee who was issued the badge.

When an employee is terminated, the Contractor company shall immediately notify Airport Security. This notification must be followed by the return of the Airport ID Badge and written confirmation of this information. The Contractor company must recover Airport ID Badges from individuals whose employment at the Airport has been terminated. The Contractor company shall notify Airport Security in writing when a subcontractor is no longer under the Contractor company's sponsorship. All Airport ID Badges must be returned to Airport Security.

An employee possessing a valid Airport ID Badge may escort other individuals into the Secured Area(s) under the conditions listed in the Rules and Regulations Part 20. If the project is extended, DEN's Project Manager must submit a new Sponsorship Form with a new expiration

date. This can be accomplished thirty (30) calendar days prior to expiration of the Airport ID Badge. An application revision must be completed for each employee still required on the project, if the badges have expired.

II-18 **Background Checks**

Every individual requesting an Airport ID Badge must complete a Criminal History Record Check (CHRC) and a Security Threat Assessment (STA) for unescorted access to the Sterile and Secured Area(s).

If an applicant has been convicted of a crime or found guilty by reason of insanity or has been arrested for any of the disqualifying crimes or is awaiting judicial proceedings, he/she may be ineligible to obtain an Airport ID Badge. A list of the disqualifying crimes may be found in 49 C.F.R. 1542.209.

II-19 Vehicles in the Secured Area

All Contractor employees who are required to drive in the Sterile and Secured Area(s) unescorted to perform their jobs are required to complete a training film on Denver Municipal Airport System Rules and Regulations as they pertain to overall movement of vehicles in the Sterile and Secured Area(s) and pass a corresponding test to assure understanding of the Rules and Regulations.

All unescorted vehicles must display a current Airport Contractor Vehicle Permit (Permit). Permits are available from Airport Security. An application form must be completed, signed by an Authorized Signatory, and all applicable permit fees must be paid for each Permit requested, and it must be signed by the Authorized Signatory. A Permit is required for each state licensed vehicle, and the vehicle Permit is not transferable.

The Contractor shall purchase and maintain in force a minimum of Ten Million Dollars (\$10,000,000.00) in combined, single-limit automobile insurance for bodily injury and property damage liability per accident or occurrence.

II-20 Violations

Any Contractor employer not regulated under 49 C.F.R. Part 1544, Aircraft Operator, will be responsible for payment or reimbursement to DEN of any Civil Penalties imposed by the Transportation Security Administration (TSA) for individual security violations by their employees and/or subcontractor employees for violations under 49 C.F.R. Part 1542.

A Contractor employee may be personally subject to Civil Penalties imposed by the TSA for individual security violations committed by Contractor employees and/or subcontractor employees under 49 C.F.R Part 1542.

Everyone who is issued an Airport ID Badge shall comply with all Security Advisories, Rules and Regulations Governing the Denver Municipal Airport System Rules and Regulations, the CEO Directives and the Denver International Airport Standard Policies and Procedures regarding Airport Safety, Security and Operations. The failure of any individual to comply with such Security Advisories, rules and directives, etc. will result in the issuance of a Violation Notice and may result

in the assessment of a Federal Civil Penalty and/or the denial, suspension or revocation of their Airport ID Badges.

The security status of DEN is subject to change without prior notice. Should the security status of DEN change at any time during the term of the Contract, a written notice shall be issued to the Contractor, detailing all applicable security modifications. The Contractor must take immediate steps to comply with those security modifications.

II-21 Diversity and Inclusivity in City Solicitations

Each Bidder shall, as a condition of responsiveness to this solicitation, complete and return the "Diversity and Inclusiveness in City Solicitations Information Request Form" with their Bid.

Using the "Diversity and Inclusiveness in City Solicitations Information Request Form," please state whether your firm has a diversity and inclusiveness program for employment and retention, procurement and supply chain activities, or customer service, and provide the additional information requested on the form. The information provided on the "Diversity and Inclusiveness in City Solicitations Information Request Form" will provide an opportunity for DEN contractors to describe their own diversity and inclusiveness practices. Bidders are not expected to conduct intrusive examinations of its employees, managers, subcontractors or business partners in order to describe diversity and inclusiveness measures. Rather, DEN simply seeks a description of the Bidder's current practices, if any.

Diversity and Inclusiveness information provided by Bidders in response to DEN solicitations for services or goods will be collated, analyzed and made available in reports consistent with the Mayor's Executive Order No. 101. However, no personally identifiable information provided by or obtained from Bidders will be in such reports.

For DEN to consider a Bid, Bidders must complete the electronic version of the Diversity and Inclusiveness in City Solicitations Form – then <u>print the completed form and include the hard copy as part of its Bid.</u> A Bid or response to a solicitation by a Bidder that does not include this <u>completed form shall be deemed non-responsive.</u> The form is found at: https://fs7.formsite.com/CCDenver/form161/index.html

The Diversity and Inclusiveness Form is separate from the requirements established by the Division of Small Business Opportunity (DSBO) and must always be completed – regardless of whether there are any DSBO goals assigned to this project.

II-22 Wage Ordinances

The services being requested in this IFB may involve services that are covered pursuant to Article IV of Chapter 20 of the Denver Revised Municipal Code ("D.R.M.C."), which is designed to address the issue of wage equity and cost of living affordability in the City & County of Denver. Bidder agrees that any contract with DEN shall include a requirement that Bidder will comply with the provisions of D.R.M.C. relating to living, minimum and prevailing wages, including, but not limited to, paying all covered workers no less than the City Minimum Wage for all covered services

rendered in connection with the resulting contract. Additionally, Bidder agrees that the contract shall require compliance with all current and future federal and state laws and City ordinances.

II-23 Taxes

- 1. <u>General</u>: Bidders shall refer to the General Conditions, G.C. 323 regarding taxes to which Bidder may be subject in performing the Work under this Contract, including but not limited to, sales and use taxes and the Denver Occupational Privilege Tax. The following instructions are to be considered along with the General Conditions and not in lieu of them.
- 2. <u>Sales and Use Tax</u>: Construction and building materials sold to contractors and subcontractors for use on structures, roads, streets, highways and other public works owned by the City at DEN are exempt from state, RTD and Cultural Facilities District sales and use taxes. However, such materials will be subject to sales and use taxes imposed by the City.
- 3. Exemption Certificates Sales and Use Tax: Contractor and Contractor's subcontractors are responsible for applying to apply to the Colorado Department of Revenue (CDOR) for a certificate or certificates of exemption, indicating that their purchase of construction or building materials is for a public project, and to deliver to the City copies of such applications as soon as possible after approval by the CDOR. Bidders shall not include in their Bid amounts the State, RTD and Cultural Facilities District Sales and Use Taxes.
- 4. <u>Denver Occupational Privilege Tax</u>: Any employee working for a Contractor or a subcontractor who earns over Five Hundred Dollars (\$500.00) working in Denver during a calendar month is subject to the payment of the Employee Occupational Privilege Tax. The Contractor and any subcontractor must pay the Business Occupational Privilege Tax for each of its employees who are subject to such tax.

II-24 Conformed Technical Specifications and Contract Documents

If applicable, and when Technical Specifications are included and/or referenced herein, Bidder understands that the Technical Specifications and Contract Drawings included in this IFB have been conformed by the City. The conformed Technical Specifications and Contract Drawings were prepared by posting or otherwise incorporating the changes noted in any addendum(s) into the Technical Specifications and Contract Drawings to form a single set of construction documents.

II-25 Site Inspection and Investigations

Prior to submitting its Bid, the Bidder shall view the video walkthrough of the work site and its surroundings provided in section V-3. For purposes of a Contract, it shall be conclusively presumed that the Bidder has made a thorough inspection of the site walk video and has waived the right to later claim extra payment or time extension(s) for conditions which would have been evident during an inspection or investigation.

Drawings and Specifications which define the Work to be done were prepared on the basis of interpretation by design professionals of information derived from investigations of the work site and site condition data provided by the City. Such information and data are subject to sampling

errors, and the interpretation of the information and data depends to a degree on the judgement of the design professional. In view of this, the Bidder is invited to make additional investigations as the Bidder's judgement dictates the need for such investigations.

Because the Bid information cannot be guaranteed, the Contractor shall have assumed the risks attendant to successful performance of the Work, except for the risk of encountering differing site conditions which are defined in the General Conditions and shall never make claim for additional payments or time extensions on the grounds that the nature or amount of Work to be done was not understood by the Bidder at the time of Bid submission.

II-26 Materials and Substitutions

It is often convenient and practical to specify materials and equipment to be incorporated into the Work by a proprietary name or by the name of its manufacturer. When so specified and further qualified by the phrases "or equal" or "or equivalent," it shall be understood that such specification is not intended to limit the material and equipment selection process. Rather, the specification is intended to indicate a standard of quality and capability which will be accepted. However, all Bidders desiring to use materials other than the specified materials must obtain the written approval of the Project Manager.

Bidders requesting substitutions will submit a Request for 'or Equal' Approval Form contained herein. All requests for approval of equal or equivalent material shall contain adequate technical data to clearly demonstrate equivalency. Requests containing inadequate or incomplete information will not be reviewed.

Any such Request for 'or Equal' Approval Form must be submitted via email to contract.procurement@flydenver.com, must include in the email Subject line: "Request for Substitution" and the IFB name, and the email must be received no later than ten (10) calendar days before the posted deadline for IFB submittals. All approvals of equal or equivalent materials will be posted to the Contract Procurement website as addendum(s) to ensure full and complete disclosure to all potential Bidders. All requests for approval of equal or equivalent material shall contain adequate technical data in order to clearly demonstrate equivalency. Incomplete submittals will not be reviewed.

If the Bidder is awarded the Contract and elects to use an 'or equal' that has been added by addendum(s), the Bidder shall be deemed to have warranted that:

- (1) The use of the 'or equal' fulfills the specification requirements contained in this IFB.
- (2) The installation of the 'or equal' will not impact the spatial requirements for the Work or the scheduling of work performed by the City or other contractors.

Additionally, the Bidder agrees that it shall modify any building system(s) (i.e., HVAC, structural, electrical) impacted by the use of an 'or equal' at no cost to the City or any other contractors under contract with the City and shall make no claims for delay or disruption arising out of such 'or equal' modification.

II-27 Permit Fees

For the construction of this project, the awarded Contractor agrees to pay the permit fees described in General Condition 317 and in the Special Conditions and Technical Specifications.

II-28 Construction Scheduling

The Bidder should refer to the General Conditions, Special Conditions and Division 013210 of the Technical Specifications for scheduling requirements for this Contract.

II-29 Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion

The Bidder certifies, by submission of its Bid or acceptance of this Contract, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible or involuntarily excluded from participation in any government contract by any Federal, State or local government department or agency. It further agrees by submitting its Bid that it will include this clause without modification in all lower-tier transactions, solicitations, Bids, contracts and subcontracts. Where the Bidder or any lower-tier participant is unable to certify to this statement, it shall attach an explanation to its Bid.

II-30 Bid Guarantee, Bond

As a guarantee of good faith on the part of the Bidder, each IFB must be accompanied by a Bid guarantee consisting of either a certified or cashier's check made payable without condition to the order of the City and County of Denver or a Bid bond written by an approved corporation surety in favor of the City and County of Denver. If the Bidder's IFB submission is responsive and Bidder is awarded a Contract but fails to either (1) execute a Contract in the form prescribed, (2) furnish the Payment & Performance Bonds described in Title 15 of the General Conditions, (3) furnish the required evidence of insurance described in Title 16 of the General Conditions or in the Special Conditions, or (4) satisfy any other condition precedent to Contract execution within its power within five (5) working days after such notice is made by the City, said Bid guarantee shall be forfeited to the City as liquidated damages and not as a penalty. The Bid guarantee shall be in the amount of five percent (5%) of the Maximum Contract Liability Amount.

A Bid Guarantee form for execution by the Bidder is supplied with each set of contract documents. IF A BID GUARANTEE IS USED, IT MUST BE THE FORM OF BID GUARANTEE SUPPLIED WITH THE CONTRACT DOCUMENTS.

Once the awarded Bidder executes a Contract and delivers to the City satisfactory Performance & Payment Bonds and the required insurance documentation and, if applicable, City Council approval of the Contract, the Bid guarantees of non-awarded Bidders will be returned.

II-31 Payment & Performance Bonds

The awarded Contractor will be required to submit Payment & Performance Bonds which guarantees it will fulfill its contractual obligations under this project and guarantees it will pay its subcontractors, material suppliers and/or laborers for any work and materials provided. The

amount of the Bonds will be 100% of the Maximum Contract Liability Amount (the full amount of the bid). Should the awarded Contractor default on its obligations and fails to complete the project, a claims process may be initiated. If Contractor is found to be in breach of the Contract, it must compensate the City up to the full amount of the Bonds.

II-32 Project Controls Requirements

Bidder will be required to use the designated Project Management Information System (PMIS) as set forth in the Technical Specifications. The PMIS is Airport Infrastructure Management's (AIM's) tool for project and information management, data analysis and document control. DEN will be responsible for providing the licensing and training for PMIS.

II-33 **Equal Employment Opportunity**

- 1. Article III, Division 2 of Chapter 28 applies to this contract. It is the policy of the City to provide equal opportunity in employment without regard to race, color, creed, sex, national origin, religion, marital status, or political opinion or affiliation. It is hereby deemed and declared to be for the public welfare and in the best interest of the City to require bidders, contractors and subcontractors soliciting and receiving, directly or indirectly, compensation from or through the City, for the performance of such contracts, to meet certain affirmative action and equal employment opportunity requirements. Additionally, contractors and subcontractors that hold any contracts which are federally-assisted shall be required to adhere to the Department of Labor's Contract Compliance program under Executive Order 11246 as defined in the regulations of the Secretary of Labor at 41 CFR Chapter 60-4.
- 2. After the Notice to Apparent Low Bidder has been issued, the Apparent Low Bidder shall submit the following to the Division of Small Business Opportunity:
 - (a) A statement that the bidder shall implement the affirmative action steps set forth in the Rules and Regulations and Bid Conditions of the Manager of Public Works pertaining to Equal Employment Opportunity, attached hereto, or the bidder's affirmative action plan which meets these requirements, and
 - (b) A projection of its anticipated workforce for this contract on the attached "EEO Questionnaire." Both of these submittals are required before the Division of Small Business Opportunity will approve the Notice to Proceed.
- 3. The bidder which is awarded this contract shall comply with the provisions and requirements, including the goals of minority and female participation and specific affirmative action steps, set forth in the Rules and Regulations and Bid Conditions of the Manager of Public Works pertaining to Equal Employment Opportunity, as said rules and regulations may be amended or readopted from time to time by the Manager of Public Works or the Director of the Division of Small Business Opportunity.

III. PREPARATION OF BID

III-1 Preparation of Bid

The Bid shall be submitted in accordance with and meet all requirements set forth in the Bid Forms, which are attached hereto. The Bidder shall fill in all blank spaces in the applicable Bid Forms and initial all interlineations, alterations or erasures in its Bid. The Bidder shall not delete, modify or supplement the printed matter on the forms which are included in "Attachment 1, Bid Forms" or make substitutions thereon. The Bidder's completed Bid Forms shall constitute its Bid. It shall be conclusively presumed that the Bidder did, before submitting a Bid, read all addenda, posted decisions and other information items relevant to the IFB that appeared on the DEN BidNet Website.

An authorized representative of the Bidder shall execute Attachment 1 of its Bid Forms – the "Bid Letter."

- 1. If the Bidder is a corporation, it shall upon execution of the Contract provide a certificate from the Secretary of State, showing that it is qualified to do business in the State of Colorado. Please call the Secretary of State for Colorado at (303) 894-2200 for information on obtaining such certification.
- 2. If the Bidder is a partnership, the Bidder must include with its Bid evidence satisfactory to DEN that the partner signing the Bid has the authority to do so.
- 3. If the Bidder is a joint venture, the Bidder shall submit with its Bid a notarized copy of the joint venture agreement. That agreement must describe the scope and amount of work each participant will perform and contain a provision that each participant will be jointly and severally liable to DEN for completing all the work and to third parties for all duties, obligations and liabilities which arise out of the joint venture's performance of the work.

III-2 Completing and Signing Bid Forms

Each bidder shall submit the following, completed and executed in accordance with the Contract Documents:

- (1) the Bid Forms, including any additional forms required by any addendum;
- (2) the Bidder's Bid Bond or Bid Guarantee in conformance with II-30; and
- (3) the Diversity and Inclusivity in City Solicitations

The bidder must complete the Bid Forms by legibly writing or printing in ink, words or figures, or both if required all the bidder's offered prices for performing the work. All blank spaces which require a response of the bidder must be properly filled in. In filling out the Bid Forms, the bidder should avoid making changes to the extent possible, but, if changes are necessary, any interlineation, white outs, or erasures should be initialed.

For any contracts containing unit prices, the bidder shall specify in the Bid Forms a unit price for each item for which a quantity is given and shall write in figures the products of the respective unit prices and quantities in the "Amount" column provided for that purpose.

Each bidder must sign the Bid Forms and give the bidder's current business address and contact information as noted. If an individual, the signature must be of the individual offering the bid; if a partnership, the signature must be that of a general partner; and if a joint venture, by each joint venture participant in their individual capacity as a corporation, partnership, or individual; if a corporation, both the president or a vice president and the secretary must sign and the seal of the corporation must be affixed. Signatures of other persons may be acceptable if the Bid contains evidence satisfactory to the CEO to prove that the other persons are authorized to bind the bidder.

Bidder shall submit its Bid Data Information in accordance with the format shown on each of the Bid Data Forms. Bidder shall prepare and use as many sheets as are necessary to provide the information required. Bidder shall ensure that each page of its Bid Data is completed and properly identified with the Bid Data form name, Bidder's name, and page number.

IV. EVALUATION OF BIDS

IV-1 BASIS FOR SELECTING THE APPARENT LOW BIDDER

The selection of the Apparent Low Bidder will be made on the basis of the lowest responsive bid by a qualified bidder whose bid complies with all of the requirements prescribed herein. The lowest bidder shall be determined by the Total Base Bid Amount. This selection shall be subject to the approval of such resulting contract in accordance with the Charter and ordinances of the City and County of Denver.

If add alternates are listed in the Bid Documents, the Apparent Low Bidder will be chosen based solely on the lowest responsive Total Base Bid Amount.

IV-2 <u>Bid Rejection and/or Disqualification</u>

Bids are non-responsive and will be excluded, rejected or disqualified if the Bidder fails to comply with the requirements of this IFB, or with any applicable City ordinances, rules, or policies, including but not limited to for the following reasons:

- 1. Bidder's failure to meet the Pre-Qualification Requirements;
- 2. Bidder's failure to provide complete documentation, Required Forms and provide bid bond;
- Improper communications and/or collusion among bidders or between the Bidder and any DEN
 contractor, including any project managers or others providing supplemental staff to DEN, with
 oversight of the project of which the IFB is a part;
- 4. Default or termination for cause of other contracts with any public or private entity within the past five (5) years;
- 5. Improper contact as described in Section II-3, above;
- 6. Omissions and/or fraudulent statements of any fact that is significant or essential to the subject matter of this IFB;
- 7. Bidder's delinquent arrearages or debts presently owed under any agreement with DEN, or any other creditor; or
- 8. Bidder's failure to disclose all trademark, copyright, licensing, franchise, and other contractual or property rights bidder has with third parties, bidder intends to use at DEN, which may restrict current business operators in any way, or may have an unfavorable impact on future bidders for opportunities at DEN.

In addition, the CEO reserves the right to reject any and all Bids, to waive irregularities and technicalities, to re-advertise, to provide the services, or to otherwise proceed in the best interest of DEN.

IV-3 **SUBMITTAL OF BIDS**

There will be no live bid opening for this project. Bids shall be submitted electronically via the Rocky Mountain E-Purchasing System (BidNet) website at:

https://www.bidnetdirect.com/colorado/cityandcountyofdenverdepartmentofaviation

Following electronic submittal of bid (including a scan of the bid bond), the original bid bond must be received by mail within seven (7) calendar days of bid opening date to be considered part of a responsive bid. Bid bonds shall be mailed to Denver International Airport, 8500 Peña Blvd., Denver, CO 80249-6340, Attention: Paul Gilchrist. At this time, bid bonds cannot be hand-delivered in person.

IV-4 UNACCEPTABLE BIDS

The City will not accept Bids from bidders in arrears to the City upon debt or contract, or which are defaulters (as surety or otherwise) upon any obligation to the City, or that are deemed irresponsible or

unreliable by the CEO. A history or pattern of litigation against the City and County of Denver by any bidder, proposed subcontractor, interested party, or any person, firm, or corporation affiliated with any bidder, among other items, will be considered by the CEO in determining the responsibility and reliability of bidders. Bidders may be required to submit satisfactory evidence that they have a practical knowledge of the particular work bid upon and that they have the necessary financial resources to complete the proposed work.

IV-5 ONLY ONE BID ACCEPTED

The City will accept only one Bid for the same work from any one bidder. This includes Bids that may be submitted under different names by one firm or corporation. Evidence of collusion among bidders shall be grounds for exclusion of any bidder who is a participant in any such collusion.

IV-6 **CONSIDERATION OF BIDS**

After the Bids are opened and read and any discrepancies have been reviewed, bids will be compared based on the Total Contract Bid Amount written on page B-1 of the Bid Letter.

If a discrepancy exists between a price or amount written in words and the price or amount written in figures, the price or amount written in words shall govern, except that in the case where a price or amount shown in figures has been crossed out and replaced with a new, legible, initialed figure, the initialed figure shall govern.

Any bid discrepancies which the City corrects in accordance with the general rules described above shall be corrected with the understanding that the Apparent Low Bidder waives any claims against the City because of the bidder's mistakes in its bid.

The City reserves the right to waive informalities, to reject any and all bids, and to advertise for new bids where it is in the best interest of the City. The City also reserves the right to negotiate terms of the contract.

IV-7 INFORMAL AND UNBALANCED BIDS

Bids shall be considered informal and may be rejected for the following reasons:

- (a) If the bid is on a form other than the Bid Forms furnished by the City, or if the form is altered or any part thereof is detached.
- (b) If there are unauthorized additions, conditional or alternate bids, or irregularities of any kind which may tend to make the bid incomplete, indefinite, or ambiguous.
- (c) If the bidder fails to acknowledge in the bid receipt of any or all addenda current on the date of opening of bids.
- (d) If the bid does not contain a unit price or lump sum amount for each item listed except in the case of authorized alternative items.
- (e) If there is an interlineation, white out, or erasure in the Bid Forms.
- (f) If the bid is unbalanced so that (1) each pay item does not reasonably carry its own proportion of cost, or (2) any pay item contains an inadequate or unreasonable price.

Page 25 Evaluation of Bid

IV-8 NOTICE TO APPARENT LOW BIDDER – EXECUTION OF CONTRACT

The Apparent Low Bidder will be given written notice of such status on the form included in the Bid Documents within ninety (90) days from the date of opening of bids.

The Apparent Low Bidder should execute the contract and return it to the City along with the required bonds and insurance forms within ten (10) business days from and including the date of the Notice to Apparent Low Bidder. When the executed contract and the required bonds and insurance certificates are received, approval for the City to contract with the Apparent Low Bidder shall be sought in accordance with the Charter of the City and County of Denver. Such notice shall not create any rights in the Apparent Low Bidder to any contract with the City.

END OF INSTRUCTIONS TO BIDDERS

V. TECHNICAL PROVISIONS AND CONSTRUCTION DRAWINGS

The following documents are published separately; they are not in this document but are available as separate attachments accessible either via link or in the BidNet advertisement as indicated.

V-1 **VOLUME 1: TECHNICAL SPECIFICATIONS**

Please see attached file in BidNet.

V-2 **VOLUME 2: DRAWINGS**

Please see attached file(s) in BidNet.

V-3 **VOLUME 3: SITE WALK VIDEO**

https://360.articulate.com/review/content/082fbc2a-ec8e-4101-bd7e-d49f8778bd16/review

Password: PBwtUT

VI. SPECIAL CONDITIONS

SC-1 CONSTRUCTION CONTRACT GENERAL CONDITIONS

The Construction Contract General Conditions which constitute a part of the Contract Documents are set forth in a separately published document, entitled "City and County of Denver, Department of Aviation and Department of Public Works, Standard Specifications for Construction, General Contract Conditions," 2011 Edition, the Table of Contents to which is bound herein (which may be informally referred to as the Yellow Book). The General Conditions book is available for purchase for \$12.00 per copy at the following locations during the business hours stated, Monday through Friday, excluding holidays:

Office of the Cashier Wellington E. Webb Municipal Office Building, 2nd Floor 201 West Colfax Avenue Denver, Colorado, USA 80202 7:30 a.m. to 4:30 p.m.

The General Conditions are also available on the City and County of Denver website at:

https://www.denvergov.org/content/denvergov/en/contract-administration/contractor-resources/general-contract-conditions.html

SC-2 DRAWINGS AND SPECIFICATIONS TO BE FURNISHED BY THE CITY

The City will provide the following Contract Documents to the Contractor in electronic format at no expense to the Contractor:

Documents

Bid Drawings - Concourse A

Bid Drawings - Concourse B

Bid Drawings - Concourse C

Tunnel Sewer Repairs IFB Specifications dated January 1, 2020

Additional copies of the foregoing documents will be furnished to the Contractor at the Contractor's expense. The Contractor will be responsible for supplying all subcontractors with copies of the Contract Documents at its expense.

If Sensitive Security Information ("SSI") is provided to the Contractor, the Contractor shall be required to comply with Department of Aviation, Standard Policies and Procedures No. 6003, "Contractor Protection of Sensitive Security Information," or its successor, and 49 C.F.R. § 1520, or its successor.

The City will not supply any copies of the General Contract Conditions to the Contractor at City expense.

SC-3 REVISIONS TO G.C. 201

The second sentence of General Condition 201 is amended to read: "The unit responsible for this management and control is the Airport Infrastructure Management Office under the supervision of the Senior Vice President for Maintenance and Airport Infrastructure Management."

SC-4 CITY LINE OF AUTHORITY AND CONTACTS

In accordance with General Condition 214, the City's line of authority for administration of this Contract is:

<u>Chief Executive Officer (CEO)</u>. Executive Office, 9th Floor, Airport Office Building, 8500 Peña Boulevard, Denver, CO 80249. Any reference to the Manager of Aviation shall also mean Chief Executive Officer, Department of Aviation (CEO).

<u>Executive Vice President – Chief Operating Officer (EVP-COO)</u> who reports to the CEO. Airport Infrastructure Management office, 9th Floor, Airport Office Building, 8500 Peña Boulevard, Denver, CO 80249.

<u>Senior Vice President - Airport Infrastructure Management (SVP-AIM)</u> who reports to the COO. Airport Infrastructure Management office, 10th Floor, Airport Office Building, 8500 Peña Boulevard, Denver, CO 80249.

<u>Director of Infrastructure and Quality Assurance,</u> reports to the SVP-AIM. The Project Manager reports to the Director of Infrastructure and Quality Assurance. Airport Infrastructure Management Division, 7th Floor, Airport Office Building, 8500 Peña Boulevard, Denver, CO 80249.

<u>Project Manager</u>, the City representative who has day to day administrative responsibility of this Contract, and who reports to the SVP-AIM. All notices, requests, pay applications (pursuant to G.C. 902), and other correspondence from the Contractor shall be sent to the assigned Project Manager unless otherwise provided in this Contract. The Project Manager for this Contract is: Rachael Bray, Airport Infrastructure Management Office, 7th Floor, Airport Office Building, 8500 Peña Boulevard, Denver, CO 80249, phone 303-342-2200.

The CEO may from time to time substitute a different City official as the designated "SVP-AIM" hereunder, and any such change will be effective upon the issuance of written notice to the Contractor which identifies the successor SVP-AIM. The SVP-AIM may from time to time change the assigned Project Manager, and any such change will be effective upon the issuance of written notice to the Contractor which identifies the successor Project Manager.

SC-5 CONTRACTOR PERFORMANCE; SUBCONTRACTING

With respect to General Condition 501, no more than ninety-five percent (95%) of the work may be subcontracted. If it is determined to be in the City's best interest, this percentage may be modified throughout the course of the project by the SVP-AIM.

SC-6 COOPERATION WITH OTHERS

The Technical Specifications describe the constraints on the physical work site areas. These descriptions are not exhaustive, and the Contractor is required to coordinate its activities and work as may be required to meet FAA or City requirements while performing work on DEN.

Without limiting the foregoing, the following contracts administered by the City involve or may involve work overlapping or adjoining the Work under this Contract and may be prosecuted concurrently with the Work performed under this Contract. There may also be other adjoining or overlapping contracts which are not listed.

Contract Number	Description
202054550	Xcel Vault
Various	Concourse Expansion Projects (CCA, CCB, CCC)
Various	CCA/CCC PCA Plant
Various	GARDI
202055228	Boiler 1, 3, 4 Phase 1

SC-7 PROSECUTION AND COMPLETION OF THE WORK:

The Work to be performed under the Contract is described in the Technical Specifications and Contract Drawings. The Contractor shall complete the Work within 365 consecutive calendar days from Notice to Proceed.

The Work to be performed under the Contract may be divided into the Milestone Areas which are described in the Technical Specifications or Contract Drawings. The Contractor shall complete the work included within these areas within the number of days set forth by the Project Manager.

	<u>Milestone</u>	Date of Completion (or, days from NTP)
1.	Drainage Station-1 (DS-1)	110 days from NTP
2.	Drainage Station-2 (DS-2)	200 days from NTP
3.	Drainage Station-3 (DS-3)	300 days from NTP
4.	Drainage Station-4 (DS-4)	365 days from NTP

SC-8 LIQUIDATED DAMAGES

If the Contractor fails to achieve Substantial Completion of the Work within the Contract Time, the Contractor shall be liable to the City for liquidated damages at the rate of One Thousand Five Hundred Dollars (\$1,500.00) per day until substantial completion is achieved.

Article IV of the Contract and General Condition 602 cover payment and withholding of liquidated damages.

SC-9 FACILITY SECURITY AND PERSONNEL ACCESS

The Contractor shall conduct all its activities at the Airport in compliance with the Airport security system rules and regulations, which are administered by the Airport Operations Division. The Contractor shall obtain the proper access authorizations for its employees, subcontractors and suppliers (i.e., Badges and Permits), and shall be responsible for such persons' compliance with all the Airport rules and regulations. A copy of the Contractors' section of the Airport Security rules and regulations are available for Contractor review at the Airport Access Services Office, Concourse A East Subcore, 4th Level. Persons regularly entering the construction areas must obtain personnel access badges from the Airport Access Services Office and must display badges, at all times, upon entering the construction, restricted and sterile areas of the airport. Any employee, subcontractor or supplier who violates such rules may be subject to revocation of his access authorization, including authorization for access to the construction site and all other restricted and sterile areas.

The security status of the Airport is subject to change without notice. These contract Special Conditions are applicable to the current security status of the Airport. Should the security status of the Airport change at any time during the term of this Contract, a written notice shall be issued to the Contractor detailing all applicable security modifications from the airport's current security status. The Contractor shall take **immediate steps** to comply with those security modifications as directed in the written notice.

If these security modifications involve any additional project cost, the Contractor shall submit a Contractor Change Request in accordance with the General Conditions for the additional cost. The Contractor Change Request shall outline in specific detail the effects of the security modifications on the Contractor's performance of the Contract, and shall provide a detailed cost breakdown for each item for which the Contractor is requesting reimbursement.

The Contractor shall return to the City, at contract completion or termination, or upon demand by the City, all access keys issued to it by the City to all areas of the Airport. If the Contractor fails to return any such key or keys at contract completion or termination or upon demand by the City, the Contractor shall be liable to the City for all the City's costs, including the City's labor costs for employees, incurred in re-coring doors and any other work which is required to prevent compromise of the Airport security system. In order to collect such costs hereunder, the City may withhold funds in such amount from any amounts due and payable to the Contractor under this Contract.

The construction of all the Project / Task Items that involve the breaching of any airport perimeter security boundary or continued access to restricted access rooms or areas will require the posting of authorized contract security personnel to maintain required security controls. The Contractor's **Total Contract BID Amount** shall include the cost of providing security services to maintain control and supervision of any and all airport perimeter security boundary breaches and for the duration of work activities where access to restricted areas is required and until the airport perimeter security boundaries are reestablished.

When security boundaries are opened for any reason, the Contractor must maintain one hundred percent (100%) control and supervision for the entire time that the openings are present to prevent unauthorized access to the secure / restricted access areas.

THE IMPORTANCE OF THIS SPECIAL CONDITION CANNOT BE OVER-EMPHASIZED. SEVERE FINANCIAL PENALTIES AS WELL AS CONTRACT TERMINATION COULD RESULT IF AIRPORT PERIMETER SECURITY REQUIREMENTS ARE NOT STRICTLY FOLLOWED. THE REQUIREMENT TO PROVIDE ONE HUNDRED PERCENT (100%) CONTROL AND SUPERVISION OF BREACHES IN THE AIRPORT'S PERIMETER SECURITY BOUNDARY IS ABSOLUTE. AT NO TIME, DURING WORK AND NON-WORK HOURS SHALL ANY BREACHES IN THE AIRPORT'S SECURITY PERIMETER BE UNSUPERVISED AND / OR UNSECURED.

For off-hours of construction, the Contractor may choose to erect a temporary wall to close all perimeter openings. The wall construction shall be of sufficient materials and strength to prevent access to the airport's Sterile/Restricted Areas. The Contractor shall submit for review and approval, the details and materials for the temporary closure of security perimeter breaches for review and approval.

The Contractor will provide contract security guard services to maintain supervision of these openings. The security services must provide coverage to allow for lunch breaks, comfort breaks and etc. The security services **must** be obtained from the following contract security guard company:

HSS 900 S. Broadway, Suite 100 Denver, Colorado 80209

DEN Contact: Glenn Spies (303) 342-4323

All security guards provided for this project must have a Denver Airport SIDA Badge.

The DEN Security Guard Contractor may change between the bidding or Bid phase of this contract from Notice to Proceed to closure of all security perimeter breaches. The Contractor shall maintain a contractual relationship with the Security Guard Contractor holding the most current contract with Denver International Airport.

The Contractor shall continue to provide security of these areas until such time that the breaches in the airport's security perimeter have been permanently secured.

The Contractor shall submit a written security plan for approval to the Director of Airport Security prior to the start of construction on any work where a breach of the perimeter security boundaries is required.

SC-10 CONSTRUCTION ACCESS

The work site is located at DEN Concourses Utility & Baggage Tunnels – 8700 Pena Blvd, Denver, CO 80249. The Contractor shall have access to the work site via Gate 4 with all equipment and materials delivery routes per construction drawings. The Contractor is responsible for ensuring all of the Contractor's and Subcontractor's personnel have the ability to access and locate the areas of work where the scope is to be performed without additional escorting or supervision from DEN.

The City will not provide parking spaces for the Contractor's employees or subcontractor employees at the Airport. Arrangements for transportation and parking for all of its and its subcontractors' employees will be the responsibility of the Contractor. The Total Contract Bid Amount or Contract Amount shall include any and all costs associated with the Contractor's and subcontractors' employee parking. Information about parking facilities and charges is available from the Airport Parking Office. Refundable deposits are required for all parking passes.

Unless specifically required by the Contract Documents, the Contractor shall install no fences or other physical obstructions on or around any project work area without the approval of the City.

SC-11 VEHICLE PERMITTING

Vehicle access on the Airport Operation Area ("AOA") is controlled by and requires permission from the Airport Access Services Office. It is not anticipated that the Contractor will need to operate vehicles on the AOA to perform the Work. Only direct construction support vehicles and/or equipment will be allowed in the contractor's work areas or sites.

SC-12 VENDORS AND SUPPLIERS

The Contractor shall provide the Project Manager's office with a list of its equipment/material vendors and suppliers. Vendors or suppliers shall access the construction work areas via the Contractor's access route, described in SC-10 above. All delivery vehicles are subject to search.

SC-13 COMMUNICATION DEVICES

Any site communications devices, mobile communication devices or internet data devices used at DEN must be approved by DEN Technologies.

SC-14 USE, POSSESSION OR SALE OF ALCOHOL OR DRUGS

The Contractor and its officers, agents, and employees shall cooperate and comply with the provisions of Executive Order No. 94 and Attachment A thereto concerning the use, possession, or sale of alcohol or drugs. Violation of these provisions or refusal to cooperate with implementation of the policy can result in the City's barring the Contractor from City facilities or participating in City operations.

SC-15 ATTORNEYS' FEES

Colorado Revised Statute 38-26-107 requires that in the event any person or company files a verified statement

of amounts due and unpaid in connection with a claim for labor and materials supplied on this project, the City shall withhold from payments to the Contractor sufficient funds to insure the payment of any such claims. Should the City and County of Denver be made a party to any lawsuit to enforce such unpaid claims or any lawsuit arising out of or relating to such withheld funds, Contractor agrees to pay to the City its costs and a reasonable attorney's fee. Because the City Attorney Staff does not bill the City for legal services on an hourly basis, Contractor agrees a reasonable fee shall be computed at the rate of two hundred dollars per hour of City Attorney time.

SC-16 INSURANCE REQUIREMENTS

In accordance with the provisions of Title 16 of the General Conditions, the minimum insurance requirements for this contract are set forth in Section II-14 and Attachment 4 of the Instructions to Bidders. The Contractor specifically agrees to comply with each condition, requirement or specification set forth in the attachment for each required coverage during all periods when the required coverages are in effect.

Contractor and sub-contractors shall procure and maintain until all of their obligations have been discharged, including any warranty periods under this Contract are satisfied, required insurance against claims for injury to persons or damage to property which may arise from or in connection with the performance of the work hereunder by the Contractor, his agents, representatives, employees or sub-contractors.

The insurance requirements herein are minimum requirements for this Contract and in no way limit the indemnity covenants contained in this Contract.

The City and County of Denver in no way warrants that the minimum limits contained herein are sufficient to protect the Contractor from liabilities that might arise out of the performance of the work under this Contract by the Contractor, his agents, representatives, employees or sub- contractors. The Contractor shall assess its own risks as it deems appropriate and/or prudent, maintain higher limits and/or broader coverages. The Contractor is not relieved of any liability or other obligations assumed or pursuant to the Contract by reason of its failure to obtain or maintain insurance in sufficient amounts, duration or types.

Contractor shall furnish the City and County of Denver with certificates of insurance (ACORD form or equivalent approved by CCD) as required by this Contract. The certificates for each insurance policy are to be signed by a person authorized by the insurer to bind coverage on its behalf.

All certificates and any required endorsements are to be received and approved by the City before work commences. Each insurance policy required by this Contract must be in effect at or prior to commencement of work under this Contract and remain in effect for the duration of the project. Failure to maintain the insurance policies as required by this Contract or to provide evidence of renewal is a material breach of the Contract. All insurance coverages for sub-contractors shall be subject to the minimum requirements identified in the Exhibit. All sub-contractors' certificates and endorsements shall be received and approved by the Contractor before work commences. The City reserves the right to request copies of these certificates at any time.

All certificates required by this Contract shall be sent directly to ContractAdminInvoices@flydenver.com. The City project/contract number and project description shall be noted on the certificate of insurance. The City reserves the right to require complete, certified copies of all insurance policies required by this Contract at any time.

The parties hereto understand and agree that the City and County of Denver, its officers, officials and employees, are relying on, and do not waive or intend to waive by any provisions of this Contract, the monetary limitations or any other rights, immunities and protections provided by the Colorado Governmental Immunity Act, §§ 24-10-

101 - 120, C.R.S., or otherwise available to the City and County of Denver, its officers, officials and employees.

SC-17 SUBCONTRACTOR RELEASES

The release form referred to in General Condition 907 is attached to this Contract. It is entitled "Denver International Airport Partial Release."

SC-18 ADDITIONAL AFFIRMATIVE ACTION REQUIREMENTS, FEDERAL PROVISIONS

This contract is subject and subordinate to the terms, reservations, restrictions, and conditions of any existing or future agreements between the City and the United States, the execution of which has been or may be required as a condition precedent to the transfer of federal rights or property to the City for airport purposes, and the expenditure of federal funds for airport purposes. The "Federal Requirements" section attached hereto is made a part of this Contract.

SC-19 ESTIMATED QUANTITIES OF UNIT PRICED ITEMS

The "total estimated quantity" of each unit price item as stated on the bid schedules shall be the estimated quantity which is used to determine the percentage of change in such item for purposes of G.C. 1104.7.

SC-20 REVISIONS TO G.C. 1102

G.C. 1102.2 is amended by replacing the phrase "Change Request" in all its occurrences in such G.C. with the phrase "Change Notice."

G.C. 1102.3 is amended by replacing the phrase "Field Order/Change Order Directive" in all its occurrences in such G.C. with the phrase "Change Order Directive."

SC-21 LISTING OF ACCEPTABLE MANUFACTURERS

The Technical Specifications list "Acceptable Manufacturers" for certain products. Such listing identifies manufacturers of certain products which have been determined by a preliminary review to be able to meet the basic product and/or system technical requirements. The listing is not intended to provide a blanket endorsement or acceptance of the manufacturer's specified products or product line. All products from listed manufacturers must meet the detailed requirements of the Technical Specifications. Products that do not meet all detailed Technical Specifications are not acceptable and will be rejected, regardless of whether the manufacturer was listed as "acceptable." The Contractor is responsible for determining the acceptability of all products under the Technical Specifications prior to submission of products for approval.

SC-22 ACCESSIBLE PARKING SPACES, ACCESS AISLES AND ROUTES OF TRAVEL

If any Work is performed in or adjacent to parking facilities at the Airport, the Contractor is responsible for compliance with this SC-30. "Accessible" parking spaces and access aisles as used in this SC-30 mean parking spaces and access aisles which are accessible for, and reserved for use by, persons with disabilities. These parking spaces and access aisles are designed and built to standards established by federal regulations implementing the Americans with Disabilities Act of 1990 ("ADA"), and are marked by signage. "Accessible routes of travel" as used herein means routes through parking facilities which comply with ADA accessibility standards, including degree of slope and absence of obstructions.

Accessible routes of travel and accessible parking spaces and access aisles must be kept free of obstructions and construction debris at all times. No accessible parking spaces or access aisles or accessible routes of travel shall be relocated, blocked or rendered unusable unless the contractor has obtained specific advance approval in writing for such actions from the airport's ADA Compliance Officer.

When prosecution of the Work requires that accessible spaces be temporarily blocked, those accessible spaces and their access aisles shall be temporarily relocated to another location as close as possible to an accessible building entrance. Temporary signage that identifies these parking spaces and access aisles as reserved for the handicapped shall be installed, and the accessible route shall be clearly marked as required.

Before blocking or relocating accessible parking spaces or accessible routes of travel, the contractor must obtain written approval from the DEN ADA Compliance Officer, by submitting a completed request form, which will be provided to the Contractor by the Project Manager at the preconstruction meeting if it is not included as a standard form in Section 019990 of the Technical Specifications. The request shall include the location of alternative spaces and/or routes, and specifications of the temporary signage to be used. Work shall not proceed without this approval.

If a vehicle is parked in any accessible space which is either temporary or approved to be relocated, the contractor will not remove signage or take any other action which would allow the access aisle for such parking space to be blocked. Such actions must be postponed until the parking space is no longer occupied.

SC-23 SUBCONTRACTOR PAYMENTS AND SUBCONTRACTOR RELEASES – REQUIRED USE OF THE B2G CONTRACT MANAGEMENT SYSTEM

The Contractor is required to use the City B2G Contract Management System to report all subcontractor payments and shall adhere to the City's Procedure for Reporting Subcontractor Payments. It is the Contractor's obligation to ensure that complete subcontractor information is entered into the B2G System prior to submission of the first application for payment in order to avoid any delays in payment. The Contractor shall, prior to the submission of each subsequent invoice, ensure payments to subcontractors have been entered into the B2G System, including subcontractor confirmation of amount of payment received, for services performed during the prior billing period.

SC-24 PAYMENTS TO CONTRACTORS

The Contractor recognizes and agrees that applications for payment shall be submitted using the Textura® Payment Management System (PPM System), which will also be the payment mechanism to disburse payments to sub-contractors used on this Project. For more information, please refer to Division I, Technical Specifications.

The Contractor further agrees that, to the fullest possible within the TPM System, the City shall be entitled to all non-Confidential records, reports, data and other information related to the project that are available to Contractor through the TPM System, including, but not limited to, information related to Contractor and subcontractor billings. To that end, Contractor agrees that it will activate any available settings within the TPM System that are necessary to grant the City access to such non-Confidential information related to the contract and the project. Applications for payment shall be based on the Contract Unit Prices or the approved Schedule of Values described in GC 903.1

In accordance with General Contract Condition 902, PAYMENT PROCEDURE, the party(ies) responsible for review of all Pay Applications shall be:

Agency/Firm

DEN Division CA
DEN Division PM

DEN Division Director
DEN Contract Services CA
CCD Denver Prevailing Wage

In accordance with General Contract Condition 906, APPLICATIONS FOR PAYMENT, each Application submitted shall include the following:

- 1. The estimate of Work completed shall be based on the approved schedule of values or unit prices, as applicable, and the percent of the Work complete.
- 2. Each Application for Payment shall include each and every independent subcontractor's payroll information including pay dates and pay amounts.
- 3. The Contractor shall also submit to the Auditor and other appropriate officials of the City in a timely fashion, information required by General Contract Condition 1004, REPORTING WAGES PAID.

In accordance with General Contract condition 907, RELEASES AND CONTRACTORS CERTIFICATION OF PAYMENT, Applications for Payment must be accompanied by a completed Partial or Final Claim Release Form, as appropriate, from EACH subcontractor and supplier, <u>AND</u> the Contractor's Certification of Payment Form.

VII. <u>ATTACHMENT 1, BID FORMS</u> <u>Attachment 1, Part 1 Bid Acknowledgement Letter</u>

CONTRACT NAME: Tunnel Sewer Repairs

Contract No.: 202056250

Bid Letter		
BIDDER		
Chief Executive Officer City and County of Denver Business Management Services (Procurement) Office Airport Office Building, Room 8810 Denver International Airport 8500 Peña Boulevard Denver, Colorado 80249		
This letter is in response to the Notice of Invitation for Bids first published on November 20, 2020, for Contract No. 202056250, Denver International Airport, Tunnel Sewer Repairs.		
The project is to relocate existing underground plumbing to above ground in the Utility Tunnel area from South of Concourse A to North of Concourse C at Denver International Airport (DEN). Work also includes adding floor drains and flexible connectors, fixing leaking pipes, and rerouting and lining existing underground pipe in the area under the East Baggage Tunnel.		
The undersigned Bidder declares that it has carefully examined the location of the proposed work and has carefully read and examined all of the Contract Documents which include, but are not limited to, the Contract Drawings, Technical Specifications, Construction Contract General Conditions, Special Conditions, Instruction to Bidders, and EEO provisions, and hereby proposes to furnish all labor, materials, equipment, tools, transportation and services, and to discharge all duties and obligations necessary and required to perform and complete the Work as required in the Contract Documents which are provided herewith and by this reference made a part hereof for the prices shown in the bid forms and totaled below:		
TOTAL BASE BID Amount:		
Dollars and Cents		
(\$).		

The undersigned acknowledges receipt, understanding and full consideration of the following addenda to the Contract Documents:

Addenda Nos.:		
Addenda Nos.:		

The undersigned agrees that this bid is a firm offer to the City to perform and complete the Contract described above which cannot be withdrawn for one hundred fifty (150) calendar days after the bids are opened or until after a contract for the work described in these bid documents is fully executed by the City, whichever date is earlier.

The undersigned Bidder hereby agrees to appear at Denver International Airport, Business Management Services Office, Room 8810, Airport Office Building, at any time within ten (10)) business days from the date of a written notice from the CEO to do so, mailed, emailed, or faxed to the business address of Bidder and at that time the Bidder shall: (1) deliver an executed Contract which conforms with this bid; (2) furnish the required performance and payment bonds in the sum of the Total Contract Bid Amount shown above, executed by a surety company acceptable to the CEO; and (3) furnish the required insurance documents.

Enclosed herewith is a bid guarantee, as defined in the Instructions to Bidders, in the amount of which bid guarantee the undersigned Bidder agrees is to be paid to and become the property of the City as liquidated damages should the bid be considered to be the best by the City and the undersigned Bidder notified that it is the apparent low bidder and it fails to enter into contract in the form prescribed and to furnish the required performance and payment bonds and evidences of insurance within ten (10) business days as stipulated above.

Attached and incorporated herein are the proposed Schedule of Prices and Quantities and Bid Data Forms. All of the forms must be completed. Bidder acknowledges that the City may incorporate, at its option, any or all of the data submitted by the Bidder into a contract arising out of this Bid.

The undersigned Bidder acknowledges the right of the City to waive informalities in the bids, to reject any or all bids submitted, and to re-advertise for bids.

The undersigned certifies that it has examined and is fully familiar with all of the provisions of the Contract Documents and is satisfied that they are accurate; that it has carefully checked all words and figures and all statements made in these Bid forms; and that it has satisfied itself with respect to the actual site conditions and the nature and location of the Work, the general and local conditions which may be encountered in the performance of the Work, and other matters which in any way affect the Work or the cost thereof.

[CERTIFICATION AND SIGNATURE ON FOLLOWING PAGES]

This bid is submitted upon the declaration that neither, I (we), nor, to the best of my (our) knowledge, none of the members of my (our) firm or company have either directly or indirectly entered into any agreement, participated in any collusion or otherwise taken any action in restraint of free competitive bidding in connection with this bid.

Dated this day of	
BUSINESS ADDRESS OF BIDDER:	
City, State, Zip Code:	
Telephone Number of Bidder:	()
Fax Number of Bidder:	()
Social Security or Employer Id. No. of B	sidder:
Email Address:	
SIGNATURE OF BIDDER:	PRINT NAME OF BIDDER:
Attest: (Corporate Seal)	
Socratory	By:
Secretary	President

Attachment 1, Part 2 Disclosure of Legal and Administrative Proceedings and Financial Condition

City and County of Denver Denver International Airport (Please use this form)

If no disclosure required i	in accordance with II-13,	please sign affirma	ition statement.
(\$50,000.00); has not filed from bidding/proposing of	ive proceedings which id bankruptcy within the la	nvolve a claim in st ten (10) years; h cal government pro	_(Bidder) has not been involved in excess of Fifty Thousand Dollars as not been debarred or suspended ocurements; and neither the Bidder e, violation or felony in the last five
Signature	-	Title	
Print Name			
Date		_	
If disclosure is required in If additional space is need	-		wing space to provide information.

Attachment 1, Part 3 Contract Information

1.	Name of Bidder/Contractor:	
must b	NOTE: If bidder is a partnership overs. Bid must be signed by all joint	or joint venture, give full names of all partners or joint venturers. If bidder is a limited liability company, bid may be signed by member-manager if LLC is organized
	Prequalified by City and County ver as Construction Contractor :	Categories:
		Monetary Limit:
4.	Address of Contractor:	
	Telephone:	Fax:
		Email Address:
5.	Established where and when:	
6.	Contractor's Banks:	
7.	Principal Officers of Contractor (m	anagers and members if LLC):
Name:	·	Name:
Title: _		Title:
Name:	·	Name:
Title: _		Title:

8.	Bidder's/Contractor's City and County Denver Contractor License if it has obt		License	No.:
	one:		Class:	
	A contractor license is required prior t submittal.	o start	of construction but not prior to bid	
9. partne	Bidder's/Contractor's state of incoership):	-	on (state of organization if an	LLC or
10.	Bidder's Surety:			
11.	Surety's State of Incorporation:			
12. areas	(if different from No. 4): —			
13. receiv				
15.	If the Bidder/Contractor is a joint verte agreement. The joint venture agreer The Bidder/Contractor shall identify a	ment w	ill not be included as a Contract Doc	ument.

Bidder Company Name:		
IFB Name:		
IFB No.:	202056250	

Bidder shall list below the name, business address, work assignment and dollar value of each subcontractor that is **not** a DBE subcontractor that will perform work or labor or provide services to the Bidder relating to this Contract in an amount greater than one and one-half percent (1.5%) of the Bidder's total bid. Only one (1) subcontractor for each portion of the work shall be listed. Any proposed subcontractors to be utilized by the Bidder that are certified as a Small Business Enterprise (SBE) shall <u>also</u> be listed on the "List of Proposed Subcontractors" attached to this IFB.

If the Bidder does not identify a subcontractor to perform portions of the work which could be subcontracted on this form or the <u>List of Proposed DBE Subcontractors</u>, the Bidder, if it is awarded the Contract, agrees not to subcontract such portions that exceed one and one-half percent (1.5%) of the total bid amount until the Contractor has advised the SVP of AIM in writing of the reasons why the subcontractor was not listed in the Bid submission and complied with the requirements of General Condition 502.

If the Bidder is awarded the Contract and does not enter into a subcontract with a subcontractor listed below or on the <u>List of Proposed M/WBE Subcontractors</u>, the Bidder agrees not to subcontract any of the work assignment identified for that subcontractor until the Bidder has advised the SVP of AIM in writing of the reasons why a different subcontractor is being used and has obtained approval.

Subcontractor Information	Work Assignment	Subcontract Dollar Value
Name:		
Address:		
Phone:		

IFB No. 202056250 Tunnel Sewer Repairs November 20, 2020

Page 43 Attachment 1, Part 4 List of Proposed Non-DBE Subcontractors

Name:	
Address:	
Phone:	
Name:	
Address:	
Phone:	
Name:	
Address:	
Phone:	
Name:	
Address:	
Phone:	
Name:	
Address:	
, radi ess	
Phone:	

This page can be duplicated if additional sheets are required

IFB No. 202056250 Tunnel Sewer Repairs November 20, 2020

Attachment 1, Part 5 Certification of Non-Segregated Facilities

The Bidder must certify that it does not maintain or provide for its employees any segregated facilities at any of its establishments and that it does not permit its employees to perform their services at any location under its control where segregated facilities are maintained. The Bidder certifies further that it will not maintain or provide for its employees segregated facilities at any of its establishments and that it will not permit its employees to perform their services at any location under its control, where segregated facilities are maintained. The Bidder agrees that a breach of this certification is a violation of the equal opportunity clause in this contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, parking lots, drinking fountains, recreation or entertainment areas, transportation and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, color, religion or national origin because of habit, local custom or any other reason. The Bidder agrees that (except where it has obtained identical certification from proposed subcontractors for specific time period) it will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding Ten Thousand Dollars (\$10,000) which are not exempt from the provisions of the equal opportunity clause and that it will retain such certification in its files.

Dated:	
Bidder Company Name:	
Ву:	
Title	

Attachment 1, Part 6 Equal Opportunity Report Statement

The Bidder shall review, complete, sign and submit with its Bid this Equal Opportunity Report Statement (Statement). A Bid may be considered unresponsive and may be rejected, in the City's sole discretion, if the Bidder fails to provide the fully executed Statement or fails to furnish required data. The Bidder shall also, prior to award, furnish such other pertinent information regarding its own employment policies and practices as well as those of its proposed subcontractors as the FAA, the Owner or the Executive Vice Chairman of the President's Committee may require.

The Bidder shall furnish similar Statements executed by each of its first tier and second-tier subcontractors and shall obtain similar compliance by such subcontractors before awarding subcontracts. No subcontract shall be awarded to any non-complying subcontractor.

The Bidder shall complete the following statements by checking the appropriate blanks.

Equal Opportunity Report Statement as Required in 41 CFR 60-1.7(b)

Title:

Failure to complete these blanks may be grounds for rejection of Bid:
 The Bidder has has not developed and has on file at each establishment affirmative action programs pursuant to 41 CFR 60-1.40 and 41 CFR 60-2.
 The Bidder has has not participated in any previous contract or subcontract subject to the equal opportunity clause prescribed by Executive Order 11246, as amended.
3. The Bidder has has not filed with the Joint Reporting Committee the annual compliance report on Standard Form 100 (EEO-1 Report).
4. The Bidder does does not employ fifty (50) or more employees.
Dated:
Bidder Company:
By:

Page 46 Attachment 1, Part 7 Bid Bond

Attachment 1, Part 7 Bid Bond

Bidder	•			

DENVER INTERNATIONAL AIRPORT

Tunnel Sewer Repairs
Contract No. 202056250

Bid Bond

KNOW ALL MEN BY THESE PRESENTS

THAT	,	as	Principal <i>,</i>	and
	_, a corporation organ	ized and e	xisting under and b	y virtue
of the laws of the State of	, and authoriz	ed to do b	usiness within the	State of
Colorado as Surety, are held and firmly bour				
in the full and just sum of	Dolla	rs and		_ Cents
(\$) lawful mor	ney of the United State	s, for the p	payment of which su	ım, well
and truly to be made, we bind ourselves, o	our heirs, executors, ac	dministrato	ors, successors and	assigns,
jointly and severally, firmly by these presen	ts:			
WHEREAS, the said Principal is herewith	submitting its Bid, o	dated on _		
, for the construction of Contract N	No. 202056250, Tunne	l Sewer Re	pairs, Denver Interi	national
Airport, as set forth in detail in the contract	documents for the City	and Coun	ty of Denver, Colora	ido, and
said Obligee has required as a condition fo	or receiving said Bid th	at the Pri	ncipal deposit speci	fied bid
security in the amount of not less than five	percent (5%) of the an	nount of sa	aid Bid, as it relates	to work
to be performed for the City, conditioned th	at in event of failure o	f the Princi	pal to execute the C	Contract
for such construction and furnish required	Performance and Pay	ment Bon	d if the Contract is	offered
him, that said sum be paid immediately to t	the Obligee as liquidat	ed damage	es, and not as a Pen	alty, for
the Principal's failure to perform.		J		• •
the Principal's failure to perform.				

The condition of this obligation is such that if the aforesaid Principal shall, within the period specified therefor, on the prescribed form presented to him for signature, enter into a written Contract with the Obligee in accordance with his bid as accepted, and give Performance and Payment Bond with good and sufficient surety or sureties, upon the form prescribed by the Obligee, for the faithful performance and the proper fulfillment of said Contract, or in the event of withdrawal of said bid within the time specified, or upon the payment to the Obligee of the sum determined upon herein, as liquidated damages and not as a Penalty, in the event the Principal fails to enter into said Contract and give such Performance and Payment Bond within the time specified, then this Obligation shall be null and void, otherwise to remain in full force and effect.

[END OF PAGE]

Signed, sealed and delivered this	day of,,
Attest:	
	PRINCIPAL
Secretary	
[SEAL if bidder a corporation]	Ву:
	President
	SURETY
	Ву:
	Attorney-in-Fact
	(ATTACH POWER OF ATTORNEY)
	Power of Attorney shall be certified as to the date of bid.

Attachment 1, Part 8 Schedule of Prices and Quantities

SCHEDULE OF PRICES AND QUANTITIES

The Schedule of Prices and Quantities forms which apply to this contract are contained in the pages immediately following this page.

These pages are not included in the page numbering of this contract document.

Item No.	BASE BID DESCRIPTION AND PRICE	<u>Unit</u>	Quantity	<u>Unit Rate</u>	<u>Item Total</u>
BASE BID	INDUSTRIAL SEWER PIPING SYSTEM SERVING BAGGAGE TUNNEL AND AGTS FLOOR DRAINS, AREA DRAINS AND TRENCH DRAINS - SCOPE OF WORK AS DESCRIBED IN THE DRAWINGS AND SPECIFICATIONS INCLUDING, BUT NOT LIMITED TO THE DEMOLITION OF EXISTING PIPING, NEW FLOOR DRAINS AND CLEANOUTS, FLEXIBLE PIPING JOINTS AND ASSOCIATED NEW PIPING, CAMERAVIDEO OF 25 LF of 4" WEST OF W1, CIPP OF 12" PIPE INTO DRAINAGE STATIONS, SAW CUTTING/CORE DRILLING OF EXISTING CONCRETE SLAB, BACKFILL, CONCRETE SLAB REPAIRS, FILLING ABANDONED PIPING WITH CONCRETE AND NEW TRENCH AND GRATE OUTSIDE DRAINAGE STATION AT CONCOURSE C.	LUMP SUM			
	dollars andcents (\$)				
1	IDENTIFY A BREAKOUT COST (INCLUDED IN THE BASE BID) TO MOVE THE EXISTING 6" MAIN IN CONCOURSE C (LOCATED BETWEEN COLUMNS N143 AND N155) APPROXIMATELY 12" TO THE EAST TO LOCATE THE PIPING OUT OF THE EMBANKMENT.	LUMP SUM	REFER TO DRAWINGS		
	dollars				
	and cents				
	(\$)				
2	IDENTIFY A BREAKOUT COST (INCLUDED IN THE BASE BID) FOR ALL NEW FLOOR DRAINS LOCATED IN THE CENTER CORES OF EACH CONCOURSE, INCLUDING COSTS FOR TRAFFIC CONTROL.	LUMP SUM	REFER TO DRAWINGS		
	dollars				
	and cents (\$)				
3	IDENTIFY A BREAKOUT COST (INCLUDED IN THE BASE BID) TO REPLACE EXISTING FLOOR DRAIN AND/OR FLOOR CLEANOUT COVER. REFER TO DRAWINGS FOR SPECIFIC LOCATIONS. IDENTIFY QUANTITY OF EACH AND INCLUDE COSTS FOR TRAFFIC CONTROL.	EA	REFER TO DRAWINGS		
	dollars				
	and cents (\$)				
	(%				

CONTRACT SPECIFICATIONS
SCHEDULE OF PRICES AND QUANTITIES

CONCOURSE A, B, C TUNNEL SEWER REPAIRS 8700, 8900, 9100 PENA BLVD

DENVER INTERNATIONAL AIRPORT CONSTRUCTION CONTRACT: 202056250

4	IDENTIFY A BREAKOUT COST (INCLUDED IN THE BASE BID) FOR ALL FLEXIBLE PIPING JOINTS. IDENTIFY QUANTITY AND SIZE.	LUMP SUM	REFER TO DRAWINGS	
	dollars			
	and cents (\$)			
	IDENTIFY A BREAKOUT COST (INCLUDED IN THE BASE BID) FOR THE NEW TRENCH AND GRATE AT CONCOURSE C.	LUMP SUM	REFER TO DRAWINGS	
	dollars			
	and cents			
	(\$)			
6	IDENTIFY A BREAKOUT COST (INCLUDED IN THE BASE BID) FOR CIPP LINER FOR EXISTING PIPING MAINS (WHERE SPECIFICALLY INDICATED ON THE DRAWINGS) WEST OF COLUMN W1.	LUMP SUM	REFER TO DRAWINGS	
	dollars			
	and cents			
	(\$)			

MISCELLANEOUS ITEMS

Item No.	Description and Price	<u>Unit</u>	<u>Quantity</u>	<u>Unit Rate</u>	<u>Item Total</u>
		LUMP SUM	1		
	dollars				
	and cents				

TOTAL ALL ITEMO (4.7) &	
TOTAL ALL ITEMS (1-7) \$	

Item No.	ADD ALTERNATE DESCRIPTION AND PRICE	<u>Unit</u>	Quantity	Unit Rate	<u>Item Total</u>
1	PROVIDE AN ADD ALTERNATE COST ASSOCIATED WITH PROVIDING SCHEDULE 80 PVC PIPE IN LIEU OF SCHEDULE 40 PVC FOR ALL NEW BURIED PIPING (APPROXIMATELY 180 LF OF 12" AND 1340 LF OF 8", CONTRACTOR TO VERIFY).	LUMPSUM			
	dollars				
	and cents				
	(\$)				
2	PROVIDE AN ADD ALTERNATE COST FOR CIPP LINER FOR EXISTING PIPING MAINS (WHERE SPECIFICALLY INDICATED ON THE DRAWINGS) EAST OF COLUMN W1, INCLUDING CAMERA/VIDEO OF EXISTING INDUSTRIAL SEWER PIPING MAIN (EXCLUDE ALL INDICATED BRANCH PIPING). RECORD LOCATION AND EXTENT OF DEFORMATION/DAMAGE OF PIPE. INCLUDE ALL REQUIREMENTS OUTLINED IN THE APPLICABLE SPECIFICATIONS.	LUMP SUM			
	dollars				
	and cents				
	(\$)				
3	PROVIDE AN ADD ALTERNATE COST TO PROVIDE POINT REPAIR OF EXISTING 6" SANITARY MAIN IN THE EAST UTILITY TUNNEL. INCLUDE FURNISHING ALL EQUIPMENT, LABOR AND MATERIALS AND COSTS TO X-RAY SLAB, SAW CUT THE EXISTING SLAB, EXCAVATION, HAUL OFF DAMAGED PIPE, REPLACE 5 LF OF MAIN, IMPORT/HAUL IN IN BACKFIL MATERIAL AND REPLACE THE EXISTING REINFORCED CONCRETE SLAB AND RESTORE SURFACE TO THE SATISFACTION OF THE OWNER.	5 LF	12	\$	\$
	dollars				
	andcents				
	(\$)				
4	PROVIDE UNIT PRICE TO REMOVE CONTAMINATED SOILS (FROM THE SITE TO THE NORTH STOCK PILE AREA) THAT IS ENCOUNTERED DURING EXCAVATION/HAND DIGGING. INCLUDE COST FOR TESTING SOIL TO DETERMINE THE CONTAMINATION.	CUBIC YARD	100	\$	\$
	dollars				
	andcents				
	(\$)				
		<u> </u>	SUBTO	TAL ITEMS (1-4)	\$

VIII. <u>ATTACHMENT 2, M/WBE FORMS</u>

DSBO FORMS

The DSBO forms which apply to this contract are contained in the pages immediately following this page.

These pages are not included in the page numbering of this contract document.



DIVISION OF SMALL BUSINESS OPPORTUNITY (DSBO) COMMITMENT TO MWBE PARTICIPATION

This page must be completed by all Bidders/Proposers to indicate their commitment towards satisfying the MWBE participation goal. The commitment will be incorporated into the contract and thereby the selected Bidder/Proposer's will be held to that commitment. (Please check the appropriate box):

COMPLETE IF YOU ARE A NON MWBE PRIME: ☐ The City and County of Denver has specified a% MWBE Participation goal on this project. The Bidder/Proposer is committed to meeting% MWBE Participation on the contract.							
COMPLETE IF YOU ARE A MWBE PRIME: The City and County of Denver has specified a% M Bidder/Proposer is a certified MWBE with the City and County MWBE Participation on the contract.							
COMPLETE IF YOU ARE UNABLE TO MEET PROJECT GOAL: The City and County of Denver has specified a% MWBE Participation goal on this project. The Bidder/Proposer is unable to meet this project goal but is committed to a% MWBE Participation on the contract. The Bidder/Proposer must make adequate good faith efforts to meet this goal in order to be deemed responsive. The Bidder/Proposer must submit a detailed statement and documentation of their good faith efforts. Award of the contract will be conditioned on meeting the requirements of this section, in accordance of Chapter 28 of the D.R.M.C. to the Division of Small Business Opportunity. The undersigned Bidder/Proposer hereby agrees and understands that they must comply with their MWBE commitments in this project in conformity with the Requirements, Terms, and Conditions of this MWBE Procurement/Contract Language.							
Firm's Representative:							
Title:							
Signature (Firm's Representative):	Date:						
Address:							
City:	State:	Zip:					
Phone:	Email:						



DIVISION OF SMALL BUSINESS OPPORTUNITY (DSBO) LETTER OF INTENT (LOI)

Contract No.: Project Name:

A. The undersigned Bidder/Proposer intends to engage the undersigned MWBE, SBE, EBE or DBE to perform work if awarded the contract. This Letter of Intent must be Signed by the Bidder/Proposer and MWBE, SBE, EBE or

DBE. Certified self-performing Prime must complete both sections A and B. If the MWBE, SBE, EBE or DBE is a lower tier, section C must be completed and signed by the firm directly utilizing the certified firm.

lower tier, section e must be completed and signed by the mil	in an ectify attilizing the cer	tinea iiiiii				
Dillia (Danasa (Nasa (Fina)		Self-Performing:				
Bidder/Proposer (Name of Firm):		☐ Yes ☐ No				
Firm's Representative:	Title:					
Signature (Firm's Representative):	Date:					
Address:	T.					
City:	State:	Zip:				
Phone:	Email:					
B. The Following Section is To Be Completed by the MWBE, SBE, work and NAICS code(s) to be performed and/or supply item DBE.	•	the MWBE, SBE, EBE or				
Name of Firm:		\square MWBE(\lor) \square SBE(\lor) \square DBE(\lor)				
Firm's Representative:	Title:					
Signature: Date:						
Address:						
City:	State:	Zip:				
Phone:	Email:					
Scope of Work:						
NAICS Code(s):						
The Bidder/Proposer intends to utilize the aforementioned MWBE, SBE	E, EBE or DBE for the Work					
above. The cost of the work and percentage of the total subcontractor	MWBE, SBE, EBE or DBE b	oid amount is:				
\$		%				
C. Lower Tier Utilization: If the certified firm is <u>not</u> a direct first tier s the Bidder/Proposer, please indicate the name of the firm that is util	·	ant, and/or supplier to				
Name of Firm:						
Firm's Representative:	Title:					
Signature:	Dat	e:				

If the above-named Bidder/Proposer is not determined to be the successful Bidder/Proposer, this <u>Letter of Intent</u> shall be null and void.



Anticipated Start Date:

DIVISION OF SMALL BUSINESS OPPORTUNITY (DSBO) 1A - LIST OF PROPOSED SUBCONTRACTORS, SUBCONSULTANTS, AND/OR SUPPLIERS

· · ·						
City & County of Denver Contract No.:						
The undersigned proposes to utilize all listed firms. Any certified firm listed must be certified by the City and County of Denver and a Letter of Intent (LOI) submited for each. If additional pages are required, please copy and attach the second page. This form must be updated and sumitted to DSBO when subcontractors, subconsultants, and/or suppliers are added throughout the contract duration.						
Con	tractor/Consultant					
Name of Firm:	□ MWBE (√) □	SBE (\forall) \square DBE (\forall) \square EBE (\forall)				
Firm's Representative:						
Signature:	Date:					
Address:						
City:	State:	Zip:				
Phone:	Email:					
Total Contract Value \$:	Self-Performing Cor	ntract Value \$:				
	Subconsultants, and/or Suppliers	CDE / // □ DDE / // □ EDE / //				
Name of Firm:	□ MWBE (V) □	SBE (\lor) \square DBE (\lor) \square EBE (\lor)				
Firm's Representative:	F					
Phone: Type of Service:	Email: Contract Value \$:					
Anticipated Start Date:	Anticipated Comple	etion Date:				
Name of Figure		CDE (-1) □ DDE (-1) □ EDE (-1)				
Name of Firm:	□ MWBE (V) □	SBE (\lor) \square DBE (\lor) \square EBE (\lor)				
Firm's Representative: Phone:	Email:					
Type of Service:	Contract Value \$:					
Type of Service.	Contract value 9.					
Anticipated Start Date:	Anticipated Comple	tion Date:				
Name of Firm:	□ MWBE (√) □	SBE (√) □ DBE (√) □ EBE (√)				
Firm's Representative:						
Phone:	Email:					
Type of Service:	Contract Value \$:					

Anticipated Completion Date:



Name of Firm:	\square MWBE (\lor) \square SBE (\lor) \square DBE (\lor) \square EBE (\lor)
Firm's Representative:	
Phone:	Email:
Type of Service:	Contract Value \$:
Anticipated Start Date:	Anticipated Completion Date:
Name of Firm:	\square MWBE (\lor) \square SBE (\lor) \square DBE (\lor) \square EBE (\lor)
Firm's Representative:	
Phone:	Email:
Type of Service:	Contract Value \$:
Anticipated Start Date:	Anticipated Completion Date:
Name of Firm:	□ MWBE (V) □ SBE (V) □ DBE (V) □ EBE (V)
Firm's Representative:	
Phone:	Email:
Type of Service:	Contract Value \$:
Anticipated Start Date:	Anticipated Completion Date:
Name of Firm:	\square MWBE (\lor) \square SBE (\lor) \square DBE (\lor) \square EBE (\lor)
Firm's Representative:	
Phone:	Email:
Type of Service:	Contract Value \$:
Anticipated Start Date:	Anticipated Completion Date:
Name of Firm:	\square MWBE (\lor) \square SBE (\lor) \square DBE (\lor) \square EBE (\lor)
Firm's Representative:	
Phone:	Email:
Type of Service:	Contract Value \$:
Anticipated Start Date:	Anticipated Completion Date:
Name of Firm:	\square MWBE (V) \square SBE (V) \square DBE (V) \square EBE (V)
Firm's Representative:	
Phone:	Email:
Type of Service:	Contract Value \$:
Anticipated Start Date:	Anticipated Completion Date:

IX. <u>ATTACHMENT 3, FORM W-9</u>

FORM W-9

Please complete the Request for Taxpayer Identification Number and Certification (FORM W-9) and submit with your Bid.

These pages are not included in the page numbering of this contract document.

Form W-9
(Rev. August 2013)
Department of the Treasury
Internal Revenue Service

Request for Taxpayer Identification Number and Certification

Give Form to the requester. Do not send to the IRS.

	Name (as shown on your income tax return)										
e 2.											
Print or type See Specific Instructions on page	Check appropriate box for federal tax classification: Individual/sole proprietor C Corporation S Corporation Partnership Trust/estate			Exemptions (see instructions):							
/pe					Exempt payee code (if any)						
Print or type	☐ Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=partnership) ▶			Exemption from FATCA reporting code (if any)							
P. P.	☐ Other (see instructions) ▶										
pecifi	Address (number, street, and apt. or suite no.)	Request	er's nam	ne and a	address	(opti	onal)				
See S	City, state, and ZIP code										
	List account number(s) here (optional)										
Pa	rt I Taxpayer Identification Number (TIN)										
to av resid entiti	r your TIN in the appropriate box. The TIN provided must match the name given on the "Name oid backup withholding. For individuals, this is your social security number (SSN). However, for ent alien, sole proprietor, or disregarded entity, see the Part I instructions on page 3. For other es, it is your employer identification number (EIN). If you do not have a number, see <i>How to ge</i> on page 3.	ra i	Social	securit	y numb	per	-				
Note	. If the account is in more than one name, see the chart on page 4 for guidelines on whose	[Employer identification number								
numl	number to enter.										
Pa	rt II Certification										
Unde	er penalties of perjury, I certify that:										
1. TI	ne number shown on this form is my correct taxpayer identification number (or I am waiting for	a numb	er to be	issue	d to m	e), ar	ıd				
S	am not subject to backup withholding because: (a) I am exempt from backup withholding, or (bervice (IRS) that I am subject to backup withholding as a result of a failure to report all interest be longer subject to backup withholding, and										
	3. I am a U.S. citizen or other U.S. person (defined below), and										
	e FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting				امدادا	ا با سد					

because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the

instructions on page 3.

Sign Signature of U.S. person ▶

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. The IRS has created a page on IRS.gov for information about Form W-9, at www.irs.gov/w9. Information about any future developments affecting Form W-9 (such as legislation enacted after we release it) will be posted on that page.

Purpose of Form

A person who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) to report, for example, income paid to you, payments made to you in settlement of payment card and third party network transactions, real estate transactions, mortgage interest you paid, acquisition or abandonment of secured property, cancellation of debt, or contributions you made to an IRA

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN to the person requesting it (the requester) and, when applicable, to:

- 1. Certify that the TIN you are giving is correct (or you are waiting for a number to be issued),
 - 2. Certify that you are not subject to backup withholding, or
- 3. Claim exemption from backup withholding if you are a U.S. exempt payee. If applicable, you are also certifying that as a U.S. person, your allocable share of any partnership income from a U.S. trade or business is not subject to the

withholding tax on foreign partners' share of effectively connected income, and

4. Certify that FATCA code(s) entered on this form (if any) indicating that you are exempt from the FATCA reporting, is correct.

Note. If you are a U.S. person and a requester gives you a form other than Form W-9 to request your TIN, you must use the requester's form if it is substantially similar to this Form W-9.

Definition of a U.S. person. For federal tax purposes, you are considered a U.S. person if you are:

• An individual who is a U.S. citizen or U.S. resident alien,

Date ▶

- A partnership, corporation, company, or association created or organized in the United States or under the laws of the United States,
- An estate (other than a foreign estate), or
- A domestic trust (as defined in Regulations section 301.7701-7).

Special rules for partnerships. Partnerships that conduct a trade or business in the United States are generally required to pay a withholding tax under section 1446 on any foreign partners' share of effectively connected taxable income from such business. Further, in certain cases where a Form W-9 has not been received, the rules under section 1446 require a partnership to presume that a partner is a foreign person, and pay the section 1446 withholding tax. Therefore, if you are a U.S. person that is a partner in a partnership conducting a trade or business in the United States, provide Form W-9 to the partnership to establish your U.S. status and avoid section 1446 withholding on your share of partnership income.

Form W-9 (Rev. 8-2013) Page **2**

In the cases below, the following person must give Form W-9 to the partnership for purposes of establishing its U.S. status and avoiding withholding on its allocable share of net income from the partnership conducting a trade or business in the United States:

- In the case of a disregarded entity with a U.S. owner, the U.S. owner of the disregarded entity and not the entity,
- In the case of a grantor trust with a U.S. grantor or other U.S. owner, generally, the U.S. grantor or other U.S. owner of the grantor trust and not the trust, and
- In the case of a U.S. trust (other than a grantor trust), the U.S. trust (other than a grantor trust) and not the beneficiaries of the trust.

Foreign person. If you are a foreign person or the U.S. branch of a foreign bank that has elected to be treated as a U.S. person, do not use Form W-9. Instead, use the appropriate Form W-8 or Form 8233 (see Publication 515, Withholding of Tax on Nonresident Aliens and Foreign Entities).

Nonresident alien who becomes a resident alien. Generally, only a nonresident alien individual may use the terms of a tax treaty to reduce or eliminate U.S. tax on certain types of income. However, most tax treaties contain a provision known as a "saving clause." Exceptions specified in the saving clause may permit an exemption from tax to continue for certain types of income even after the payee has otherwise become a U.S. resident alien for tax purposes.

If you are a U.S. resident alien who is relying on an exception contained in the saving clause of a tax treaty to claim an exemption from U.S. tax on certain types of income, you must attach a statement to Form W-9 that specifies the following five items:

- 1. The treaty country. Generally, this must be the same treaty under which you claimed exemption from tax as a nonresident alien.
 - 2. The treaty article addressing the income.
- 3. The article number (or location) in the tax treaty that contains the saving clause and its exceptions.
 - 4. The type and amount of income that qualifies for the exemption from tax.
- Sufficient facts to justify the exemption from tax under the terms of the treaty article.

Example. Article 20 of the U.S.-China income tax treaty allows an exemption from tax for scholarship income received by a Chinese student temporarily present in the United States. Under U.S. law, this student will become a resident allen for tax purposes if his or her stay in the United States exceeds 5 calendar years. However, paragraph 2 of the first Protocol to the U.S.-China treaty (dated April 30, 1984) allows the provisions of Article 20 to continue to apply even after the Chinese student becomes a resident alien of the United States. A Chinese student who qualifies for this exception (under paragraph 2 of the first protocol) and is relying on this exception to claim an exemption from tax on his or her scholarship or fellowship income would attach to Form W-9 a statement that includes the information described above to support that exemption.

If you are a nonresident alien or a foreign entity, give the requester the appropriate completed Form W-8 or Form 8233.

What is backup withholding? Persons making certain payments to you must under certain conditions withhold and pay to the IRS a percentage of such payments. This is called "backup withholding." Payments that may be subject to backup withholding include interest, tax-exempt interest, dividends, broker and barter exchange transactions, rents, royalties, nonemployee pay, payments made in settlement of payment card and third party network transactions, and certain payments from fishing boat operators. Real estate transactions are not subject to backup withholding.

You will not be subject to backup withholding on payments you receive if you give the requester your correct TIN, make the proper certifications, and report all your taxable interest and dividends on your tax return.

Payments you receive will be subject to backup withholding if:

- 1. You do not furnish your TIN to the requester,
- 2. You do not certify your TIN when required (see the Part II instructions on page 3 for details), $\,$
 - 3. The IRS tells the requester that you furnished an incorrect TIN,
- 4. The IRS tells you that you are subject to backup withholding because you did not report all your interest and dividends on your tax return (for reportable interest and dividends only), or
- 5. You do not certify to the requester that you are not subject to backup withholding under 4 above (for reportable interest and dividend accounts opened after 1983 only).

Certain payees and payments are exempt from backup withholding. See *Exempt payee code* on page 3 and the separate Instructions for the Requester of Form W-9 for more information.

Also see Special rules for partnerships on page 1.

What is FATCA reporting? The Foreign Account Tax Compliance Act (FATCA) requires a participating foreign financial institution to report all United States account holders that are specified United States persons. Certain payees are exempt from FATCA reporting. See Exemption from FATCA reporting code on page 3 and the Instructions for the Requester of Form W-9 for more information.

Updating Your Information

You must provide updated information to any person to whom you claimed to be an exempt payee if you are no longer an exempt payee and anticipate receiving reportable payments in the future from this person. For example, you may need to provide updated information if you are a C corporation that elects to be an S corporation, or if you no longer are tax exempt. In addition, you must furnish a new Form W-9 if the name or TIN changes for the account, for example, if the grantor of a grantor trust dies.

Penalties

Failure to furnish TIN. If you fail to furnish your correct TIN to a requester, you are subject to a penalty of \$50 for each such failure unless your failure is due to reasonable cause and not to willful neglect.

Civil penalty for false information with respect to withholding. If you make a false statement with no reasonable basis that results in no backup withholding, you are subject to a \$500 penalty.

Criminal penalty for falsifying information. Willfully falsifying certifications or affirmations may subject you to criminal penalties including fines and/or imprisonment.

Misuse of TINs. If the requester discloses or uses TINs in violation of federal law, the requester may be subject to civil and criminal penalties.

Specific Instructions

Name

If you are an individual, you must generally enter the name shown on your income tax return. However, if you have changed your last name, for instance, due to marriage without informing the Social Security Administration of the name change, enter your first name, the last name shown on your social security card, and your new last name

If the account is in joint names, list first, and then circle, the name of the person or entity whose number you entered in Part I of the form.

Sole proprietor. Enter your individual name as shown on your income tax return on the "Name" line. You may enter your business, trade, or "doing business as (DBA)" name on the "Business name/disregarded entity name" line.

Partnership, C Corporation, or S Corporation. Enter the entity's name on the "Name" line and any business, trade, or "doing business as (DBA) name" on the "Business name/disregarded entity name" line.

Disregarded entity. For U.S. federal tax purposes, an entity that is disregarded as an entity separate from its owner is treated as a "disregarded entity." See Regulation section 301.7701-2(c)(2)(iii). Enter the owner's name on the "Name" line. The name of the entity entered on the "Name" line should never be a disregarded entity. The name on the "Name" line must be the name shown on the income tax return on which the income should be reported. For example, if a foreign LLC that is treated as a disregarded entity for U.S. federal tax purposes has a single owner that is a U.S. person, the U.S. owner's name is required to be provided on the "Name" line. If the direct owner of the entity is also a disregarded entity, enter the first owner that is not disregarded for federal tax purposes. Enter the disregarded entity's name on the "Business name/disregarded entity name" line. If the owner of the disregarded entity is a foreign person, the owner must complete an appropriate Form W-8 instead of a Form W-9. This is the case even if the foreign person has a U.S. TIN.

Note. Check the appropriate box for the U.S. federal tax classification of the person whose name is entered on the "Name" line (Individual/sole proprietor, Partnership, C Corporation, S Corporation, Trust/estate).

Limited Liability Company (LLC). If the person identified on the "Name" line is an LLC, check the "Limited liability company" box only and enter the appropriate code for the U.S. federal tax classification in the space provided. If you are an LLC that is treated as a partnership for U.S. federal tax purposes, enter "P" for partnership. If you are an LLC that has filed a Form 8832 or a Form 2553 to be taxed as a corporation, enter "C" for C corporation or "S" for S corporation, as appropriate. If you are an LLC that is disregarded as an entity separate from its owner under Regulation section 301.7701-3 (except for employment and excise tax), do not check the LLC box unless the owner of the LLC (required to be identified on the "Name" line) is another LLC that is not disregarded for U.S. federal tax purposes. If the LLC is disregarded as an entity separate from its owner, enter the appropriate tax classification of the owner identified on the "Name" line.

Other entities. Enter your business name as shown on required U.S. federal tax documents on the "Name" line. This name should match the name shown on the charter or other legal document creating the entity. You may enter any business, trade, or DBA name on the "Business name/disregarded entity name" line.

Exemptions

If you are exempt from backup withholding and/or FATCA reporting, enter in the *Exemptions* box, any code(s) that may apply to you. See *Exempt payee code* and *Exemption from FATCA reporting code* on page 3.

Form W-9 (Rev. 8-2013) Page **3**

Exempt payee code. Generally, individuals (including sole proprietors) are not exempt from backup withholding. Corporations are exempt from backup withholding for certain payments, such as interest and dividends. Corporations are not exempt from backup withholding for payments made in settlement of payment card or third party network transactions.

Note. If you are exempt from backup withholding, you should still complete this form to avoid possible erroneous backup withholding.

The following codes identify payees that are exempt from backup withholding:

- 1—An organization exempt from tax under section 501(a), any IRA, or a custodial account under section 403(b)(7) if the account satisfies the requirements of section 401(f)(2)
- 2-The United States or any of its agencies or instrumentalities
- 3—A state, the District of Columbia, a possession of the United States, or any of their political subdivisions or instrumentalities
- $4\!-\!\text{A}$ foreign government or any of its political subdivisions, agencies, or instrumentalities
 - 5-A corporation
- 6—A dealer in securities or commodities required to register in the United States, the District of Columbia, or a possession of the United States
- 7—A futures commission merchant registered with the Commodity Futures Trading Commission
 - 8-A real estate investment trust
- $9-\!$ An entity registered at all times during the tax year under the Investment Company Act of 1940
 - 10-A common trust fund operated by a bank under section 584(a)
 - 11-A financial institution
- 12—A middleman known in the investment community as a nominee or custodian
 - 13-A trust exempt from tax under section 664 or described in section 4947

The following chart shows types of payments that may be exempt from backup withholding. The chart applies to the exempt payees listed above, 1 through 13.

IF the payment is for	THEN the payment is exempt for
Interest and dividend payments	All exempt payees except for 7
Broker transactions	Exempt payees 1 through 4 and 6 through 11 and all C corporations. S corporations must not enter an exempt payee code because they are exempt only for sales of noncovered securities acquired prior to 2012.
Barter exchange transactions and patronage dividends	Exempt payees 1 through 4
Payments over \$600 required to be reported and direct sales over \$5,000 ¹	Generally, exempt payees 1 through 5 ²
Payments made in settlement of payment card or third party network transactions	Exempt payees 1 through 4

¹ See Form 1099-MISC, Miscellaneous Income, and its instructions.

Exemption from FATCA reporting code. The following codes identify payees that are exempt from reporting under FATCA. These codes apply to persons submitting this form for accounts maintained outside of the United States by certain foreign financial institutions. Therefore, if you are only submitting this form for an account you hold in the United States, you may leave this field blank. Consult with the person requesting this form if you are uncertain if the financial institution is subject to these requirements.

- A—An organization exempt from tax under section 501(a) or any individual retirement plan as defined in section 7701(a)(37)
 - $\ensuremath{\mathsf{B-The}}$ United States or any of its agencies or instrumentalities
- C—A state, the District of Columbia, a possession of the United States, or any of their political subdivisions or instrumentalities
- D-A corporation the stock of which is regularly traded on one or more established securities markets, as described in Reg. section 1.1472-1(c)(1)(i)
- E—A corporation that is a member of the same expanded affiliated group as a corporation described in Reg. section 1.1472-1(c)(1)(i)
- F—A dealer in securities, commodities, or derivative financial instruments (including notional principal contracts, futures, forwards, and options) that is registered as such under the laws of the United States or any state

- G—A real estate investment trust
- H—A regulated investment company as defined in section 851 or an entity registered at all times during the tax year under the Investment Company Act of 1940
 - I-A common trust fund as defined in section 584(a)
 - J-A bank as defined in section 581
 - K-A broker
 - L-A trust exempt from tax under section 664 or described in section 4947(a)(1)
 - M-A tax exempt trust under a section 403(b) plan or section 457(g) plan

Part I. Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. If you are a resident alien and you do not have and are not eligible to get an SSN, your TIN is your IRS individual taxpayer identification number (ITIN). Enter it in the social security number box. If you do not have an ITIN, see How to get a TIN below.

If you are a sole proprietor and you have an EIN, you may enter either your SSN or EIN. However, the IRS prefers that you use your SSN.

If you are a single-member LLC that is disregarded as an entity separate from its owner (see *Limited Liability Company (LLC)* on page 2), enter the owner's SSN (or EIN, if the owner has one). Do not enter the disregarded entity's EIN. If the LLC is classified as a corporation or partnership, enter the entity's EIN.

Note. See the chart on page 4 for further clarification of name and TIN combinations.

How to get a TIN. If you do not have a TIN, apply for one immediately. To apply for an SSN, get Form SS-5, Application for a Social Security Card, from your local Social Security Administration office or get this form online at www.ssa.gov. You may also get this form by calling 1-800-772-1213. Use Form W-7, Application for IRS Individual Taxpayer Identification Number, to apply for an ITIN, or Form SS-4, Application for Employer Identification Number, to apply for an EIN. You can apply for an EIN online by accessing the IRS website at www.irs.gov/businesses and clicking on Employer Identification Number (EIN) under Starting a Business. You can get Forms W-7 and SS-4 from the IRS by visiting IRS.gov or by calling 1-800-TAX-FORM (1-800-829-3676).

If you are asked to complete Form W-9 but do not have a TIN, apply for a TIN and write "Applied For" in the space for the TIN, sign and date the form, and give it to the requester. For interest and dividend payments, and certain payments made with respect to readily tradable instruments, generally you will have 60 days to get a TIN and give it to the requester before you are subject to backup withholding on payments. The 60-day rule does not apply to other types of payments. You will be subject to backup withholding on all such payments until you provide your TIN to the requester

Note. Entering "Applied For" means that you have already applied for a TIN or that you intend to apply for one soon.

Caution: A disregarded U.S. entity that has a foreign owner must use the appropriate Form W-8.

Part II. Certification

To establish to the withholding agent that you are a U.S. person, or resident alien, sign Form W-9. You may be requested to sign by the withholding agent even if items 1, 4, or 5 below indicate otherwise.

For a joint account, only the person whose TIN is shown in Part I should sign (when required). In the case of a disregarded entity, the person identified on the "Name" line must sign. Exempt payees, see Exempt payee code earlier.

 $\begin{tabular}{ll} \textbf{Signature requirements.} Complete the certification as indicated in items 1 through 5 below. \end{tabular}$

- 1. Interest, dividend, and barter exchange accounts opened before 1984 and broker accounts considered active during 1983. You must give your correct TIN, but you do not have to sign the certification.
- 2. Interest, dividend, broker, and barter exchange accounts opened after 1983 and broker accounts considered inactive during 1983. You must sign the certification or backup withholding will apply. If you are subject to backup withholding and you are merely providing your correct TIN to the requester, you must cross out item 2 in the certification before signing the form.
- ${\bf 3.}$ Real estate transactions. You must sign the certification. You may cross out item 2 of the certification.
- 4. Other payments. You must give your correct TIN, but you do not have to sign the certification unless you have been notified that you have previously given an incorrect TIN. "Other payments" include payments made in the course of the requester's trade or business for rents, royalties, goods (other than bills for merchandise), medical and health care services (including payments to corporations), payments to a nonemployee for services, payments made in settlement of payment card and third party network transactions, payments to certain fishing boat crew members and fishermen, and gross proceeds paid to attorneys (including payments to corporations).
- 5. Mortgage interest paid by you, acquisition or abandonment of secured property, cancellation of debt, qualified tuition program payments (under section 529), IRA, Coverdell ESA, Archer MSA or HSA contributions or distributions, and pension distributions. You must give your correct TIN, but you do not have to sign the certification.

²However, the following payments made to a corporation and reportable on Form 1099-MISC are not exempt from backup withholding: medical and health care payments, attorneys' fees, gross proceeds paid to an attorney, and payments for services paid by a federal executive agency.

Form W-9 (Rev. 8-2013) Page **4**

What Name and Number To Give the Requester

What Name and Number 10	dive the nequester
For this type of account:	Give name and SSN of:
Individual Two or more individuals (joint account)	The individual The actual owner of the account or, if combined funds, the first individual on the account 1
Custodian account of a minor (Uniform Gift to Minors Act)	The minor ²
4. a. The usual revocable savings trust (grantor is also trustee) b. So-called trust account that is not a legal or valid trust under state law	The grantor-trustee ¹ The actual owner ¹
Sole proprietorship or disregarded entity owned by an individual	The owner ³
6. Grantor trust filing under Optional Form 1099 Filing Method 1 (see Regulation section 1.671-4(b)(2)(i)(A))	The grantor*
For this type of account:	Give name and EIN of:
Disregarded entity not owned by an individual A valid trust, estate, or pension trust	The owner Legal entity ⁴
Corporation or LLC electing corporate status on Form 8832 or Form 2553	The corporation
Association, club, religious, charitable, educational, or other tax-exempt organization	The organization
11. Partnership or multi-member LLC12. A broker or registered nominee	The partnership The broker or nominee
13. Account with the Department of Agriculture in the name of a public entity (such as a state or local government, school district, or prison) that receives agricultural program payments	The public entity
14. Grantor trust filing under the Form 1041 Filing Method or the Optional Form 1099 Filing Method 2 (see Regulation section 1.671-4(b)(2)(i)(B))	The trust

¹ List first and circle the name of the person whose number you furnish. If only one person on a joint account has an SSN, that person's number must be furnished.

Note. If no name is circled when more than one name is listed, the number will be considered to be that of the first name listed.

Secure Your Tax Records from Identity Theft

Identity theft occurs when someone uses your personal information such as your name, social security number (SSN), or other identifying information, without your permission, to commit fraud or other crimes. An identity thief may use your SSN to get a job or may file a tax return using your SSN to receive a refund.

To reduce your risk:

- · Protect your SSN,
- Ensure your employer is protecting your SSN, and
- Be careful when choosing a tax preparer.

If your tax records are affected by identity theft and you receive a notice from the IRS, respond right away to the name and phone number printed on the IRS notice or letter.

If your tax records are not currently affected by identity theft but you think you are at risk due to a lost or stolen purse or wallet, questionable credit card activity or credit report, contact the IRS Identity Theft Hotline at 1-800-908-4490 or submit Form 14039.

For more information, see Publication 4535, Identity Theft Prevention and Victim Assistance.

Victims of identity theft who are experiencing economic harm or a system problem, or are seeking help in resolving tax problems that have not been resolved through normal channels, may be eligible for Taxpayer Advocate Service (TAS) assistance. You can reach TAS by calling the TAS toll-free case intake line at 1-877-777-4778 or TTY/TDD 1-800-829-4059.

Protect yourself from suspicious emails or phishing schemes. Phishing is the creation and use of email and websites designed to mimic legitimate business emails and websites. The most common act is sending an email to a user falsely claiming to be an established legitimate enterprise in an attempt to scam the user into surrendering private information that will be used for identity theft.

The IRS does not initiate contacts with taxpayers via emails. Also, the IRS does not request personal detailed information through email or ask taxpayers for the PIN numbers, passwords, or similar secret access information for their credit card, bank, or other financial accounts.

If you receive an unsolicited email claiming to be from the IRS, forward this message to <code>phishing@irs.gov</code>. You may also report misuse of the IRS name, logo, or other IRS property to the Treasury Inspector General for Tax Administration at 1-800-366-4484. You can forward suspicious emails to the Federal Trade Commission at: <code>spam@uce.gov</code> or contact them at <code>www.ftc.gov/idtheft</code> or 1-877-IDTHEFT (1-877-438-4338).

Visit IRS.gov to learn more about identity theft and how to reduce your risk.

Privacy Act Notice

Section 6109 of the Internal Revenue Code requires you to provide your correct TIN to persons (including federal agencies) who are required to file information returns with the IRS to report interest, dividends, or certain other income paid to you; mortgage interest you paid; the acquisition or abandonment of secured property; the cancellation of debt; or contributions you made to an IRA, Archer MSA, or HSA. The person collecting this form uses the information on the form to file information returns with the IRS, reporting the above information. Routine uses of this information include giving it to the Department of Justice for civil and criminal litigation and to cities, states, the District of Columbia, and U.S. commonwealths and possessions for use in administering their laws. The information also may be disclosed to other countries under a treaty, to federal and state agencies to enforce civil and criminal laws, or to federal law enforcement and intelligence agencies to combat terrorism. You must provide your TIN whether or not you are required to file a tax return. Under section 3406, payers must generally withhold a percentage of taxable interest, dividend, and certain other payments to a payee who does not give a TIN to the payer. Certain penalties may also apply for providing false or fraudulent information.

² Circle the minor's name and furnish the minor's SSN.

³ You must show your individual name and you may also enter your business or "DBA" name on the "Business name/disregarded entity" name line. You may use either your SSN or EIN (if you have one), but the IRS encourages you to use your SSN.

⁴List first and circle the name of the trust, estate, or pension trust. (Do not furnish the TIN of the personal representative or trustee unless the legal entity itself is not designated in the account title.) Also see *Special rules for partnerships* on page 1.

^{*}Note. Grantor also must provide a Form W-9 to trustee of trust.

X. <u>ATTACHMENT 4, INSURANCE REQUIREMENTS</u>

INSURANCE REQUIREMENTS

The insurance requirements relative to this contract are contained in the pages immediately following this page.

These pages are not included in the page numbering of this contract document.

EXHIBIT C

CITY AND COUNTY OF DENVER INSURANCE REQUIREMENTS FOR DEPARTMENT OF AVIATION PROFESSIONAL SERVICES AGREEMENT – ROCIP PROJECT

APPLICABILITY OF ROCIP: City and County of Denver and Denver International Airport (hereinafter referred to collectively as "DEN") has arranged for certain construction activities at DEN to be insured under an Owner Controlled Insurance Program (OCIP) or a Rolling Owner Controlled Insurance Program (ROCIP) (hereinafter collectively referred to as "ROCIP"). A ROCIP is a single insurance program that insures DEN, the Contractor and subcontractors of any tier, and other designated parties (Enrolled Parties), for work performed at the Project Site. Contractor is not eligible for or provided coverage under the ROCIP program and instead Contractor must provide its own insurance as further specified in the Agreement, including this Exhibit C. Contractor must comply with the provisions of the DEN ROCIP III Safety Manual, which is part of the Contract Documents and which is linked below. DEN also is providing links to the DEN ROCIP III Insurance Manual and the DEN ROCIP III Claims Guide solely for Contractor's information.

DEN ROCIP III Insurance Manual DEN ROCIP III Safety Manual DEN ROCIP III Claims Guide

NOTICE OF CHANGE TO ROCIP: DEN reserves the right to terminate or modify the DEN ROCIP or any portion thereof. Further, dependent on factors including, but not limited to, the official timing and duration of the ROCIP project for which services are provided under this Agreement, DEN may need to transition from one ROCIP program to another and introduce corresponding requirements for contractors. DEN will provide Contractor notice in accordance with the terms and conditions of this Agreement.

A. Certificate Holder

The certificate shall be issued to: CITY AND COUNTY OF DENVER

Denver International Airport 8500 Peña Boulevard, Suite 8810

Denver CO 80249 Attn: Risk Management

B. Acceptable Certificate of Insurance Form and Submission Instructions

Please read these requirements carefully to ensure proper documentation and receipt of your certificate(s) of insurance.

- ACORD FORM (or equivalent) certificate is required.
- SUBMIT via emailed in pdf format to: contractadmininvoices@flydenver.com
- ELECTRONIC CERTIFICATES are required, hard copy documents will not be accepted.
- THIRD PARTY SOFTWARE may be implemented during the term of this Agreement to manage insurance compliance and documents with required use by Vendor of such system.
- REFERENCE on the certificate must include the DEN assigned Contract Number.

C. Coverages and Limits

1. Commercial General Liability:

Contractor shall maintain insurance coverage including bodily injury, property damage, personal injury, advertising injury, independent contractors, host liquor, and products and completed operations in minimum limits of \$1,000,000 each occurrence, \$2,000,000 products and completed operations aggregate; if policy contains a general aggregate, a minimum limit of \$2,000,000 annual per location aggregate must be maintained.

- a. Coverage shall include contractual liability covering liability assumed under this Agreement (including defense costs assumed under contract) within the scope of coverages provided.
- b. Coverage shall include Mobile Equipment Liability, if used to perform services under this Agreement.

2. Business Automobile Liability:

Contractor shall maintain a minimum limit of \$1,000,000 combined single limit each occurrence for bodily injury and property damage for all owned, leased, hired and/or non-owned vehicles used in performing services under this Agreement.

- a. If operating vehicles unescorted airside at DEN, a \$10,000,000 combined single limit each occurrence for bodily injury and property damage is required.
- b. If Contractor does not have blanket coverage on all owned and operated vehicles and will require unescorted airside driving privileges, then a schedule of insured vehicles (including year, make, model and VIN number) must be submitted with the Certificate of Insurance.
- c. The policy must not contain an exclusion related to operations on airport premises.
- d. If transporting waste, hazardous material, or regulated substances, Contractor shall carry a Broadened Pollution Endorsement and an MCS 90 endorsement on its policy.
- e. If Contractor is an individual or represents that Contractor does not own any motor vehicles and/or Contractor's owners, officers, directors, and employees use their personal vehicles for business purposes, Personal Automobile Liability insurance coverage will be accepted provided it includes a business use endorsement.
- f. If Contractor will be completing all services to DEN under this Agreement remotely, this requirement will be waived.

3. Workers' Compensation and Employer's Liability Insurance:

Contractor shall maintain workers compensation coverage in compliance with the statutory requirements of the state(s) of operation and Employer's Liability insurance with limits no less than \$100,000 per occurrence for each bodily injury claim, \$100,000 per occurrence for each bodily injury caused by disease claim, and \$500,000 aggregate for all bodily injuries caused by disease claims.

- a. If Contractor is a sole proprietor, Workers' Compensation and Employer's Liability is exempt under the Colorado Workers' Compensation Act. It is the sole responsibility of the Contractor to determine their eligibility for providing this coverage and executing all required documentation with the State of Colorado.
- 4. Professional Liability (Errors and Omissions) Insurance: Contractor shall maintain a minimum limit of \$1,000,000 each claim and annual aggregate, providing

contractor shall maintain a minimum limit of \$1,000,000 each claim and annual aggregate, providing coverage for all applicable professional services outlined in this Agreement. [AMEND TO REQUIRE PROJECT SPECIFIC COVERAGE IF PERTINENT BASED ON SCOPE OF WORK.]

5. Technology Errors and Omissions, Network Security, and Privacy Liability (Cyber): [REMOVE IF NOT PERTINENT PER SCOPE OF WORK.]

Contractor shall maintain a limit no less than \$1,000,000 each claim and annual aggregate.

- a. Coverage shall include negligent acts, errors, mistakes and omissions arising out of the scope of services of this Agreement performed by Contractor, or any person employed or contracted by Contractor.
- b. Coverage shall include, but not be limited to, liability arising from theft, dissemination and/or use of personal, private, confidential, information subject to a non-disclosure agreement, including information stored or transmitted, privacy or cyber laws, damage to or destruction of information, intentional and/or unintentional release of private information, alteration of information, extortion and network security, introduction of a computer virus into, or otherwise causing damage to, a customer's or third person's computer, computer system, network or similar computer related property and the

data, software, and programs thereon, advertising injury, personal injury (including invasion of privacy), intellectual property offenses related to internet, forensic investigations and business interruption coverage.

6. Unmanned Aerial Vehicle (UAV) Liability:

If Lessee desires to use drones in any aspect of its work or presence on DEN premises, the following requirements must be met prior to commencing any drone operations:

- a. Express written permission must be granted by DEN.
- b. Express written permission must be granted by the Federal Aviation Administration (FAA).
- c. Drone equipment must be properly registered with the FAA.
- d. Drone operator(s) must be properly licensed by the FAA.
- e. Contractor must maintain UAV Liability including flight coverage, personal and advertising injury liability, and hired/non-owned UAV liability for its commercial drone operations with a limit no less than \$1,000,000 combined single limit each occurrence for bodily injury and property damage.

7. Excess/Umbrella Liability:

Combination of primary and excess coverage may be used to achieve minimum required coverage limits. Excess/Umbrella policy(ies) must follow form of the primary policies with which they are related to provide the minimum limits and be verified as such on any submitted Certificate of Insurance.

D. Reference to Project and/or Contract

The City Project and/or Contract Number and project description shall be noted on the Certificate of Insurance.

E. Additional Insured

For all coverages required under this Agreement (excluding Workers' Compensation, Employer's Liability and Professional Liability), Contractor's insurer(s) shall include the City and County of Denver, its elected and appointed officials, agents, employees and volunteers as Additional Insureds by policy endorsement.

F. Waiver of Subrogation

For all coverages required under this Agreement, Contractor's insurer(s) shall waive subrogation rights against the City and County of Denver, its elected and appointed officials, agents, employees and volunteers by policy endorsement.

G. Notice of Material Change, Cancellation or Nonrenewal

Each certificate and related policy shall contain a valid provision requiring notification to the Certificate Holder in the event any of the required policies be canceled or non-renewed or reduction in required coverage before the expiration date thereof.

- 1. Such notice shall reference the DEN assigned contract number related to this Agreement.
- 2. Said notice shall be sent thirty (30) days prior to such cancellation or non-renewal or reduction in required coverage unless due to non-payment of premiums for which notice shall be sent ten (10) days prior.
- 3. If such written notice is unavailable from the insurer or afforded as outlined above, Contractor shall provide written notice of cancellation, non-renewal and any reduction in required coverage to the Certificate Holder within seven (7) business days of receiving such notice by its insurer(s) and include documentation of the formal notice received from its insurer's as verification.

H. Additional Provisions

- 1. Deductibles, Self-Insured Retentions, or any other type of retention are the sole responsibility of the Contractor.
- 2. Defense costs shall be in addition to the limits of liability. If this provision is unavailable that limitation must be evidenced on the Certificate of Insurance.
- 3. A severability of interests or separation of insureds provision (no insured vs. insured exclusion) is included

- under all policies where Additional Insured status is required.
- 4. A provision that coverage is primary and non-contributory with other coverage or self-insurance maintained by the City is included under all policies where Additional Insured status is required.
- 5. The insurance requirements under this Agreement shall be the greater of (i) the minimum limits and coverage specified hereunder or (ii) the broader coverage and maximum limits of coverage of any insurance policy or proceeds available to the Lessee. It is agreed that the insurance requirements set forth herein shall not in any way act to reduce coverage that is broader or that includes higher limits than the minimums set forth in this Agreement.
- 6. All policies shall be written on an occurrence form. If an occurrence form is unavailable or not industry norm for a given policy type, claims-made coverage will be accepted by the City provided the retroactive date is on or before the Agreement Effective Date or the first date when any goods or services were provided to the City, whichever is earlier, and continuous coverage will be maintained or an extended discovery period of three years beginning at the time work under this Agreement is completed or the Agreement is terminated, whichever is later.
- 7. Contractor shall advise the City in the event any general aggregate or other aggregate limits are reduced below the required minimum per occurrence limits. At their own expense, and where such general aggregate or other aggregate limits have been reduced below the required minimum per occurrence limit, the Contractor will procure such per occurrence limits and furnish a new certificate of insurance showing such coverage remains in force.
- 8. Certificates of Insurance must (i) specify the issuing companies, policy numbers and policy periods for each required form of coverage, (ii) be issued and signed by an authorized entity and (iii) be submitted to the City at the time Contractor signed this Agreement.
- 9. The insurance shall be underwritten by an insurer licensed or authorized to do business in the State of Colorado and rated by A.M. Best Company as A- VIII or better.
- 10. Certificate of Insurance and Related Endorsements: The City's acceptance of a certificate of insurance or other proof of insurance that does not comply with all insurance requirements set forth in this Agreement shall not act as a waiver of Contractor's breach of this Agreement or of any of the City's rights or remedies under this Agreement. The City's acceptance of any submitted insurance certificate is subject to the approval of DEN Risk Management. All coverage requirements specified in the certificate shall be enforced unless waived or otherwise modified in writing by DEN Risk Management. Contractor is solely responsible for ensuring all formal policy endorsements are issued by their insurers to support the requirements herein.
- 11. The City shall have the right to verify or confirm, at any time, all coverage, information or representations, and the insured and its undersigned agent shall promptly and fully cooperate in any such audit the City may elect to undertake.
- 12. No material changes, modifications or interlineations to insurance coverage required by this Agreement shall be allowed without the review and written approval of DEN Risk Management.
- 13. Contractor shall be responsible for ensuring DEN is provided updated Certificate(s) of Insurance ten (10) days prior to each policy renewal.
- 14. Contractor's failure to maintain the insurance required by this Agreement shall be the basis for immediate termination of this Agreement at DEN's sole discretion and without penalty to the City.

XI. ATTACHMENT 5, DIVERSITY AND INCLUSIVENESS IN CITY SOLICITATIONS

For the City or the City Agency to consider a bid/Bid, Bidders must complete the on-line Diversity and Inclusiveness in City Solicitations Form – then <u>print the completed form and include the hard copy as part of Bidder's bid/Biddocuments</u>. A Bid or response to a solicitation by a Bidder that does not include this completed form shall be <u>deemed non-responsive</u>.

Click on the following link to access the on-line form:

https://fs7.formsite.com/CCDenver/form161/index.html

Using the form found in link above, please state whether you have a Diversity and Inclusiveness program for employment and retention, procurement and supply chain activities or customer service, and provide the additional information requested on the form. The information provided on the Diversity and Inclusiveness in City Solicitations Form will provide an opportunity for City Bidders to describe their own diversity and inclusiveness practices. Bidders are not expected to conduct intrusive examinations of their employees, managers or business partners in order to describe diversity and inclusiveness measures. Rather, the City simply seeks a description of the Bidder's current practices, if any. Diversity and Inclusiveness information provided by City Bidders in response to City solicitations for services or goods will be collated, analyzed and made available in reports consistent with City Executive Order No. 101. However, no personally identifiable information provided by or obtained from Bidders will be in such reports.

Insert the completed hard copy of the Diversity and Inclusiveness in City Solicitations Form immediately following this page.

XII. ATTACHMENT 6, SAMPLE CONTRACT

SAMPLE CONTRACT

The Sample Contract is contained in the pages immediately following this page.

These pages are not included in the page numbering of this contract document.

SAMPLE AGREEMENT

Notice to Bidders:

City Required Contract Provisions

The following contract provisions are required in every contract issued by the Department of Aviation. The language of each clause is drafted in accordance with city, state and federal obligations placed on the airport and is not subject to modification. Accordingly, bidders should carefully review this Sample Agreement provided with the Invitation for Bid, including these required provisions, in preparation of their Bids.

- 1. Indemnification
- 2. Basic insurance requirements
- 3. Limitation of liability (available in narrowly applicable circumstances)
- 4. Federal requirements
 - a. Standard Federal Aviation Administration grant assurances (Appendix 1 to the Sample Agreement)
 - b. Federal Aviation Administration document retention and review requirements
- 5. Airport security requirements
- 6. City code and charter; state statutes
 - a. Prompt pay
 - b. Prevailing wage
 - c. Immigration provisions (Not applicable for contracts for Information Technology services or IT products and services See, C.R.S. 8-17.5-101(6)(b)(V))
 - d. Colorado open records act
 - e. DSBO (if applicable to subject matter of contract)
 - f. City nondiscrimination language
 - g. Dispute resolution
- 7. Denver Executive Orders ("XOs")
 - a. Environmental
 - b. Drugs alcohol tobacco
 - c. Nondiscrimination in contracts
- 8. Airport System General Bond Ordinance (1984, as amended).
- 9. Choice of law (Colorado)
- 10. Jurisdiction and venue (Colorado)

CONTRACT FOR CONSTRUCTION

THIS CONTRACT FOR CONSTRUCTION ("Contract") is made and entered into as of the date stated on the City's signature page below (the "Effective Date") by and between the CITY AND COUNTY OF DENVER, a municipal corporation of the State of Colorado acting on behalf of its Department of Aviation (the "City"), and VENDOR NAME, a Jurisdiction from the SOS website corporation and authorized to do business in the State of Colorado ("Choose an item.") (collectively the "Parties").

WITNESSETH

WHEREAS, the City, for at least three (3) consecutive days, advertised that proposals would be received for furnishing all labor, tools, supplies, equipment, materials and everything necessary and required for the construction and installation of task orders issued under Contract No. 202056250-00, Tunnel Sewer Repairs at Denver International Airport ("DEN"); and

WHEREAS, a proposal in response to said advertisement have been received by the Chief Executive Officer of DEN (the "CEO"), who has recommended that a contract for the work be made and entered into with Contractor, which was the lowest, responsive, qualified proposers; and

WHEREAS, Contractor is qualified, willing, and able to perform the work in accordance with its proposal and the Contract Documents defined below;

NOW, THEREFORE, for and in consideration of the compensation to be paid by the City to Contractor and subject to the terms of this Contracts, the Parties agree as follows:

ARTICLE I. CONTRACT DOCUMENTS

It is agreed by the Parties that the instruments, drawings, and documents described below and whether attached to and bound with this Contract or not (the "Contract Documents"), are incorporated into the Contract by this reference, and are as fully a part of this Contract as if they were set out here verbatim and in full:

- Contract
- Notice to Proceed
- Form of Final Receipt
- Building Information Modeling ("BIM") if applicable
- Change Directives
- Change Orders
- Exhibit A Federal Appendices
- Exhibit B Equal Employment Opportunity Provisions
- Exhibit C Insurance Requirements
- Exhibit D Prevailing Wage Schedules
- Exhibit E Special Conditions
- Exhibit F Standard Specifications for Construction General Contract Conditions (2011 Edition) (the "Yellow Book") ("General Conditions") (Table of

Contents attached as Exhibit F)

•	Exhibit G	Performance Bond
•	Exhibit H	Payment Bond
•	Exhibit I	Technical Specifications
•	Exhibit J	Contract Drawings
•	Exhibit K	Invitation for Bid and Contractor's Response

In the event of an irreconcilable conflict between a provision of Article I through XXXI of this Contract document and any other provisions of the Contract Documents such that it is impossible to give effect to both, the order of precedence to determine which document shall control to resolve such conflict is as follows, in descending order:

1.	Exhibit A	Federal Appendices
2.	Contract	

- 3. Exhibit K Invitation for Bid and Contractor's Response
- 4. Change Directives
- 5. Change Orders
- 6. Exhibit B Equal Employment Opportunity Provisions
- 7. Exhibit E Special Conditions
- 8. Exhibit F Standard Specifications for Construction General Contract Conditions

(2011 Edition) (the "Yellow Book") ("General Conditions")

(Table of Contents attached as Exhibit F)

- 9. Exhibit C Insurance Requirements
- 10. Exhibit D Prevailing Wage Schedules
- 11. Exhibit I Technical Specifications
- 12. Exhibit J Contract Drawings
- 13. Exhibit G Performance Bond
- 14. Exhibit H Payment Bond
- 15. Notice to Proceed
- 16. Form of Final Receipt
- 17. Building Information Modeling ("BIM") if applicable

The remaining order of precedence is established in General Conditions Title 4.

ARTICLE II. SCOPE OF WORK

Contractor shall furnish all labor and tools, supplies, equipment, superintendence, materials, and everything necessary for and required to do, perform, and complete all of the work described, drawn, set forth, shown, and included in the Contract Documents (the "Work").

ARTICLE III. TERM OF CONTRACT

The Senior Vice President of Aviation – Airport Infrastructure Management (the "SVP-AIM") will issue a written notice to proceed to Contractor (the "Notice to Proceed"), and Contractor shall begin performing the Work required under this Contract within ten (10) days of such Notice to Proceed (the "Commencement Date"). Contractor shall fully complete the Work in its entirety within 365 consecutive calendar days from the date of the Notice to Proceed ("Contract Time"). Contractor is not authorized to commence work prior to its receipt of the

Notice to Proceed.

ARTICLE IV. TERMS OF PAYMENT

The City agrees to pay Contractor for the performance and completion of all of the Work as required by the Scope of Work and the Contract Documents, and Contractor agrees to accept as its full and only compensation therefor, a total amount of **Contract Amount Dollars and Amount Cents** (\$Click here to enter text.) (the "Maximum Contract Amount"). In no event will the City's liability exceed the Maximum Contract Amount, as adjusted by duly authorized Change Orders in accordance with this Contract. The Parties specifically agree that any performance by Contractor hereunder shall not subject the City to any cost, charge, or fee not specified above.

ARTICLE V. VERIFIED STATEMENT OF CLAIMS

Colorado Revised Statutes § 38-26-107 ("C.R.S.") requires that, in the event any person or company files a verified statement of amounts due and unpaid in connection with a claim for labor and materials supplied on this project, the City shall withhold from payments to Contractor sufficient funds to insure the payment of any such claims. Should the City be made a party to any lawsuit to enforce such unpaid claims or any lawsuit arising out of or relating to such withheld funds, Contractor agrees to pay to the City its costs and a reasonable attorney's fee incurred in any such lawsuit. Because the City Attorney Staff does not bill the City for legal services on an hourly basis, Contractor agrees a reasonable fee shall be computed at the rate of two hundred dollars and no cents (\$200.00) per hour of City Attorney time.

ARTICLE VI. DISPUTES

All disputes arising under or related to this Contract shall be resolved by administrative hearing under the procedures described in Denver Revised Municipal Code Section 5-17 ("**D.R.M.C.**") and all related rules and procedures. The determination resulting from said administrative hearing shall be final, subject only to Contractor's right to appeal the determination under Colorado Rule of Civil Procedure, Rule 106.

ARTICLE VII. DEFENSE AND INDEMNIFICATION

- **A.** To the fullest extent permitted by law, the Contractor hereby agrees to defend, indemnify, reimburse and hold harmless City, its appointed and elected officials, agents and employees for, from and against all liabilities, claims, judgments, suits or demands for damages to persons or property arising out of, resulting from, or related to the work performed under this Contract that are due to the negligence or fault of the Contractor or the Contractor's agents, representatives, subcontractors, or suppliers ("Claims"). This indemnity shall be interpreted in the broadest possible manner consistent with the applicable law to indemnify the City.
- **B.** Contractor's duty to defend and indemnify City shall arise at the time written notice of the Claim is first provided to City regardless of whether suit has been filed and even if Contractor is not named as a Defendant.
- C. Contractor will defend any and all Claims which may be brought or threatened against City and will pay on behalf of City any expenses incurred by reason of such Claims including, but not

limited to, court costs and attorney fees incurred in defending and investigating such Claims or seeking to enforce this indemnity obligation, including but not limited to time expended by the City Attorney Staff, whose costs shall be computed at the rate specified in Article V. Such payments on behalf of City shall be in addition to any other legal remedies available to City and shall not be considered City's exclusive remedy.

- **D.** Insurance coverage requirements specified in this Contract shall in no way lessen or limit the liability of the Contractor under the terms of this indemnification obligation. The Contractor shall obtain, at its own expense, any additional insurance that it deems necessary for the City's protection.
- **E.** This defense and indemnification obligation shall survive the expiration or termination of this Contract.

ARTICLE VIII. WAIVER OF C.R.S. § 13-20-801, et seq.

Notwithstanding any other provision of this Contract, Contractor specifically waives all of the provisions of C.R.S. §§ 13-20-801 *et seq.* as they may relate to Contractor's performance under this Contract.

ARTICLE IX. LIQUIDATED DAMAGES

If Contractor fails to achieve Substantial Completion of the Work within the Contract Time or fails to substantially complete the Work described in the Scope of Work within the time set forth in the Special Conditions, the City will suffer substantial damages, which damages would be difficult to accurately determine. The Parties hereto have considered the possible elements of damages and have agreed that the amount of liquidated damages for Contractor's failure to substantially complete the work within the Contract Time shall be \$1,500.00 per day.

If Contractor shall fail to pay such liquidated damages promptly upon demand therefor, the Surety on its Performance Bond and Payment Bond shall pay such damages. Also, the City may withhold all, or any part of, such liquidated damages from any payment due Contractor. Additional provisions relating to liquidated damages are set forth in the Construction Contract General Conditions and Special Conditions.

ARTICLE X. INSURANCE REQUIREMENTS

- **A.** Contractor shall obtain and keep in force all of the minimum insurance coverage forms and amounts set forth in *Exhibit C* ("Insurance Requirements") during the entire term of this Contract, including any extensions of the Contract or other extended period stipulations stated in *Exhibit C*. All certificates of insurance and any required endorsements must be received and approved by DEN Risk Management before any airport access or work commences.
- **B.** Unless specifically excepted in writing by DEN Risk Management, if Contractor shall be using subcontractors to provide any part of the services under this Contract, Contractor shall do one of the following:
 - 1. Include all subcontractors performing services hereunder as insureds under its required

insurance and specifically list on all submitted certificates of insurance required under *Exhibit C*; or

- 2. Ensure that each subcontractor provides its own insurance coverage in accordance with the requirements set forth in this Contract.
- C. The City in no way warrants or represents the minimum limits contained herein are sufficient to protect Contractor from liabilities arising out of the performance of the terms and conditions of this Contract by Contractor, its agents, representatives, employees, or subcontractors. Contractor shall assess its own risks and maintain higher limits and/or broader coverage as it deems appropriate and/or prudent. Contractor is not relieved of any liability or other obligations assumed or undertaken pursuant to this Contract by reason of its failure to obtain or maintain insurance in sufficient amounts, duration, or types.
- **D.** In no event shall the City be liable for any of the following: (i) business interruption or other consequential damages sustained by Contractor; (ii) damage, theft, or destruction of Contractor's inventory, or property of any kind; or (iii) damage, theft, or destruction of an automobile, whether or not insured.
- **E.** The Parties understand and agree that the City, its elected and appointed officials, employees, agents and volunteers are relying on, and do not waive or intend to waive by any provisions of this Contract, the monetary limitations and any other rights, immunities and protections provided by the Colorado Governmental Immunity Act, C.R.S. §§ 24-10-101, *et seq.*, or otherwise available to the City, its elected and appointed officials, employees, agents and volunteers.

ARTICLE XI. CONTRACT BINDING

It is agreed that this Contract shall be binding on and inure to the benefit of the Parties hereto, their heirs, executors, administrators, assigns, and successors.

ARTICLE XII. SEVERABILITY

If any part, portion, or provision of this Contract shall be found or declared null, void, or unenforceable for any reason whatsoever by any court of competent jurisdiction or any governmental agency having authority thereover, only such part, portion, or provision shall be affected thereby and all other parts, portions, and provisions of this Contract shall remain in full force and effect.

ARTICLE XIII. ASSIGNMENT

Contractor shall not assign, pledge or transfer its duties, obligations, and rights under this Contract, in whole or in part, without first obtaining the written consent of the CEO or his/her authorized representative. Any attempt by Contractor to assign or transfer its rights hereunder without such prior written consent shall, at the option of the CEO or his/her authorized representative, automatically terminate this Contract and all rights of Contractor hereunder.

ARTICLE XIV. APPROPRIATIONS



Payment will be in accordance with the provisions of the Contract Documents, including Title 9 of the General Conditions, and will be made solely and exclusively from funds appropriated and otherwise lawfully made available for the purposes of this Contract from the City and County of Denver Airport System Funds. The City has no obligation to make payments from any other fund or source or to make additional appropriations or allocations to such fund to satisfy such costs or other obligations.

ARTICLE XV. APPROVALS

In the event this Contract calls for the payment by the City of Five Million Dollars and no cents (\$5,000,000.00) or more, approval by the Denver City Council, acting by Resolution in accordance with Section 3.2.6 of the Charter of the City and County of Denver, is and shall be an express condition precedent to the lawful and binding execution and performance of this Contract.

ARTICLE XVI. JOINT VENTURE

If Contractor is a Joint Venture, the partners to the Joint Venture shall be jointly and severally liable to the City for the performance of all duties and obligations of Contractor which are set forth in the Contract.

ARTICLE XVII. NO DISCRIMINATION IN EMPLOYMENT

In connection with the performance of work under this Contract, Contractor agrees not to refuse to hire, discharge, promote or demote, or to discriminate in matters of compensation against any person otherwise qualified, solely because of race, color, religion, national origin, gender, age, military status, sexual orientation, gender variance, marital status, or physical or mental disability; and Contractor further agrees to insert the foregoing provision in all subcontracts hereunder.

ARTICLE XVIII. COORDINATION OF SERVICES

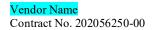
Contractor agrees to perform its work under this Contract in accordance with the operational requirements of DEN, and all work and movement of personnel or equipment on areas included within the DEN site shall be subject to the regulations and restrictions established by the City or its authorized agents.

ARTICLE XIX. COMPLIANCE WITH ALL LAWS AND REGULATIONS

Contractor and its subcontractor(s) shall perform all work under this Contract in compliance with all existing and future applicable laws, rules, regulations and codes of the United States and the State of Colorado and with the Charter, ordinances and rules and regulations of the City.

ARTICLE XX. PROMPT PAYMENT

A. The City will make monthly progress payments to the Contractor for all services performed under this Contract based upon the Contractor's monthly invoices. Such invoices shall be in a form acceptable to the City and shall include detail of the time worked by the Contractor's own personnel, billings from subcontractors, and all other information necessary to assess the



Contractor's progress. Invoices shall be accompanied by documentation of expenses for which reimbursement is sought, and all other supporting documentation required by the City. The City's Prompt Payment Ordinance, §§ 20-107 to 20-118, D.R.M.C., applies to invoicing and payment under this Contract.

- **B.** Final Payment to the Contractor shall not be made until after the Project is accepted, and all certificates of completion, record drawings and reproducible copies are delivered to the City, and the Contract is otherwise fully performed by the Contractor. The City may, at the discretion of the Director, withhold reasonable amounts from billing and the entirety of the final payment until all such requirements are performed to the satisfaction of the Director. However, no deductions shall be made from the Contractor's compensation because of penalty, liquidated damages or other sums withheld from payments to contractor(s).
- C. For contracts of one million dollars (\$1,000,000.00) and over, the Contractor is required to comply with the Contractor Prompt Payment provisions under § 28-72, D.R.M.C., with regard to payments by the Contractor to MWBE subcontractors. The Contractor shall make payment by no later than thirty-five (35) days from receipt by the Contractor of the subcontractor's invoice.

ARTICLE XXI. OWNERSHIP AND DELIVERABLES.

Upon payment to Contractor, all records, data, deliverables, and any other work product prepared by Contractor or any custom development work performed by Contractor for the purpose of performing this Contract on or before the day of payment shall become the sole property of the City. Upon request by the City, or based on any schedule agreed to by Contractor and the City, Contractor shall provide the City with copies of the data/files that have been uploaded to any database maintained by or on behalf of Contractor or otherwise saved or maintained by Contractor as part of the services provided to the City under this Contract. All such data/files shall be provided to the City electronically in a format agreed to by the Parties. Contractor also agrees to allow the City to review any of the procedures Contractor uses in performing any work or other obligations under this Contract, and to make available for inspection any and all notes, documents, materials, and devices used in the preparation for or performance of any of the scope of work, for up to six (6) years after termination of this Contract. Upon written request from the City, Contractor shall deliver any information requested pursuant to this Article within ten (10) business days in the event a schedule or otherwise agreed-upon timeframe does not exist.

ARTICLE XXII. COLORADO OPEN RECORDS ACT

- **A.** Contractor acknowledges that the City is subject to the provisions of the Colorado Open Records Act ("CORA"), C.R.S. §§ 24-72-201 *et seq.*, and Contractor agrees that it will fully cooperate with the City in the event of a request or lawsuit arising under such act for the disclosure of any materials or information which Contractor asserts is confidential or otherwise exempt from disclosure. Any other provision of this Contract notwithstanding, all materials, records, and information provided by Contractor to the City shall be considered confidential by the City only to the extent provided in CORA, and Contractor agrees that any disclosure of information by the City consistent with the provisions of CORA shall result in no liability of the City.
 - B. In the event of a request to the City for disclosure of such information, time and

circumstances permitting, the City will make a good faith effort to advise Contractor of such request in order to give Contractor the opportunity to object to the disclosure of any material Contractor may consider confidential, proprietary, or otherwise exempt from disclosure. In the event Contractor objects to disclosure, the City, in its sole and absolute discretion, may file an application to the Denver District Court for a determination of whether disclosure is required or exempted. In the event a lawsuit to compel disclosure is filed, the City may tender all such material to the court for judicial determination of the issue of disclosure. In both situations, Contractor agrees it will either waive any claim of privilege or confidentiality or intervene in such legal process to protect materials Contractor does not wish disclosed. Contractor agrees to defend, indemnify, and hold harmless the City, its officers, agents, and employees from any claim, damages, expense, loss, or costs arising out of Contractor's objection to disclosure, including prompt reimbursement to the City of all reasonable attorney's fees, costs, and damages the City may incur directly or may be ordered to pay by such court, including but not limited to time expended by the City Attorney Staff, whose costs shall be computed at the rate specified in Article V.

ARTICLE XXIII. EXAMINATION OF RECORDS AND AUDITS

A. Any authorized agent of the City, including the City Auditor or his or her representative, has the right to access, and the right to examine, copy and retain copies, at City's election in paper or electronic form, any pertinent books, documents, papers and records related to Contractor's performance pursuant to this Contract, provision of any goods or services to the City, and any other transactions related to this Contract. Contractor shall cooperate with City representatives and City representatives shall be granted access to the foregoing documents and information during reasonable business hours and until the latter of six (6) years after the final payment under the Contract or expiration of the applicable statute of limitations. When conducting an audit of this Contract, the City Auditor shall be subject to government auditing standards issued by the United States Government Accountability Office by the Comptroller General of the United States, including with respect to disclosure of information acquired during the course of an audit. No examination of records and audits pursuant to this paragraph shall require Contractor to make disclosures in violation of state or federal privacy laws. Contractor shall at all times comply with D.R.M.C. § 20-276.

B. Additionally, Contractor agrees until the expiration of six (6) years after the final payment under this Contract, any duly authorized representative of the City, including the CEO or his or her representative, shall have the right to examine any pertinent books, documents, papers and records of Contractor related to Contractor's performance of this Contract, including communications or correspondence related to Consultant's performance, without regard to whether the work was paid for in whole or in part with federal funds or was otherwise related to a federal grant program.

C. In the event the City receives federal funds to be used toward the services performed under this Contract, the Federal Aviation Administration ("FAA"), the Comptroller General of the United States and any other duly authorized representatives shall have access to any books, documents, papers and records of Contractor which are directly pertinent to a specific grant program for the purpose of making audit, examination, excerpts and transcriptions. Contractor further agrees that such records will contain information concerning the hours and specific services

performed along with the applicable federal project number.

ARTICLE XXIV. PREVAILING WAGE REQUIREMENTS

A. Contractor shall comply with, and agrees to be bound by, all requirements, conditions and determinations of the City regarding the Payment of Prevailing Wages Ordinance, D.R.M.C. §§20-76 through 20-79, including, but not limited to, the requirement that every covered worker working on a City-owned or leased building or on City-owned land shall be paid no less than the prevailing wages and fringe benefits in effect on the date the bid or request for proposal was advertised. In the event a request for bids, or a request for proposal, was not advertised, Contractor shall pay every covered worker no less than the prevailing wages and fringe benefits in effect on the date funds for the contract were encumbered.

Date bid or proposal issuance was advertised Click here to enter text.

If contract opportunity was not advertised, date of written encumbrance N/A

- **B.** Certain initial Prevailing Wage Schedules are attached as *Exhibit D*. Other rates may apply based on the work performed. Prevailing wage and fringe rates will adjust on the yearly anniversary of the actual date of bid or proposal issuance, if applicable, or the date of the written encumbrance if no bid/proposal issuance date is applicable. Unless expressly provided for in this Contract, Contractor will receive no additional compensation for increases in prevailing wages or fringe rates.
- C. Contractor shall provide the Auditor of the City and County of Denver with a list of all subcontractors providing any services under the Contract.
- **D.** Contractor shall provide the Auditor with electronically-certified payroll records for all covered workers employed under the Contract in a manner specified by the Auditor.
- **E.** Contractor shall prominently post at the work site the current prevailing wage and fringe rates. The posting must inform workers that any complaints regarding the payment of prevailing wages or fringe benefits may be submitted to the Denver Auditor by calling 720-913-5000 or emailing auditor@denvergov.org.
- **F.** If Contractor fails to pay workers as required by the Prevailing Wage Ordinance, Contractor will not be paid until documentation of payment satisfactory to the Auditor has been provided. The Auditor may enforce the Prevailing Wage Ordinance in a manner provided by law, including the Prevailing Wage Ordinance. The City also may, by written notice, suspend or terminate work if Contractor fails to pay required wages and fringe rates.

ARTICLE XXV. MINIMUM WAGE REQUIREMENTS

To the extent required by law, Contractor shall comply with and agrees to be bound by all requirements, conditions, and City determinations regarding the City's Minimum Wage Ordinance, D.R.M.C. §§ 20-82 through 20-84, including, but not limited to, the requirement that every covered worker shall be paid no less than the City Minimum Wage in accordance with the City's Minimum Wage Ordinance. By executing this Contract, Contractor expressly acknowledges



that Contractor is aware of the requirements of the City's Minimum Wage Ordinance and that any failure by Contractor, or any other individual or entity acting subject to this Contract, to strictly comply with the foregoing D.R.M.C. Sections shall result in the penalties and other remedies authorized therein.

ARTICLE XXVI. COMPLIANCE WITH MINORITY/WOMEN BUSINESS ENTERPRISE REQUIREMENTS

- **A.** This Contract is subject to Article III, Divisions 1 and 3 of Chapter 28, Denver Revised Municipal Code ("**D.R.M.C.**"), designated as §§ 28-31 to 28-40 and 28-51 to 28-90 (the "MWBE Ordinance") and any Rules or Regulations promulgated pursuant thereto. The contract goal for MWBE participation established for this Contract by the Division of Small Business Opportunity ("**DSBO**") is 18 %.
- **B.** Under § 28-68, D.R.M.C., Contractor has an ongoing, affirmative obligation to maintain for the duration of this Contract, at a minimum, compliance with its originally achieved level of MWBE participation upon which this Contract was awarded, unless the City initiates a material alteration to the scope of work affecting MWBEs performing on this Contract through change order, contract amendment, force account, or as otherwise described in § 28-70, D.R.M.C. Contractor acknowledges that:
 - 1. If directed by DSBO, Contractor is required to develop and comply with a Utilization Plan in accordance with § 28-62, D.R.M.C. Along with the Utilization Plan requirements, Contractor must establish and maintain records and submit regular reports, as directed by DSBO, which will allow the City to assess progress in complying with the Utilization Plan and achieving the MWBE participation goal. The Utilization Plan is subject to modification by DSBO.
 - 2. If change orders or any other contract modifications are issued under the Contract, Contractor shall have a continuing obligation to immediately inform DSBO in writing of any agreed upon increase or decrease in the scope of work of such contract, upon any of the bases discussed in § 28-70, D.R.M.C., regardless of whether such increase or decrease in scope of work has been reduced to writing at the time of notification.
 - 3. If change orders or other amendments or modifications are issued under the contract that include an increase in the scope of work of this Contract, whether by amendment, change order, force account or otherwise, which increases the dollar value of the contract, whether or not such change is within the scope of work designated for performance by an MWBE at the time of contract award, such change orders or contract modification shall be immediately submitted to DSBO for notification purposes.
 - 4. Those amendments, change orders, force accounts or other contract modifications that involve a changed scope of work that cannot be performed by existing project subcontractors are subject to the original contract goal. Contractor shall satisfy the goal with respect to such changed scope of work by soliciting new MWBEs in accordance with § 28-70, D.R.M.C. Contractor must also satisfy the requirements under §§ 28-60 and 28-73, D.R.M.C., with regard to changes in scope or participation. Contractor shall

- supply to the DSBO Director all required documentation described in §§ 28-60, 28-70, and 28-73 D.R.M.C. with respect to the modified dollar value or work under the contract.
- 5. Failure to comply with these provisions may subject Contractor to sanctions set forth in § 28-76 of the MWBE Ordinance.
- 6. Should any questions arise regarding specific circumstances, Contractor should consult the MWBE Ordinance or may contact the Project's designated DSBO representative at (720) 913-1999.

ARTICLE XXVII. SENSITIVE SECURITY INFORMATION

Contractor acknowledges that, in the course of performing its work under this Contract, Contractor may be given access to Sensitive Security Information ("SSI"), as material is described in the Code of Federal Regulations, 49 C.F.R. Part 1520. Contractor specifically agrees to comply with all requirements of the applicable federal regulations, including but not limited to, 49 C.F.R. Parts 15 and 1520. Contractor understands any questions it may have regarding its obligations with respect to SSI must be referred to the DEN's Security Office.

ARTICLE XXVIII. DEN SECURITY

- A. Contractor, its officers, authorized officials, employees, agents, subcontractors, and those under its control, shall comply with safety, operational, or security measures required of Contractor or the City by the FAA or TSA. If Contractor, its officers, authorized officials, employees, agents, subcontractors or those under its control, fail or refuse to comply with said measures and such noncompliance results in a monetary penalty being assessed against the City, then, in addition to any other remedies available to the City, Contractor shall fully reimburse the City any fines or penalties levied against the City, and any attorney fees or related costs paid by the City as a result of any such violation. Contractor must pay this amount within fifteen (15) days from the date of the invoice or written notice. Any fines and fees assessed by the FAA or TSA against the City due to the actions of Contractor and/or its agents will be deducted directly from the invoice for that billing period.
- **B.** Contractor is responsible for compliance with Airport Security regulations and 49 C.F.R. Parts 1542 (Airport Security) and 14 C.R.F. Parts 139 (Airport Certification and Operations). Any and all violations pertaining to Parts 1542 and 139 resulting in a fine will be passed on to and borne by Contractor. The fee/fine will be deducted from the invoice at time of billing.

ARTICLE XXIX. FEDERAL RIGHTS

- **A.** This Contract is subject and subordinate to the terms, reservations, restrictions and conditions of any existing or future contracts between the City and the United States, the execution of which has been or may be required as a condition precedent to the transfer of federal rights or property to the City for airport purposes, and the expenditure of federal funds for the extension, expansion or development of the Denver Municipal Airport System.
 - 1. General Civil Rights: Contractor agrees to comply with pertinent statutes, Executive

Orders and such rules as are promulgated to ensure that no person shall, on the grounds of race, creed, color, national origin, sex, age, or disability be excluded from participating in any activity conducted with or benefiting from Federal Assistance. This provision binds Contractor and subtier contractors from the bid solicitation period through the completion of the contract. This provision is in addition to that required of Title VI of the Civil Rights Act of 1964.

- 2. Federal Fair Labor Standards Act: This Contract incorporates by reference the provisions of 29 C.F.R. Part 201, the Federal Fair Labor Standards Act ("FLSA"), with the same force and effect as if given in full text. The FLSA sets minimum wage, overtime pay, recordkeeping, and child labor standards for full and part-time workers. Contractor agrees to incorporate by reference the provisions of FLSA in all contracts and subcontracts resulting from this Contract. Contractor has full responsibility to monitor compliance to the referenced regulation. Contractor must address any claims or disputes arising from this requirement directly with the U.S. Department of Labor Wage and Hour Division.
- 3. Occupational Safety and Health Act: This Contract incorporates by reference the requirements of 29 C.F.R. Part 1910 with the same force and effect as if given in full text. Contractor must provide a work environment that is free from recognized hazards that may cause death or serious physical harm to the employee. Contractor retains full responsibility to monitor its compliance and any subcontractor's compliance with the applicable requirements of the Occupational Safety and Health Act of 1970 (29 C.F.R. Part 1910). Contractor must address any claims or disputes that pertain to a referenced requirement directly with the U.S. Department of Labor Occupational Safety and Health Administration.
- 4. Contractor covenants it will include the provisions of this section in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Federal Acts, Regulations and directives issued pursuant thereto. Contractor covenants it will take action with respect to any subcontract or procurement as City or the FAA may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if Contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, Contractor may request City to enter into any litigation to protect the interests of City. In addition, Contractor may request the United States to enter into the litigation to protect the interests of the United States.

ARTICLE XXX. CITY EXECUTION OF CONTRACT

This Contract is expressly subject to, and shall become effective upon, the execution of all signatories of the City and, if required, the approval of Denver City Council. This Contract may be executed in two or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same.

ARTICLE XXXI. ELECTRONIC SIGNATURES AND ELECTRONIC RECORDS



The Contract, and any other documents requiring a signature hereunder, may be signed electronically by the City and/or Contractor in the manner specified by the City. The Parties agree not to deny the legal effect or enforceability of the Contract solely because it is in electronic form or because an electronic record was used in its formation. The Parties agree not to object to the admissibility of the Contract in the form of an electronic record, or a paper copy of an electronic document, or a paper copy of a document bearing an electronic signature, on the ground that it is an electronic record or electronic signature or that it is not in its original form or is not an original.



EXHIBIT A

Standard Federal Assurances and Nondiscrimination Non-Federal Contract Provision

A5 CIVIL RIGHTS - GENERAL

A5.3.1 Clause that is used for Contracts

GENERAL CIVIL RIGHTS PROVISIONS

The Contractor agrees to comply with pertinent statutes, Executive Orders and such rules as are promulgated to ensure that no person shall, on the grounds of race, creed, color, national origin, sex, age, or disability be excluded from participating in any activity conducted with or benefiting from Federal assistance.

This provision binds the Contractor and subcontractors from the bid solicitation period through the completion of the contract. This provision is in addition to that required by Title VI of the Civil Rights Act of 1964.

A6 CIVIL RIGHTS - TITLE VI ASSURANCE

A6.3.1 Title VI Solicitation Notice

Title VI Solicitation Notice:

The (Name of Sponsor), in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 USC §§ 2000d to 2000d-4) and the Regulations, hereby notifies all bidders or offerors that it will affirmatively ensure that any contract entered into pursuant to this advertisement, [select disadvantaged business enterprises or airport concession disadvantaged business enterprises] will be afforded full and fair opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award.

A6.4 CONTRACT CLAUSES

A6.4.1 Title VI Clauses for Compliance with Nondiscrimination Requirements

Compliance with Nondiscrimination Requirements:

During the performance of this contract, the Contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "Contractor"), agrees as follows:

- 1. **Compliance with Regulations:** The Contractor (hereinafter includes consultants) will comply with the Title VI List of Pertinent Nondiscrimination Acts and Authorities, as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.
- 2. **Nondiscrimination:** The Contractor, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The Contractor will not participate directly or indirectly in the discrimination prohibited by the Nondiscrimination Acts and Authorities, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR part 21.

- 3. Solicitations for Subcontracts, including Procurements of Materials and Equipment: In all solicitations, either by competitive bidding or negotiation made by the Contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier will be notified by the Contractor of the contractor's obligations under this contract and the Nondiscrimination Acts and Authorities on the grounds of race, color, or national origin.
- 4. **Information and Reports:** The Contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the sponsor or the Federal Aviation Administration to be pertinent to ascertain compliance with such Nondiscrimination Acts and Authorities and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish the information, the Contractor will so certify to the sponsor or the Federal Aviation Administration, as appropriate, and will set forth what efforts it has made to obtain the information.
- 5. **Sanctions for Noncompliance:** In the event of a Contractor's noncompliance with the non-discrimination provisions of this contract, the sponsor will impose such contract sanctions as it or the Federal Aviation Administration may determine to be appropriate, including, but not limited to:
 - a. Withholding payments to the Contractor under the contract until the Contractor complies; and/or
 - b. Cancelling, terminating, or suspending a contract, in whole or in part.
- 6. **Incorporation of Provisions:** The Contractor will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations, and directives issued pursuant thereto. The Contractor will take action with respect to any subcontract or procurement as the sponsor or the Federal Aviation Administration may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the Contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, the Contractor may request the sponsor to enter into any litigation to protect the interests of the sponsor. In addition, the Contractor may request the United States to enter into the litigation to protect the interests of the United States.

A6.4.2 Title VI Clauses for Deeds Transferring United States Property CLAUSES FOR DEEDS TRANSFERRING UNITED STATES PROPERTY

The following clauses will be included in deeds effecting or recording the transfer of real property, structures, or improvements thereon, or granting interest therein from the United States pursuant to the provisions of the Airport Improvement Program grant assurances.

NOW, THEREFORE, the Federal Aviation Administration as authorized by law and upon the condition that the (*Title of Sponsor*) will accept title to the lands and maintain the project

constructed thereon in accordance with (*Name of Appropriate Legislative Authority*), for the (Airport Improvement Program or other program for which land is transferred), and the policies and procedures prescribed by the Federal Aviation Administration of the U.S. Department of Transportation in accordance and in compliance with all requirements imposed by Title 49, Code of Federal Regulations, U.S. Department of Transportation, Subtitle A, Office of the Secretary, Part 21, Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation pertaining to and effectuating the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252; 42 USC § 2000d to 2000d-4), does hereby remise, release, quitclaim and convey unto the (*Title of Sponsor*) all the right, title and interest of the U.S. Department of Transportation/Federal Aviation Administration in and to said lands described in (*Exhibit A attached hereto or other exhibit describing the transferred property*) and made a part hereof.

(HABENDUM CLAUSE)

TO HAVE AND TO HOLD said lands and interests therein unto (*Title of Sponsor*) and its successors forever, subject, however, to the covenants, conditions, restrictions and reservations herein contained as follows, which will remain in effect for the period during which the real property or structures are used for a purpose for which Federal financial assistance is extended or for another purpose involving the provision of similar services or benefits and will be binding on the (*Title of Sponsor*), its successors and assigns.

The (*Title of Sponsor*), in consideration of the conveyance of said lands and interests in lands, does hereby covenant and agree as a covenant running with the land for itself, its successors and assigns, that (1) no person will on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination with regard to any facility located wholly or in part on, over, or under such lands hereby conveyed [,] [and]* (2) that the (Title of Sponsor) will use the lands and interests in lands and interests in lands so conveyed, in compliance with all requirements imposed by or pursuant to Title 49, Code of Federal Regulations, U.S. Department of Transportation, Subtitle A, Office of the Secretary, Part 21, Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation, Effectuation of Title VI of the Civil Rights Act of 1964, and as said Regulations and Acts may be amended[, and (3) that in the event of breach of any of the above-mentioned nondiscrimination conditions, the Department will have a right to enter or re-enter said lands and facilities on said land, and that above described land and facilities will thereon revert to and vest in and become the absolute property of the Federal Aviation Administration and its assigns as such interest existed prior to this instruction].*

(*Reverter clause and related language to be used only when it is determined that such a clause is necessary in order to make clear the purpose of Title VI.)

A6.4.3 Title VI Clauses for Transfer of Real Property Acquired or Improved Under the Activity, Facility, or Program

CLAUSES FOR TRANSFER OF REAL PROPERTY ACQUIRED OR IMPROVED UNDER THE AIRPORT IMPROVEMENT PROGRAM

The following clauses will be included in (deeds, licenses, leases, permits, or similar instruments) entered into by the (*Title of Sponsor*) pursuant to the provisions of the Airport Improvement Program grant assurances.

- A. The (grantee, lessee, permittee, etc. as appropriate) for himself/herself, his/her heirs, personal representatives, successors in interest, and assigns, as a part of the consideration hereof, does hereby covenant and agree [in the case of deeds and leases add "as a covenant running with the land"] that:
 - 1. In the event facilities are constructed, maintained, or otherwise operated on the property described in this (deed, license, lease, permit, etc.) for a purpose for which a Federal Aviation Administration activity, facility, or program is extended or for another purpose involving the provision of similar services or benefits, the (grantee, licensee, lessee, permittee, etc.) will maintain and operate such facilities and services in compliance with all requirements imposed by the Nondiscrimination Acts and Regulations listed in the Pertinent List of Nondiscrimination Authorities (as may be amended) such that no person on the grounds of race, color, or national origin, will be excluded from participation in, denied the benefits of, or be otherwise subjected to discrimination in the use of said facilities.
- B. With respect to licenses, leases, permits, etc., in the event of breach of any of the above Nondiscrimination covenants, (*Title of Sponsor*) will have the right to terminate the (lease, license, permit, etc.) and to enter, re-enter, and repossess said lands and facilities thereon, and hold the same as if the (lease, license, permit, etc.) had never been made or issued.*
- C. With respect to a deed, in the event of breach of any of the above Nondiscrimination covenants, the (*Title of Sponsor*) will have the right to enter or re-enter the lands and facilities thereon, and the above described lands and facilities will there upon revert to and vest in and become the absolute property of the (*Title of Sponsor*) and its assigns.*

(*Reverter clause and related language to be used only when it is determined that such a clause is necessary to make clear the purpose of Title VI.)

A6.4.4 Title VI Clauses for Construction/Use/Access to Real Property Acquired Under the Activity, Facility or Program

CLAUSES FOR CONSTRUCTION/USE/ACCESS TO REAL PROPERTY ACQUIRED UNDER THE ACTIVITY, FACILITY OR PROGRAM

The following clauses will be included in deeds, licenses, permits, or similar instruments/agreements entered into by (*Title of Sponsor*) pursuant to the provisions of the Airport Improvement Program grant assurances.

A. The (grantee, licensee, permittee, etc., as appropriate) for himself/herself, his/her heirs, personal representatives, successors in interest, and assigns, as a part of the consideration hereof, does hereby covenant and agree (in the case of deeds and leases add, "as a covenant running with the land") that (1) no person on the ground of race, color, or

national origin, will be excluded from participation in, denied the benefits of, or be otherwise subjected to discrimination in the use of said facilities, (2) that in the construction of any improvements on, over, or under such land, and the furnishing of services thereon, no person on the ground of race, color, or national origin, will be excluded from participation in, denied the benefits of, or otherwise be subjected to discrimination, (3) that the (grantee, licensee, lessee, permittee, etc.) will use the premises in compliance with all other requirements imposed by or pursuant to the List of discrimination Acts And Authorities.

- B. With respect to (licenses, leases, permits, etc.), in the event of breach of any of the above nondiscrimination covenants, (*Title of Sponsor*) will have the right to terminate the (license, permit, etc., as appropriate) and to enter or re-enter and repossess said land and the facilities thereon, and hold the same as if said (license, permit, etc., as appropriate) had never been made or issued.*
- C. With respect to deeds, in the event of breach of any of the above nondiscrimination covenants, (*Title of Sponsor*) will there upon revert to and vest in and become the absolute property of (*Title of Sponsor*) and its assigns. *

(*Reverter clause and related language to be used only when it is determined that such a clause is necessary to make clear the purpose of Title VI.)

A6.4.5 Title VI List of Pertinent Nondiscrimination Acts and Authorities Title VI List of Pertinent Nondiscrimination Acts and Authorities

During the performance of this contract, the Contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "Contractor") agrees to comply with the following non-discrimination statutes and authorities; including but not limited to:

- Title VI of the Civil Rights Act of 1964 (42 USC § 2000d et seq., 78 stat. 252) (prohibits discrimination on the basis of race, color, national origin);
- 49 CFR part 21 (Non-discrimination in Federally-assisted programs of the Department of Transportation—Effectuation of Title VI of the Civil Rights Act of 1964);
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 USC § 4601) (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- Section 504 of the Rehabilitation Act of 1973 (29 USC § 794 et seq.), as amended (prohibits discrimination on the basis of disability); and 49 CFR part 27;
- The Age Discrimination Act of 1975, as amended (42 USC § 6101 et seq.) (prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982 (49 USC § 471, Section 47123), as amended (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987 (PL 100-209) (broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, the Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of

the terms "programs or activities" to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);

- Titles II and III of the Americans with Disabilities Act of 1990, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 USC §§ 12131 12189) as implemented by U.S. Department of Transportation regulations at 49 CFR parts 37 and 38;
- The Federal Aviation Administration's Nondiscrimination statute (49 USC § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures nondiscrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;
- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);
- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 USC 1681 et seq).

A17 FEDERAL FAIR LABOR STANDARDS ACT (FEDERAL MINIMUM WAGE) A17.3 SOLICITATION CLAUSE

All contracts and subcontracts that result from this solicitation incorporate by reference the provisions of 29 CFR part 201, the Federal Fair Labor Standards Act (FLSA), with the same force and effect as if given in full text. The FLSA sets minimum wage, overtime pay, recordkeeping, and child labor standards for full and part-time workers.

The [Contractor | Consultant] has full responsibility to monitor compliance to the referenced statute or regulation. The [Contractor | Consultant] must address any claims or disputes that arise from this requirement directly with the U.S. Department of Labor – Wage and Hour Division.

A20 OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970 A20.3 CONTRACT CLAUSE

All contracts and subcontracts that result from this solicitation incorporate by reference the requirements of 29 CFR Part 1910 with the same force and effect as if given in full text. The employer must provide a work environment that is free from recognized hazards that may cause death or serious physical harm to the employee. The employer retains full responsibility to monitor its compliance and their subcontractor's compliance with the applicable requirements of

the Occupational Safety and Health Act of 1970 (20 CFR Part 1910). The employer must address any claims or disputes that pertain to a referenced requirement directly with the U.S. Department of Labor – Occupational Safety and Health Administration.

LXHIBIT B

CITY AND COUNTY OF DENVER RULES AND REGULATIONS AND BID CONDITIONS OF THE MANAGER OF PUBLIC WORKS

PERTAINING TO EQUAL EMPLOYMENT OPPORTUNITY IN THE CITY AND COUNTY OF DENVER

APPROVED FOR LEGALITY:	APPROVED AND ADOPTED:
/s/ Attorney for the City and	/s/ Manager of Public Works
County of Denver	ŭ

Adopted and Published Pursuant to Article 111, Division 2 of Chapter 28 the Revised Municipal Code of the City and County of Denver

These Rules and Regulations cancel and supersede any and all previous issued Rules and Regulations on the subject

RULES AND REGULATIONS REGARDING EQUAL EMPLOYMENT OPPORTUNITY

Promulgated and adopted by the Manager of Public Works pursuant to and by authority of Article III, Division 2, Chapter 28 of the Revised Municipal Code of the City and County of Denver, and for the purpose of insuring that contractors. subcontractors and suppliers soliciting and receiving compensation for contract work from or through the City and County of Denver provide equal opportunity in employment without regard to race, color, creed, sex, national origin, age, religion, marital status, political opinion or affiliation or mental or physical handicap and meet certain requirements for the hiring' training promotion and treatment during employment of members of ethnic groups subjected to differential treatment, including persons of African descent (Black), Spanish-surnamed (Hispanic), Asian-American and American Indian groups.

RULE I DEFINITIONS

- A. "City" means the City and County of Denver.
- B. "Manager" shall mean the Manager of Public Works for the City and County of Denver.
- C. "Contract" means a contract entered into with the City and County of Denver, financed in whole or in part by local resources or funds of the City and County of Denver, for the construction of any public building or prosecution or completion of any public work.
- D. "Contractor" means the original party to a contract with the City and County of Denver, also referred to as the "general" or "prime" contractor.
- E. "Director" means the Director of the Mayor's Office of Contract Compliance.
- F. "Subcontractor" means any person company, association, partnership, corporation, or other entity which assumes by subordinate agreement some or all of the obligations of the general or prime contractor.
- G. The Phrase "Bidding Specifications" as used in Article 111, Division 2 of Chapter 28 of the Revised Municipal Code shall include BID CONDITION, INVITATION TO BID AND NOTICE OF PROPOSAL.
- H. "Affirmative Action Program" means a set of specific and result-oriented procedures or steps to which a contractor commits himself to apply every good faith effort to employ members of ethnic minority groups, to include persons of African descent (Black), Spanish surnamed (Hispanic), Asian-American, American Indians, and persons with mental or physical handicap.
- I. "Mayor's Office of Contract Compliance" means the City agency established pursuant to Article III, Division 1 of Chapter 28 of the Denver Revised Municipal Code.

RULE II NOTICE OF HEARING

When results of conciliation efforts are unsatisfactory to the Manager and he is informed in accordance with Article III, Division 2 of Chapter 28 of the Revised Municipal Code that a contractor or subcontractor has apparently failed to meet affirmative action and equal employment opportunity requirements after a reasonable period of notice to correct deficiencies, the Manager will, prior to imposition of any sanctions, afford the general contractor a hearing in order to determine whether the contractor or his subcontractors have failed to comply with the affirmative action and equal employment opportunity requirements of Article III, Division 2 of Chapter 28 of the Revised Municipal Code or of the contract. Written notice of such hearing shall be delivered personally or sent by certified mail return receipt requested, to the contractor and to any subcontractor involved at least ten days prior to the date scheduled for the hearing.

RULE III HEARING

- A. Contractors will appear at hearings and may be represented by counsel, and may present testimony orally and other evidence.
- B. Hearings shall be conducted by one or more hearing examiners designated as such by the Manager.
- C. The Director of the Mayor's Office of Contract Compliance may participate in hearings as a witness.
- D. Hearings shall be held at the place specified in the notice of hearing.
- E. All oral testimony shall be given under oath or affirmation and a record of such proceedings shall be made.
- F. All hearings shall be open to the public.
- G. The hearing officer shall make recommendations to the Manager who shall make a final decision.

REGULATIONS

REGULATION NO. 1. **ORDINANCE**: The Rules and Regulations of the Manager shall be inserted in the bidding specifications for every contract for which bidding is required.

REGULATION NO. 2. **EXEMPTIONS:** Each contract and subcontract, regardless of dollar amount, shall be subject to affirmative action requirements unless specifically exempted in writing individually by the Manager. Exemptions apply only to "affirmative action" in equal employment opportunity, and are not to be construed as condonation in any manner of "discrimination" or "discriminatory practices" in employment because of race, color, creed sex age national origin, religion, marital status, political opinion or mental or physical handicap.

REGULATION NO. 3. DIRECTOR OF CONTRACT COMPLIANCE: The Director of the Mayor's Office of Contract Compliance shall perform the duties assigned to such official by Article III, Division 2 of Chapter 28 of the Revised Municipal Code and by the Manager. (1) The Director of the Mayor's Office of Contract Compliance or designated representatives shall inform. bidders and contractors of affirmative action procedures, programs, and goals in accordance with the ordinance at pre-bid and pre-construction conference; (2) make regular on-site inspections; (3) supply contractors and subcontractors with report forms to be completed by them when requested, and furnished to the Director of the Mayor's Office of Contract Compliance; and (4) review payroll records, employment records and practices of general contractors and their subcontractors and suppliers during the performance of any contract. The Director of the Mayor's Office of Contract Compliance shall promptly report apparent affirmative action deficiencies to the Manager.

REGULATION NO. 4. GOALS AND TIMETABLES: In general, goals and timetables should take into account anticipated vacancies and the availability of skills in the market place from which employees should be drawn. In addition, where discrimination in employment by a general contractor or any of his subcontractors is indicated, a corrective action program will take into account the need by the general contractor and his subcontractors to correct past discriminatory practices and reach goals of minority manpower utilization on a timely basis through such recruiting and advertising efforts as are necessary and appropriate.

<u>REGULATION NO.5.</u> AWARD OF CONTRACTS: It shall be the responsibility of the Director of the Mayor's Office of Contract Compliance to determine the affirmative action capability of bidders, contractors and subcontractors and to recommend to the Manager the award of contracts to those bidders, contractors and subcontractors and suppliers who demonstrate the ability and willingness to comply with the terms of their contract.

<u>REGULATION NO. 6</u>. PUBLICATION AND DUPLICATION: Copies of these Rules and Regulations as amended by the Manager from time to time, shall as soon as practicable and after Notice being published will be made a part of all City Contracts.

REGULATION NO. 7. NOTICE TO PROCEED: Prior to issuance of Notice to Proceed a sign-off will be required of the Director of the Mayor's Office of Contract Compliance or his designee.

<u>REGULATION NO. 8</u>. **CONTRACTS WITH SUBCONTRACTORS:** To the greatest extent possible the contractor shall make a good faith effort to contract with minority contractors, subcontractors and suppliers for services and supplies by taking affirmative actions which include but are not limited to the following:

- 1. Advertise invitations for subcontractor bids in minority community news media.
- 2. Contact minority contractor organizations for referral of prospective subcontractors.
- 3. Purchase materials and supplies from minority material suppliers.

<u>REGULATION NO. 9.</u> AGENCY REFERRALS: it shall be no excuse that the union with which the contractor or subcontractor has an agreement providing for referral, exclusive or otherwise, failed to refer minority employees.

REGULATION NO. 10. CLAUSES: The Manager shall include the appropriate clauses in every contract and the contractor shall cause to be inserted in every subcontract the appropriate clauses:

- 1. **APPENDIX A:** City and County of Denver Equal Opportunity Clause-ALL CONTRACTS funded only with City & County of Denver monies.
- 2. APPENDIX B: Equal Opportunity Clause (11246)-ALL FEDERAL ASSISTED
- 3. APPENDIX C: Section 3-Assurance of Compliance-HUD ASSISTED PROJECTS.
- 4. APPENDIX D: Section 3-Clause-HUD ASSISTED PROJECTS.

All amendments to the appendices shall be included by reference.

<u>REGULATION NO. 11</u>. SHOW CAUSE NOTICES: When the Manager has reasonable cause to believe that a contractor has violated Article III, Division 2 of Chapter 28 of the Revised Municipal Code, he may issue a notice requiring the contractor to show cause, within fifteen days why enforcement procedures, or other appropriate action to insure compliance, should not be instituted.

REGULATION NO. 12. BID CONDITIONS-AFFIRMATIVE ACTION REQUIREMENTS- EQUAL EMPLOYMENT OPPORTUNITY:

1. APPENDIX E:

The Bid Conditions- Affirmative Action Requirements-Equal Employment Opportunity as amended and published by the U.S. Department of Labor, Employment Standards Administration, Office of Federal Contract Compliance, shall be inserted verbatim for bidding specification for every non-exempt contract involving the use of Federal funds.

2. APPENDIX F:

The Bid Conditions- Affirmative Action Requirements-Equal Employment Opportunity as published by the Department of Public Works, City and County of Denver shall be inserted verbatim as bidding specifications for every non-exempt contract using City funds.

APPENDIX A

CITY AND COUNTY OF DENVER EQUAL OPPORTUNITY CLAUSE-ALL CONTRACTS

- 1. The contractor will not discriminate against any employee or applicant for employment because of race creed, color, sex, age, national origin, religion, marital status, political opinion or affiliation, or mental or physical handicap. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, creed, color, sex, age, national origin, religion, marital status, political opinion or affiliation, or mental or physical handicap. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.
- 2. The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, creed, color, sex, age, national origin, religion, marital status, political opinion or affiliation, or mental or physical handicap.
- 3. The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided, advising the said labor union or workers' representatives of the contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
- 4. Each contractor will comply with all provisions of Article III, Division 2, Chapter 28 of the Revised Municipal Code, and the rules, regulations, and relevant orders of the Manager and Director.
- 5. The contractor will furnish all information and reports required by Article III, Division 2, Chapter 28 of the Revised Municipal Code, and by rules, regulations and orders of the Manager and Director or pursuant thereto, and will permit access to his books, records, and accounts by the Manager, Director or their designee for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
- 6. In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations or orders this contract may be cancelled, terminated., or suspended in whole or in part and the contractor may be declared ineligible for further City contracts in accordance with procedures authorized in Article III, Division 2, Chapter 28 of the Revised Municipal Code, or by rules, regulations, or order of the Manager.
- 7. The contractor will include Regulation 12 Paragraph 2 and the provisions of paragraphs (1) through (6) in every subcontract or purchase order unless, exempted by rules, regulations, or orders of the Manager issued pursuant to Article III, Division 2, Chapter 28 of the Revised Municipal Code, so that such provisions will be binding upon each subcontractor or suppliers. The contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance.

The applicant further agrees to be bound by the above equal opportunity clauses with respect to its own employment practices when it participates in City contracts. The contractor agrees to assist and cooperate actively with the Manager and the Director in obtaining compliance of subcontractors and suppliers with the equal opportunity clause and the rules, regulations and relevant orders of the Manager, and will furnish the Manager and the Director such information as they may require for the supervision of compliance, and will otherwise assist the Manager and Director in the discharge of the City's primary responsibility for securing compliance. The contractor further agrees to refrain from entering into any contract or contract modification subject to Article III, Division 2, Chapter 28 of the Revised Municipal Code with a contractor debarred from, or who has not demonstrated eligibility for, City contracts.

The contractor will carry out such sanctions and penalties for violation of the equal opportunity clause as may be imposed upon contractors and subcontractors by the Manager and Director. In addition, the contractor agrees that failure or refusal to comply with these undertakings the Manager may take any or all of the following actions:

- A. Cancellation, termination, or suspension in whole or in part of this contract.
- B. Refrain from extending any further assistance to the applicant under the program with respect to which the failure occurred until satisfactory assurance of future compliance has been received from such applicant.
- C. Refer the case to the City Attorney for appropriate legal proceedings.

SUBCONTRACTS: Each prime contractor or subcontractor shall include the equal opportunity clause in each of its subcontracts.

APPENDIX F BID CONDITIONS AFFIRMATIVE ACTION REQUIREMENTS EQUAL EMPLOYMENT OPPORTUNITY

For all Non-Exempt Construction Contracts to be Awarded by the City and County of Denver, Department of Public Works

NOTICE

EACH BIDDER, CONTRACTOR OR SUBCONTRACTOR (HEREINAFTER THE CONTRACTOR) MUST FULLY COMPLY WITH THE REQUIREMENTS OF THESE BID CONDITIONS AS TO EACH CONSTRUCTION TRADE IT INTENDS TO USE ON THIS CONSTRUCTION CONTRACT, AND ALL OTHER CONSTRUCTION WORK (BOTH CITY AND NON-CITY) IN THE DENVER AREA DURING THE PERFORMANCE OF THIS CONTRACT OR SUBCONTRACT. THE CONTRACTOR COMMITS ITSELF TO THE GOALS FOR MINORITY MANPOWER UTILIZATION, AS APPLICABLE, AND ALL OTHER REQUIREMENTS, TERMS AND CONDITION OF THESE BID CONDITIONS BY SUBMITTING A PROPERLY SIGNED BID.

THE CONTRACTOR SHALL APPOINT A COMPANY EXECUTIVE TO ASSUME THE RESPONSIBILITY FOR THE IMPLEMENTATION OF THE REQUIREMENTS, TERMS AND CONDITIONS OF THESE BID CONDITIONS.

EULOIS CLECKLEY

Manager of Public Works

City and County of Denver

A. REQUIREMENTS --AN AFFIRM ATIVE ACTION PLAN:

Contractors shall be subject to the provisions and requirements of these bid conditions including the goals and timetables for minority' and female utilization, and specific affirmative action steps set forth by the Office of Contract Compliance. The contractor's commitment to the goals for minority, and female utilization as required constitutes a commitment that it will make every good faith effort to meet such goals.

1. GOALS AND TIMETABLES:

The goals and timetables for minority¹ and female participation, expressed in percentage terms for the contractor's aggregate workforce in each trade are as follows:

GOALS FOR MINORITY PARTICIPATION FOR EACH TRADE

From January 1, 1982 to 6.9%

Until Further Notice

FOR EACH TRADE

GOALS FOR FEMALE PARTICIPATION

to 21.7% - 23.5% Until Further Notice

The goals for minority and female utilization above are expressed in terms of hours of training and employment as a proportion of the total number of hours to be worked by the contractor's aggregate workforce, which includes all supervisory personnel, in each trade, on all projects for the City and County of Denver during the performance of its contract (i.e., The period beginning with the first day of work on the City and County of Denver funded construction contract and ending with the last day of work).

The hours of minority and female employment and training must be substantially uniform throughout the length of the contract in each trade and minorities and females must be employed evenly on each of a contractor's projects. Therefore, the transfer of minority or female employees from contractor to contractor or from project to project for the purpose of meeting the contractor's goals shall be a violation of these Bid Conditions.

If the contractor counts the nonworking hours of apprentices they must be employed by the contractor during the training period; the contractor must have made a commitment to employ apprentices at the completion of their training subject to the availability of employment opportunities; and the apprentices must be trained pursuant to training programs approved by the Bureau of Apprenticeship and Training.

¹ "Minority" is defined as including, Blacks, Spanish Surname Americans, Asian-Americans, and American Indians, and includes both men and Minority women.

2. SPECIFIC AFFIRMATIVE ACTION STEPS:

No contractor shall be found to be in noncompliance solely on account of its failure to meet its goals, but will be given an opportunity to demonstrate that the contractor has instituted all the specific affirmative action steps specified and has made every good faith effort to make these steps work toward the attainment of its goals within the timetables, all to the purpose of expanding minority and female utilization in its aggregate workforce. A contractor, who fails to comply with its obligation under the Equal Opportunity Clause of its contract and fails to achieve its commitments to the goals for minority and female utilization has the burden of proving that it has engaged in an Affirmative Action Program directed at increasing minority and female utilization and that such efforts were at least as extensive and as specific as the following:

- a. The contractor should have notified minority and female organizations when employment opportunities were available and should have maintained records of the organization's response.
- b. The contractor should have maintained a file of the names and addresses of each minority and female referred to it by any individual or organization and what action was taken with respect to each such referred individual, and if the individual was not employed by the contractor, the reasons. If such individual was sent to the union hiring hall for referral and not referred back by the union or if referred, not employed by the contractor, the file should have documented this and their reasons.
- c. The contractor should have promptly notified the Department of Public Works, and Mayor's Office of Contract Compliance when the union or unions with which the contractor has collective bargaining agreements did not refer to the contractor a minority or female sent by the contractor, or when the contractor has other information that the union referral process has impeded efforts to meet its goals.
- d. The contractor should have disseminated its EEO policy within its organization by including it in any employee handbook or policy manual; by publicizing it in company newspapers and annual reports and by advertising such policy at reasonable intervals in union publications. The EEO policy should be further disseminated by conducting staff meetings to explain and discuss the policy; by posting of the policy; and by review of the policy with minority and female employees.
- e. The contractor should have disseminated its EEO policy externally by informing and discussing it with all recruitment sources; by advertising in news media, specifically including minority and female news media; and by notifying and discussing it with all subcontractors.
- f. The contractor should have made both specific and reasonably recurrent written and oral recruitment efforts. Such efforts should have been directed at minority and female organizations, schools with substantial minority and female enrollment, and minority and female recruitment and training organizations within the contractor's recruitment area.

- g. The contractor should have evidence available for inspection that all tests and other selection techniques used to select from among candidates for hire, transfer, promotion, training, or retention are being used in a manner that does not violate the OFCCP Testing Guidelines in 41 CFR Part 60-3.
- h. The contractor should have made sure that seniority practices and job classifications do not have a discriminatory effect.
- i. The contractor should have made certain that all facilities are not segregated by race.
- j. The contractor should have continually monitored all personnel activities to ensure that its EEO policy was being carried out including the evaluation of minority and female employees for promotional opportunities on a quarterly basis and the encouragement of such employees to seek those opportunities.
- k. The contractor should have solicited bids for subcontracts from available minority and female subcontractors engaged in the trades covered by these Bid conditions, including circulation of minority and female contractor associations.

NOTE: The Director and the Mayor's Office of Contract Compliance will provide technical assistance on questions pertaining to minority and female recruitment sources, minority and female community organizations, and minority and female news media upon receipt of a request for assistance from a contractor.

3. **NON-DISCRIMINATION**:

In no event may a contractor utilize the goals and affirmative action steps required in such a manner as to cause or result in discrimination against any person on account of race, color, religion, sex, marital status, national origin, age, mental or physical handicap, political opinion or affiliation.

4. **COMPLIANCE AND ENFORCEMENT**:

In all cases, the compliance of a contractor will be determined in accordance with its obligations under the terms of these Bid Conditions. All contractors performing or to perform work on projects subject to these Bid Conditions hereby agree to inform their subcontractors in writing of their respective obligations under the terms and requirements of these Bid Conditions, including the provisions relating to goals of minority and female employment and training.

A. Contractors Subject to these Bid Conditions:

In regard to these Bid Conditions, if the contractor meets the goals set forth therein or can demonstrate that it has made every good faith effort to meet these goals, the contractor shall be presumed to be in compliance with Article III, Division 2, Chapter 28 of the Revised Municipal Code, the implementing regulations and its obligations under these Bid Conditions. In the event, no formal sanctions or proceedings leading toward sanctions shall be instituted unless the contracting or administering agency otherwise determines that the contractor is violating the Equal Opportunity Clause.

1. Where the Office of Contract Compliance finds that a contractor failed to comply with the requirements of Article 111, Division 2, Chapter 28 of the Revised Municipal

Code or the implementing regulations and the obligations under these Bid Conditions, and so informs the Manager, the Manager shall take such action and impose such sanctions, which include suspension, termination, cancellation, and debarment, as may be appropriate under the Ordinance and its regulations. When the Manager proceeds with such formal action it has the burden of proving that the contractor has not met the goals contained in these Bid Conditions. The contractor's failure to meet its goals shall shift to it the requirement to come forward with evidence to show that it has met the good faith requirements of these Bid Conditions.

- 2. The pendency of such proceedings shall be taken into consideration by the Department of Public Works in determining whether such contractor can comply with the requirements of Article 111, Division 2, Chapter 28 of the Revised Municipal Code, and is therefore a "responsible prospective contractor".
- 3. The Mayor's Office of Contract Compliance shall review the contractor's employment practices during the performance of the contract. If the Mayor's Office of Contract Compliance determines that the contractor's Affirmative Action Plan is no longer an acceptable program, the Director shall notify the Manager.

B. Obligations Applicable to Contractors:

It shall be no excuse that the union with which the contractor has a collective bargaining agreement providing for exclusive referral failed to refer minority or female employees. Discrimination in referral for employment, even if pursuant to provisions of a collective bargaining agreement, is prohibited by the National Labor Relations Act, as amended, Title VI of the Civil Rights Act of 1964, as amended, and Article III, Division 2, Chapter 28 of the Revised Municipal Code. It is the policy of the Department of Public Works that contractors have a responsibility to provide equal employment opportunity, if they wish to participate in City and County of Denver contracts. To the extent they have delegated the responsibility for some of their employment practices to a labor organization and, as a result, are prevented from meeting their obligations pursuant to Article III, Division 2, Chapter 28 of the Revised Municipal Code, such Contractors cannot be considered to be in compliance with Article III, Division 2, Chapter 28 of the Revised Municipal Code, or its implementing rules and regulations.

C. <u>General Requirements</u>

Contractors are responsible for informing their subcontractors in writing regardless of tier, as to their respective obligations. Whenever a contractor subcontracts a portion of work in any trade covered by these Bid Conditions, it shall include these Bid Conditions in such subcontracts and each subcontractor shall be bound by these Bid Conditions to the full extent as if it were the prime contractor. The contractor shall not, however, be held accountable for the failure of its subcontractors to fulfill their obligations under these Bid Conditions. However, the prime contractor shall give notice to the Director of any refusal or failure of any subcontractor to fulfill the obligations under these Bid Conditions. A subcontractor's failure to comply will be treated in the same manner as such failure by a prime contractor.

- Contractors hereby agree to refrain from entering into any contract or contract
 modification subject to Article 111, Division 2, Chapter 28 of the Revised
 Municipal Code with a contractor debarred from, or who is determined not to be
 a "responsive" bidder for the City and County of Denver contracts pursuant to
 the Ordinance.
- 2. The contractor shall carry out such sanctions and penalties for violation of these Bid Conditions and the Equal Opportunity Clause including suspension, termination and cancellation of existing subcontracts and debarment from future contracts as may be ordered by the Manager pursuant to Article 111, Division 2, Chapter 28 of the Revised Municipal Code and its implementing regulations.
- 3. Nothing herein is intended to relieve any contractor during the term of its contract from compliance with Article III, Division 2, Chapter 28 of the Revised Municipal Code, and the Equal Opportunity Clause of its contract with respect to matters not covered in these Bid Conditions.
- 4. Contractors must keep such records and file such reports relating to the provisions of these Bid Conditions as shall be required by the Office of Contract Compliance.
- 5. Requests for exemptions from these Bid Conditions must be made in writing, with justification, to the Manager of Public Works, City and County Building, Room 379, Denver, Colorado 80202, and shall be forwarded through and with the endorsement of the Director.

EXHIBIT D



TO: All Users of the City and County of Denver Prevailing Wage Schedules

FROM: Ryland Feno, Classification & Compensation Technician II

DATE: August 31, 2020

SUBJECT: Latest Change to Prevailing Wage Schedules

The effective date for this publication will be **Friday**, **August 28**, **2020** and applies to the City and County of Denver for **HEAVY CONSTRUCTION PROJECTS** in accordance with the Denver Revised Municipal Code, Section 20-76(c).

General Wage Decision No. CO20200002 Superseded General Decision No. CO20190002 Modification No. 2 Publication Date: 08/28/2020 (6 pages)

Unless otherwise specified in this document, apprentices shall be permitted only if they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor (DOL). The employer and the individual apprentice must be registered in a program which has received prior approval by the DOL. Any employer who employs an apprentice and is found to be in violation of this provision shall be required to pay said apprentice the full journeyman scale.

Attachments as listed above.

*Career Service Board approved to adjust all Davis Bacon classifications under \$13.00 to comply with the city's minimum wage. The effective date is August 15, 2019. See page 7 for reference.

Office of Human Resources

201 W. Colfax Ave. Dept. 412 | Denver, CO 80202 p: 720.913.5751 | f: 720.913.5720 www.denvergov.org/humanresources "General Decision Number: CO20200002 08/28/2020

Superseded General Decision Number: CO20190002

State: Colorado

Construction Type: Heavy

Counties: Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, El Paso, Jefferson, Larimer, Mesa, Pueblo and Weld

Counties in Colorado.

HEAVY CONSTRUCTION PROJECTS

Note: Under Executive Order (EO) 13658, an hourly minimum wage of \$10.80 for calendar year 2020 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least \$10.80 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2020. If this contract is covered by the EO and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must pay workers in that classification at least the wage rate determined through the conformance process set forth in 29 CFR 5.5(a)(1)(ii) (or the EO minimum wage rate, if it is higher than the conformed wage rate). The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification	Number	Publication	Date
0		01/03/2020	
1		01/31/2020	
2		08/28/2020	

ASBE0028-001 07/01/2019

Rates Fringes

Asbestos Workers/Insulator (Includes application of

all insulating materials, protective coverings, coatings and finishings to all types of mechanical systems)	\$ 32.98	14.73				
BRC00007-004 01/01/2019						
ADAMS, ARAPAHOE, BOULDER, BROOM JEFFERSON AND WELD COUNTIES	FIELD, DENVER	, DOUGLAS,				
	Rates	Fringes				
BRICKLAYER	\$ 29.52	10.48				
BRC00007-006 05/01/2018						
EL PASO AND PUEBLO COUNTIES						
	Rates	Fringes				
BRICKLAYER	\$ 25.88	10.34				
ELEC0012-004 06/01/2019						
PUEBLO COUNTY						
	Rates	Fringes				
ELECTRICIAN Electrical contract over \$1,000,000 Electrical contract under \$1,000,000	\$ 24.85					
ELEC0068-001 06/01/2019						
	ADAMS, ARAPAHOE, BOULDER, BROOMFIELD, DENVER, DOUGLAS, JEFFERSON, LARIMER, AND WELD COUNTIES					
	Rates	Fringes				
ELECTRICIAN	\$ 36.50	16.18				
ELEC0111-001 03/01/2019						
	Rates	Fringes				
Line Construction: Groundman	\$ 20.41	13.75%+\$6.20				

Line Equipment Operator Lineman and Welder	\$ 44.92	
* ELEC0113-002 02/01/2020		
EL PASO COUNTY		
	Rates	Fringes
ELECTRICIAN		
ELEC0969-002 06/01/2019		
MESA COUNTY		
	Rates	Fringes
ELECTRICIAN		10.06
* ENGI0009-001 05/01/2020		
	Rates	Fringes
Power equipment operators: Blade: Finish	\$ 30.37 \$ 30.20 \$ 30.47 \$ 31.55 \$ 33.67 \$ 29.67 \$ 30.53 \$ 29.29 \$ 30.20	11.15 11.15 11.15 11.15 11.15 11.15 11.15 11.15 11.15 11.15 11.15
IRON0024-003 11/01/2019	_	
	Rates	Fringes
Ironworkers: Structural		22.26
LABO0086-001 05/01/2009		

Rates Fringes

Laborers: Pipelayer		6.78		
PLUM0003-005 06/01/2017				
ADAMS, ARAPAHOE, BOULDER, BROOME JEFFERSON, LARIMER AND WELD COUN		DOUGLAS,		
	Rates	Fringes		
PLUMBER				
PLUM0058-002 07/01/2018				
EL PASO COUNTY				
	Rates	Fringes		
Plumbers and Pipefitters	\$ 32.75	14.85		
PLUM0058-008 07/01/2018				
PUEBLO COUNTY				
	Rates	Fringes		
Plumbers and Pipefitters	\$ 32.75	14.85		
PLUM0145-002 07/01/2016				
MESA COUNTY				
	Rates	Fringes		
Plumbers and Pipefitters		11.70		
PLUM0208-004 06/01/2016				
ADAMS, ARAPAHOE, BOULDER, BROOMFIELD, DENVER, DOUGLAS, JEFFERSON, LARIMER AND WELD COUNTIES				
	Rates	Fringes		
PIPEFITTER		16.62		
SHEE0009-002 07/01/2019				
	Rates	Fringes		

Sheet metal worker	\$ 34.62	17.95
TEAM0455-002 07/01/2019		
	Rates	Fringes
Truck drivers: Pickup Tandem/Semi and Water		4.42 4.42
SUCO2001-006 12/20/2001		
	Rates	Fringes
BOILERMAKER	\$ 17.60	
Carpenters: Form Building and Setting All Other Work		2.74 3.37
Cement Mason/Concrete Finisher	\$ 17.31	2.85
IRONWORKER, REINFORCING	\$ 18.83	3.90
Laborers: Common	\$ 8.91	2.92 3.80 3.21
Painters: Brush, Roller & Spray	\$ 15.81	3.26
Power equipment operators: Backhoe	\$ 17.24 \$ 15.37	2.48 3.23 4.41

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

Office of Human Resources Supplemental Rates (Specific to the Denver Projects) (Supp #74, Revised: 08-21-2019)

Classification		Base	Fringe
Ironworker	Ornamental	\$24.80	\$10.03
Laborer	Group 1	\$18.18	\$8.27
	Group 2	\$21.59	\$8.61
Laborer (Common)		\$13.00	\$2.92
Laborer (Flagger)		\$13.00	\$3.80
Laborer (Landscape)		\$13.00	\$3.21
Laborer (Janitor)	Janitor/Yardmen	\$17.68	\$8.22
Laborer (Asbestos)	Removal of Asbestos	\$21.03	\$8.55
Laborer (Tunnel)	Group 1	\$18.53	\$8.30
	Group 2	\$18.63	\$8.31
	Group 3	\$19.73	\$8.42
	Group 4	\$21.59	\$8.61
	Group 5	\$19.68	\$8.42
Line Construction	Lineman, Gas Fitter/Welder	\$36.88	\$9.55
	Line Eq Operator/Line Truck		
	Crew	\$25.74	\$8.09
Millwright		\$28.00	\$10.00
Power Equipment Operator	Group 1	\$22.97	\$10.60
	Group 2	\$23.32	\$10.63
	Group 3	\$23.67	\$10.67
	Group 4	\$23.82	\$10.68
	Group 5	\$23.97	\$10.70
	Group 6	\$24.12	\$10.71
	Group 7	\$24.88	\$10.79
Power Equipment Operator (Tunnels above and			
below ground, shafts and raises):	Group 1	\$25.12	\$10.81
	Group 2	\$25.47	\$10.85
	Group 3	\$25.57	\$10.86
	Group 4	\$25.82	\$10.88
	Group 5	\$25.97	\$10.90
	Group 6	\$26.12	\$10.91
	Group 7	\$26.37	\$10.94
Truck Driver	Group 1	\$18.42	\$10.00
	Group 2	\$19.14	\$10.07
	Group 3	\$19.48	\$10.11
	Group 4	\$20.01	\$10.16
	Group 5	\$20.66	\$10.23
	Group 6	\$21.46	\$10.31

Go to http://www.denvergov.org/Auditor to view the Prevailing Wage Clarification Document for a list of complete classifications used.

City and County of Denver



DEPARTMENT OF AVIATION DEPARTMENT OF PUBLIC WORKS

STANDARD SPECIFICATIONS FOR CONSTRUCTION GENERAL CONTRACT CONDITIONS

2011 Edition

Statement

The City and County of Denver does not warrant or represent the accuracy or timeliness of the information contained in this page or any of its constituent pages and the information presented is for instructional purposes and illustration only and is not intended to be specific advice, legal or otherwise. The City has made every effort to provide accurate up-to-date information, however this database is dynamic and errors can occur. The City and County of Denver shall not be held responsible for errors or omissions nor be liable for any special consequential or exemplary damages resulting, in whole or in part, from any viewer(s)' uses of, or in reliance upon, this material.

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PERFORMANCE BOND

KNOW ALL MEN BY THESE F	PRESENTS, that we, the undersigned	<u>[B</u>	<u>Bidder name]</u> ,
a corporation organized und	ler the laws of the State of	[Bidder state], hereina	after referred
to as the "Contractor" and _	[Bond issuer], a corp	poration organized under th	ne laws of the
State of	[Bond company state], and authori	ized to transact business in	the State of
Colorado, hereinafter referr	ed to as Surety, are held and firmly	y bound unto the CITY AND	COUNTY OF
DENVER, a municipal corpor	ration of the State of Colorado, here	einafter referred to as the '	"CITY", in the
penal sum of	[Bid amount text]] Dollars (\$), lawful
money of the United States	of America, for the payment of wh	iich sum the Contractor and	d Surety bind
themselves and their heirs,	executors, administrators, successor	ors and assigns, jointly and	l severally by
these presents.			

WHEREAS, the above Contractor has, as of the date of execution listed on the contract signature page, entered into a written contract with the City for furnishing all labor, materials, equipment, tools, superintendence, and other facilities and accessories for the construction of Contract No. 202056250, Tunnel Sewer Repairs, Denver International Airport, in accordance with the Technical Specifications, Contract Drawings and all other Contract Documents therefor which are incorporated herein by reference and made a part hereof, and are herein referred to as the Contract.

NOW, THEREFORE, the condition of this performance bond is such that if the Contractor:

- 1. Promptly and faithfully observes, abides by and performs each and every covenant, condition and part of said Contract, including, but not limited to, its warranty provisions, in the time and manner prescribed in the Contract, and
- 2. Pays the City all losses, damages (liquidated or actual, including, but not limited to, damages caused by delays in the performance of the Contract), expenses, costs and attorneys' fees, that the City sustains resulting from any breach or default by the Contractor under the Contract, then this bond is void; otherwise, it shall remain in full force and effect.

IN ADDITION, if said Contractor fails to duly pay for any labor, materials, team hire, sustenance, provisions, provender, or any other supplies used or consumed by said Contractor or its subcontractors in its performance of the work contracted to be done or fails to pay any person who supplies rental machinery, tools, or equipment, all amounts due as the result of the use of such machinery, tools, or equipment in the prosecution of the work, the Surety shall pay the same in an amount not exceeding the amount of this obligation, together with interest as provided by law.

PROVIDED FURTHER, that the said Surety, for value received, hereby stipulates and agrees that any and all changes in the Contract or compliance or noncompliance with the formalities in the Contract for making such changes shall not affect the Surety's obligations under this bond and the Surety hereby waives notice of any such changes.

(End of Page)

IN WITNESS WHEREOF , said Contractor and said day of	Surety have executed these presents as of this
day 01	
	CONTRACTOR
	Ву:
	President
	SURETY
	Ву:
	Attorney-in-Fact
(Accompany this bond with Attorney-in-Fact's au	uthority from the Surety to execute bond, certified to
include the date of the bond.)	CITY AND COUNTY OF DENVER
	By: MAYOR
	By: Chief Executive Officer
	Denver International Airport
	APPROVED AS TO FORM:
	KRISTIN M. BRONSON, Attorney for the
	City and County of Denver
	Ву:
	Assistant City Attorney

ALL

MEN

BY

THESE

KNOW

undersigned

the

PAYMENT BOND

PRESENTS.

that

we.

	, ,
	[Proposer name], a corporation organized under the
aws of the State of	[Proposer state], hereinafter referred to as the "Contractor" and
	[Bonding company name], a corporation organized under the laws of the
State of	[Bonding company state], and authorized to transact business in the State
of Colorado, hereinafter refe	rred to as Surety, are held and firmly bound unto the CITY AND COUNTY OF
DENVER, a municipal corpor	ation of the State of Colorado, hereinafter referred to as the "CITY", in the
penal sum of	[Proposal amount text]
Dollars (\$), lawful money of the United States of America, for the payment of
which sum the Contractor	and Surety bind themselves and their heirs, executors, administrators,
successors and assigns, joint	y and severally, firmly by these presents.
WHEREAS, the above Contra	ctor has entered into a written contract with the City for furnishing all labor,
materials, tools, superintend	ence, and other facilities and accessories for the construction of Contract No.
	Denver International Airport, in accordance with the Technical
Specifications, Contract Dra	wings and all other Contract Documents therefor which are incorporated
nerein by reference and mad	e a part hereof, and are herein referred to as the Contract.

NOW, **THEREFORE**, the condition of this payment bond obligation is such that if the Contractor shall at all times promptly make payments of all amounts lawfully due to all persons supplying or furnishing it or its subcontractors with labor and materials, rental machinery, tools, or equipment, used or performed in the prosecution of work provided for in the above Contract and shall indemnify and save harmless the City to the extent of any and all payments in connection with the carrying out of such Contract which the City may be required to make under the law, then this obligation shall be null and void, otherwise, it shall remain in full force and effect;

PROVIDED FURTHER, that the said Surety, for value received, hereby stipulates and agrees that any and all changes in the Contract, or compliance or noncompliance with the formalities in the Contract for making such changes shall not affect the Surety's obligations under this bond and the Surety hereby waives notice of any such changes.

[END OF PAGE]

N WITNESS WHEREOF , said Contractor and day of	d said Surety have executed these presents as of this
	CONTRACTOR
	2
	By: President
	SURETY
	By: Attorney-in-Fact
nclude the date of the bond.)	CITY AND COUNTY OF DENVER
	By: MAYOR
	By: Chief Executive Officer Denver International Airport
	APPROVED AS TO FORM:
	KRISTIN M. BRONSON, Attorney for the City and County of Denver
	By: Assistant City Attorney

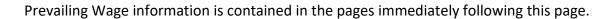
XIII. ATTACHMENT 7, CERTIFICATE OF GOOD STANDING

CERTIFICATE OF GOOD STANDING

Please submit a Certificate of Good Standing from the Office of the Secretary of the State of Colorado for the proposing entity.

XIV. PREVAILING WAGES

PREVAILING WAGES



These pages are not included in the page numbering of this Contract document

EXHIBIT D



TO: All Users of the City and County of Denver Prevailing Wage Schedules

FROM: Ryland Feno, Classification & Compensation Technician II

DATE: August 31, 2020

SUBJECT: Latest Change to Prevailing Wage Schedules

The effective date for this publication will be **Friday**, **August 28**, **2020** and applies to the City and County of Denver for **HEAVY CONSTRUCTION PROJECTS** in accordance with the Denver Revised Municipal Code, Section 20-76(c).

General Wage Decision No. CO20200002 Superseded General Decision No. CO20190002 Modification No. 2 Publication Date: 08/28/2020 (6 pages)

Unless otherwise specified in this document, apprentices shall be permitted only if they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor (DOL). The employer and the individual apprentice must be registered in a program which has received prior approval by the DOL. Any employer who employs an apprentice and is found to be in violation of this provision shall be required to pay said apprentice the full journeyman scale.

Attachments as listed above.

*Career Service Board approved to adjust all Davis Bacon classifications under \$13.00 to comply with the city's minimum wage. The effective date is August 15, 2019. See page 7 for reference.

Office of Human Resources

201 W. Colfax Ave. Dept. 412 | Denver, CO 80202 p: 720.913.5751 | f: 720.913.5720 www.denvergov.org/humanresources "General Decision Number: CO20200002 08/28/2020

Superseded General Decision Number: CO20190002

State: Colorado

Construction Type: Heavy

Counties: Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, El Paso, Jefferson, Larimer, Mesa, Pueblo and Weld

Counties in Colorado.

HEAVY CONSTRUCTION PROJECTS

Note: Under Executive Order (EO) 13658, an hourly minimum wage of \$10.80 for calendar year 2020 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least \$10.80 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2020. If this contract is covered by the EO and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must pay workers in that classification at least the wage rate determined through the conformance process set forth in 29 CFR 5.5(a)(1)(ii) (or the EO minimum wage rate, if it is higher than the conformed wage rate). The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

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	Rates	Fringes
BRICKLAYER	\$ 25.88	10.34
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PUEBLO COUNTY		
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ELECTRICIAN Electrical contract over \$1,000,000 Electrical contract under \$1,000,000	\$ 24.85	
ELEC0068-001 06/01/2019		
ADAMS, ARAPAHOE, BOULDER, BROOM JEFFERSON, LARIMER, AND WELD CO		, DOUGLAS,
	Rates	Fringes
ELECTRICIAN	\$ 36.50	16.18
ELEC0111-001 03/01/2019		
	Rates	Fringes
Line Construction: Groundman	\$ 20.41	13.75%+\$6.20

Line Equipment Operator Lineman and Welder	\$ 44.92	
* ELEC0113-002 02/01/2020		
EL PASO COUNTY		
	Rates	Fringes
ELECTRICIAN		
ELEC0969-002 06/01/2019		
MESA COUNTY		
	Rates	Fringes
ELECTRICIAN		10.06
* ENGI0009-001 05/01/2020		
	Rates	Fringes
Power equipment operators: Blade: Finish	\$ 30.37 \$ 30.20 \$ 30.47 \$ 31.55 \$ 33.67 \$ 29.67 \$ 30.53 \$ 29.29 \$ 30.20	11.15 11.15 11.15 11.15 11.15 11.15 11.15 11.15 11.15 11.15 11.15
IRON0024-003 11/01/2019	_	
	Rates	Fringes
Ironworkers: Structural		22.26
LABO0086-001 05/01/2009		

Rates Fringes

Laborers: Pipelayer		6.78			
PLUM0003-005 06/01/2017					
	ADAMS, ARAPAHOE, BOULDER, BROOMFIELD, DENVER, DOUGLAS, JEFFERSON, LARIMER AND WELD COUNTIES				
	Rates	Fringes			
PLUMBER					
PLUM0058-002 07/01/2018					
EL PASO COUNTY					
	Rates	Fringes			
Plumbers and Pipefitters	\$ 32.75	14.85			
PLUM0058-008 07/01/2018					
PUEBLO COUNTY					
	Rates	Fringes			
Plumbers and Pipefitters	\$ 32.75	14.85			
PLUM0145-002 07/01/2016					
MESA COUNTY					
	Rates	Fringes			
Plumbers and Pipefitters		11.70			
PLUM0208-004 06/01/2016					
ADAMS, ARAPAHOE, BOULDER, BROOMFIELD, DENVER, DOUGLAS, JEFFERSON, LARIMER AND WELD COUNTIES					
	Rates	Fringes			
PIPEFITTER		16.62			
SHEE0009-002 07/01/2019					
	Rates	Fringes			

Sheet metal worker	\$ 34.62	17.95
TEAM0455-002 07/01/2019		
	Rates	Fringes
Truck drivers: Pickup Tandem/Semi and Water		4.42 4.42
SUCO2001-006 12/20/2001		
	Rates	Fringes
BOILERMAKER	\$ 17.60	
Carpenters: Form Building and Setting All Other Work		2.74 3.37
Cement Mason/Concrete Finisher	\$ 17.31	2.85
IRONWORKER, REINFORCING	\$ 18.83	3.90
Laborers: Common	\$ 8.91	2.92 3.80 3.21
Painters: Brush, Roller & Spray	\$ 15.81	3.26
Power equipment operators: Backhoe	\$ 17.24 \$ 15.37	2.48 3.23 4.41

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

Office of Human Resources Supplemental Rates (Specific to the Denver Projects) (Supp #74, Revised: 08-21-2019)

Classification		Base	Fringe
Ironworker	Ornamental	\$24.80	\$10.03
Laborer	Group 1	\$18.18	\$8.27
	Group 2	\$21.59	\$8.61
Laborer (Common)		\$13.00	\$2.92
Laborer (Flagger)		\$13.00	\$3.80
Laborer (Landscape)		\$13.00	\$3.21
Laborer (Janitor)	Janitor/Yardmen	\$17.68	\$8.22
Laborer (Asbestos)	Removal of Asbestos	\$21.03	\$8.55
Laborer (Tunnel)	Group 1	\$18.53	\$8.30
	Group 2	\$18.63	\$8.31
	Group 3	\$19.73	\$8.42
	Group 4	\$21.59	\$8.61
	Group 5	\$19.68	\$8.42
Line Construction	Lineman, Gas Fitter/Welder	\$36.88	\$9.55
	Line Eq Operator/Line Truck		
	Crew	\$25.74	\$8.09
Millwright		\$28.00	\$10.00
Power Equipment Operator	Group 1	\$22.97	\$10.60
	Group 2	\$23.32	\$10.63
	Group 3	\$23.67	\$10.67
	Group 4	\$23.82	\$10.68
	Group 5	\$23.97	\$10.70
	Group 6	\$24.12	\$10.71
	Group 7	\$24.88	\$10.79
Power Equipment Operator (Tunnels above and			
below ground, shafts and raises):	Group 1	\$25.12	\$10.81
	Group 2	\$25.47	\$10.85
	Group 3	\$25.57	\$10.86
	Group 4	\$25.82	\$10.88
	Group 5	\$25.97	\$10.90
	Group 6	\$26.12	\$10.91
	Group 7	\$26.37	\$10.94
Truck Driver	Group 1	\$18.42	\$10.00
	Group 2	\$19.14	\$10.07
	Group 3	\$19.48	\$10.11
	Group 4	\$20.01	\$10.16
	Group 5	\$20.66	\$10.23
	Group 6	\$21.46	\$10.31

Go to http://www.denvergov.org/Auditor to view the Prevailing Wage Clarification Document for a list of complete classifications used.

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DENVER INTERNATIONAL AIRPORT PARTIAL LIEN RELEASE – CONSTRUCTION

Project:	-	Date:	
City Contract No		Current Subcontract Amount: \$	_
FROM: Subcontractor	(1)	Last Progress Payment for billing period ending	20
Address:	-	\$	
City/State:	(2)	Progress invoiced for previous billing period (if unpaid) 20	
Telephone:	-	\$	
TO: Contractor	(3)	Progress invoiced for current billing period ending	20
Address:	-	\$	
City/State:	(4)	Total Paid to Date:	
		\$	
() MBE/WBE() SBE () DBE	() N	lon	

The Undersigned hereby certifies that all costs, charges or expenses incurred by the undersigned or on behalf of the undersigned for any work, labor or services performed and for any materials, supplies or equipment provided on the above referenced Project or used in connection with the above referenced Subcontract (the "Work Effort") have been duly paid in full to date.

The Undersigned further certifies that each of the undersigned's subcontractors and suppliers that incurred or caused to be incurred, on their behalf, costs, charges or expenses in connection with the undersigned's Work Effort on the above referenced Project have been duly paid in full to date.

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The Undersigned hereby (1) acknowledges receipt of the progress payment referred to above as the Last Progress Payment which, when added to the total of all previous progress payments, constitutes full payment, less retainage, for all labor, services, material and supplies which the undersigned has provided for use in and upon the project described above through, 20 and, (2) hereby releases the Contractor, surety, the City and County of Denver, and any intermediate subcontractor or supplier of any tier from any and all claims prior to the above mentioned date, except for the withheld retainage.
The Undersigned also hereby agrees that the Contractor, Surety, the City and County of Denver, and any intermediate subcontractor or supplier of any tier shall be released from any and all claims arising out of its performance or non-performance of any contract associated with the above project through, 20, except for withheld retainage after it has received full payment, less retainage, of the amount invoiced for the current billing period.
As additional consideration for the payments referenced above, the undersigned agrees to defend, indemnify and hold harmless the City, its officers, employees, agents and assigns and the above-referenced Contractor from and against all costs, losses, damages, causes of action, judgments under the subcontract and expenses arising out of or in connection with any claim or claims against the City or the Contractor which arise out of the Undersigned's performance of the Work Effort and which may be asserted by the Undersigned or any of its suppliers or subcontractors of any tier or any of their representatives, officers, agents, or employees.
It is acknowledged that this release is for the benefit of and may be relied upon by the City and the referenced Contractor.
The foregoing shall not relieve the undersigned of any obligation under the provisions of the Undersigned's subcontract, as the subcontract may have been amended, which by their nature survive completion of the Undersigned's work effort including, without limitation, warranties, guarantees, insurance requirements and indemnities.
Subcontractor:
Certified by:
Title:
Date:



DENVER INTERNATIONAL AIRPORT FINAL LIEN RELEASE – CONSTRUCTION (Subcontractor)

Project:		Date:	_
City Contract No.		Subcontractor Contract No	
		Dated:	_
FROM:			
Subcontractor:	(1)	Last Progress Payment for billing period ending	_, 20
Address:		\$	_
City/State:	(2)	Does not apply	
Telephone:			
TO:			
Contractor:	(3)	Does not apply	
Address:			
City/State:	(4)	Total Paid to Date:	
		\$	_
(() N	าท	

The Undersigned hereby certifies that all costs, charges or expenses incurred by the undersigned or on behalf of the undersigned for any work, labor or services performed and for any materials, supplies or equipment provided on the above referenced Project or used in connection with the above referenced Subcontract (the "Work Effort") have been duly paid in full.

The Undersigned further certifies that each of the undersigned's subcontractors and suppliers that incurred or caused to be incurred, on their behalf, costs, charges or expenses in connection with the undersigned's Work Effort on the above referenced Project have been duly paid in full.

Page 63 Lien Release

The undersigned Subcontractor hereby (1) acknowledges receipt of the progress payment referred to above as the Last Progress Payment which, when added to the total of all previous progress payments, constitutes ful payment for all labor, services, materials and supplies which the undersigned has provided for use in and upon the project described above through
The Subcontractor also hereby agrees that the Contractor, Surety, the City and County of Denver, and any intermediate subcontractor or supplier of any tier shall be released from any and all claims arising out of its performance or non-performance of any contract associated with the above project.
As additional consideration for the payments referenced above, the undersigned agrees to defend, indemnify and hold harmless the City, its officers, employees, agents and assigns and the above-referenced Contractor from and against all costs, losses, damages, causes of action, judgments under the subcontract and expenses arising out of or in connection with any claim or claims against the City or the Contractor which arise out of the Undersigned's performance of the Work Effort and which may be asserted by the Undersigned or any of its suppliers of subcontractors of any tier or any of their representatives, officers, agents, or employees.
It is acknowledged that this release is for the benefit of and may be relied upon by the City and the referenced Contractor.
The foregoing shall not relieve the undersigned of any obligation under the provisions of the Undersigned's subcontract, as the subcontract may have been amended, which by their nature survive completion of the Undersigned's work effort including, without limitation, warranties, guarantees, insurance requirements and indemnities.
Subcontractor:
Certified by:
Title:
Date:

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CITY AND COUNTY OF DENVER RULES AND REGULATIONS AND BID CONDITIONS OF THE MANAGER OF PUBLIC WORKS

PERTAINING TO EQUAL EMPLOYMENT OPPORTUNITY IN THE CITY AND COUNTY OF DENVER

APPROVED FOR LEGALITY:	APPROVED AND ADOPTED:
/s/	/s/
Attorney for the City and County of Denver	Manager of Public Works

Adopted and Published Pursuant to Article 111, Division 2 of Chapter 28 the Revised Municipal Code of the City and County of Denver

These Rules and Regulations cancel and supersede any and all previous issued Rules and Regulations on the subject

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RULES AND REGULATIONS REGARDING EQUAL EM PLOYM ENT OPPORTUNITY

Promulgated and adopted by the Manager of Public Works pursuant to and by authority of Article III, Division 2, Chapter 28 of the Revised Municipal Code of the City and County of Denver, and for the purpose of insuring that contractors. subcontractors and suppliers soliciting and receiving compensation for contract work from or through the City and County of Denver provide equal opportunity in employment without regard to race, color, creed, sex, national origin, age, religion, marital status, political opinion or affiliation or mental or physical handicap and meet certain requirements for the hiring' training promotion and treatment during employment of members of ethnic groups subjected to differential treatment, including persons of African descent (Black), Spanish-surnamed (Hispanic), Asian-American and American Indian groups.

RULE I DEFINITIONS

- A. "City" means the City and County of Denver.
- B. "Manager" shall mean the Manager of Public Works for the City and County of Denver.
- C. "Contract" means a contract entered into with the City and County of Denver, financed in whole or in part by local resources or funds of the City and County of Denver, for the construction of any public building or prosecution or completion of any public work.
- D. "Contractor" means the original party to a contract with the City and County of Denver, also referred to as the "general" or "prime" contractor.
- E. "Director" means the Director of the Mayor's Office of Contract Compliance.
- F. "Subcontractor" means any person company, association, partnership, corporation, or other entity which assumes by subordinate agreement some or all of the obligations of the general or prime contractor.
- G. The Phrase "Bidding Specifications" as used in Article 111, Division 2 of Chapter 28 of the Revised Municipal Code shall include BID CONDITION, INVITATION TO BID AND NOTICE OF PROPOSAL.
- H. "Affirmative Action Program" means a set of specific and result-oriented procedures or steps to which a contractor commits himself to apply every good faith effort to employ members of ethnic minority groups, to include persons of African descent (Black), Spanish surnamed (Hispanic), Asian-American, American Indians, and persons with mental or physical handicap.
- I. "Mayor's Office of Contract Compliance" means the City agency established pursuant to Article III, Division 1 of Chapter 28 of the Denver Revised Municipal Code.

RULE 11

NOTICE OF HEARING

When results of conciliation efforts are unsatisfactory to the Manager and he is informed in accordance with Article III, Division 2 of Chapter 28 of the Revised Municipal Code that a contractor or subcontractor has apparently failed to meet affirmative action and equal employment opportunity requirements after a reasonable period of notice to correct deficiencies, the Manager will, prior to imposition of any sanctions, afford the general contractor a hearing in order to determine whether the contractor or his subcontractors have failed to comply with the affirmative action and equal employment opportunity requirements of Article III, Division 2 of Chapter 28 of the Revised Municipal Code or of the contract. Written notice of such hearing shall be delivered personally or sent by certified mail return receipt requested, to the contractor and to any subcontractor involved at least ten days prior to the date scheduled for the hearing.

RULE III HEARING

- A. Contractors will appear at hearings and may be represented by counsel, and may present testimony orally and other evidence.
- B. Hearings shall be conducted by one or more hearing examiners designated as such by the Manager.
- C. The Director of the Mayor's Office of Contract Compliance may participate in hearings as a witness.
- D. Hearings shall be held at the place specified in the notice of hearing.
- E. All oral testimony shall be given under oath or affirmation and a record of such proceedings shall be made.
- F. All hearings shall be open to the public.
- G. The hearing officer shall make recommendations to the Manager who shall make a final decision.

REGULATIONS

REGULATION NO. 1. **ORDINANCE**: The Rules and Regulations of the Manager shall be inserted in the bidding specifications for every contract for which bidding is required.

REGULATION NO. 2. **EXEMPTIONS:** Each contract and subcontract, regardless of dollar amount, shall be subject to affirmative action requirements unless specifically exempted in writing individually by the Manager. Exemptions apply only to "affirmative action" in equal employment opportunity, and are not to be construed as condonation in any manner of "discrimination" or "discriminatory practices" in employment because of race, color, creed sex age national origin, religion, marital status, political opinion or mental or physical handicap.

REGULATION NO. 3. DIRECTOR OF CONTRACT COMPLIANCE: The Director of the Mayor's Office of Contract Compliance shall perform the duties assigned to such official by Article III, Division 2 of Chapter 28 of the Revised Municipal Code and by the Manager. (1) The Director of the Mayor's Office of Contract Compliance or designated representatives shall inform. bidders and contractors of affirmative action procedures, programs, and goals in accordance with the ordinance at pre-bid and pre-construction conference; (2) make regular on-site inspections; (3) supply contractors and subcontractors with report forms to be completed by them when requested, and furnished to the Director of the Mayor's Office of Contract Compliance; and (4) review payroll records, employment records and practices of general contractors and their subcontractors and suppliers during the performance of any contract. The Director of the Mayor's Office of Contract Compliance shall promptly report apparent affirmative action deficiencies to the Manager.

REGULATION NO. 4. GOALS AND TIMETABLES: In general, goals and timetables should take into account anticipated vacancies and the availability of skills in the market place from which employees should be drawn. In addition, where discrimination in employment by a general contractor or any of his subcontractors is indicated, a corrective action program will take into account the need by the general contractor and his subcontractors to correct past discriminatory practices and reach goals of minority manpower utilization on a timely basis through such recruiting and advertising efforts as are necessary and appropriate.

REGULATION NO.5. AWARD OF CONTRACTS: It shall be the responsibility of the Director of the Mayor's Office of Contract Compliance to determine the affirmative action capability of bidders, contractors and subcontractors and to recommend to the Manager the award of contracts to those bidders, contractors and subcontractors and suppliers who demonstrate the ability and willingness to comply with the terms of their contract.

REGULATION NO. 6. PUBLICATION AND DUPLICATION: Copies of these Rules and Regulations as amended by the Manager from time to time, shall as soon as practicable and after Notice being published will be made a part of all City Contracts.

REGULATION NO. 7. NOTICE TO PROCEED: Prior to issuance of Notice to Proceed a sign-off will be required of the Director of the Mayor's Office of Contract Compliance or his designee.

<u>REGULATION NO. 8</u>. **CONTRACTS WITH SUBCONTRACTORS:** To the greatest extent possible the contractor shall make a good faith effort to contract with minority contractors, subcontractors and suppliers for services and supplies by taking affirmative actions which include but are not limited to the following:

- 1. Advertise invitations for subcontractor bids in minority community news media.
- 2. Contact minority contractor organizations for referral of prospective subcontractors.
- 3. Purchase materials and supplies from minority material suppliers.

REGULATION NO. 9. AGENCY REFERRALS: it shall be no excuse that the union with which the contractor or subcontractor has an agreement providing for referral, exclusive or otherwise, failed to refer minority employees.

REGULATION NO. 10. CLAUSES: The Manager shall include the appropriate clauses in every contract and the contractor shall cause to be inserted in every subcontract the appropriate clauses:

- 1. **APPENDIX A:** City and County of Denver Equal Opportunity Clause-ALL CONTRACTS funded only with City & County of Denver monies.
- 2. **APPENDIX B:** Equal Opportunity Clause (11246)-ALL FEDERAL ASSISTED
- 3. **APPENDIX C:** Section 3-Assurance of Compliance-HUD ASSISTED PROJECTS.
- 4. APPENDIX D: Section 3-Clause-HUD ASSISTED PROJECTS.

All amendments to the appendices shall be included by reference.

<u>REGULATION NO. 11</u>. SHOW CAUSE NOTICES: When the Manager has reasonable cause to believe that a contractor has violated Article III, Division 2 of Chapter 28 of the Revised Municipal Code, he may issue a notice requiring the contractor to show cause, within fifteen days why enforcement procedures, or other appropriate action to insure compliance, should not be instituted.

REGULATION NO. 12. BID CONDITIONS-AFFIRMATIVE ACTION REQUIREMENTS-EQUAL EMPLOYMENT OPPORTUNITY:

1. APPENDIX E:

The Bid Conditions- Affirmative Action Requirements-Equal Employment Opportunity as amended and published by the U.S. Department of Labor, Employment Standards Administration, Office of Federal Contract Compliance, shall be inserted verbatim for bidding specification for every non-exempt contract involving the use of Federal funds.

2. APPENDIX F:

The Bid Conditions- Affirmative Action Requirements-Equal Employment Opportunity as published by the Department of Public Works, City and County of Denver shall be inserted verbatim as bidding specifications for every non-exempt contract using City funds.

APPENDIX A

CITY AND COUNTY OF DENVER EQUAL OPPORTUNITY CLAUSE-ALL CONTRACTS

1. The contractor will not discriminate against any employee or applicant for employment because of race creed, color, sex, age, national origin, religion, marital status, political opinion or affiliation, or mental or physical handicap. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, creed, color, sex, age, national origin, religion, marital status, political opinion or affiliation, or mental or physical handicap. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or

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recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection f6r training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

- 2. The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, creed, color, sex, age, national origin, religion, marital status, political opinion or affiliation, or mental or physical handicap.
- 3. The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided, advising the said labor union or workers' representatives of the contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
- 4. Each contractor will comply with all provisions of Article III, Division 2, Chapter 28 of the Revised Municipal Code, and the rules, regulations, and relevant orders of the Manager and Director.
- 5. The contractor will furnish all information and reports required by Article III, Division 2, Chapter 28 of the Revised Municipal Code, and by rules, regulations and orders of the Manager and Director or pursuant thereto, and will permit access to his books, records, and accounts by the Manager, Director or their designee for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
- 6. In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations or orders this contract may be cancelled, terminated., or suspended in whole or in part and the contractor may be declared ineligible for further City contracts in accordance with procedures authorized in Article III, Division 2, Chapter 28 of the Revised Municipal Code, or by rules, regulations, or order of the Manager.
- 7. The contractor will include Regulation 12 Paragraph 2 and the provisions of paragraphs (1) through (6) in every subcontract or purchase order unless, exempted by rules, regulations, or orders of the Manager issued pursuant to Article III, Division 2, Chapter 28 of the Revised Municipal Code, so that such provisions will be binding upon each subcontractor or suppliers. The contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance.

The applicant further agrees to be bound by the above equal opportunity clauses with respect to its own employment practices when it participates in City contracts. The contractor agrees to assist and cooperate actively with the Manager and the Director in obtaining compliance of

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subcontractors and suppliers with the equal opportunity clause and the rules, regulations and relevant orders of the Manager, and will furnish the Manager and the Director such information as they may require for the supervision of compliance, and will otherwise assist the Manager and Director in the discharge of the City's primary responsibility for securing compliance. The contractor further agrees to refrain from entering into any contract or contract modification subject to Article III, Division 2, Chapter 28 of the Revised Municipal Code with a contractor debarred from, or who has not demonstrated eligibility for, City contracts.

The contractor will carry out such sanctions and penalties for violation of the equal opportunity clause as may be imposed upon contractors and subcontractors by the Manager and Director. In addition, the contractor agrees that failure or refusal to comply with these undertakings the Manager may take any or all of the following actions:

- A. Cancellation, termination, or suspension in whole or in part of this contract.
- B. Refrain from extending any further assistance to the applicant under the program with respect to which the failure occurred until satisfactory assurance of future compliance has been received from such applicant.
- C. Refer the case to the City Attorney for appropriate legal proceedings.

SUBCONTRACTS: Each prime contractor or subcontractor shall include the equal opportunity clause in each of its subcontracts.

APPENDIX F BID CONDITIONS AFFIRMATIVE ACTION REQUIREMENTS EQUAL EMPLOYMENT OPPORTUNITY

For all Non-Exempt Construction Contracts to be Awarded by the City and County of Denver, Department of Public Works

NOTICE

EACH BIDDER, CONTRACTOR OR SUBCONTRACTOR (HEREINAFTER THE CONTRACTOR) MUST FULLY COMPLY WITH THE REQUIREMENTS OF THESE BID CONDITIONS AS TO EACH CONSTRUCTION TRADE IT INTENDS TO USE ON THIS CONSTRUCTION CONTRACT, AND ALL OTHER CONSTRUCTION WORK (BOTH CITY AND NON-CITY) IN THE DENVER AREA DURING THE PERFORMANCE OF THIS CONTRACT OR SUBCONTRACT. THE CONTRACTOR COMMITS ITSELF TO THE GOALS FOR MINORITY MANPOWER UTILIZATION, AS APPLICABLE, AND ALL OTHER REQUIREMENTS, TERMS AND CONDITION OF THESE BID CONDITIONS BY SUBMITTING A PROPERLY SIGNED BID.

THE CONTRACTOR SHALL APPOINT A COMPANY EXECUTIVE TO ASSUME THE RESPONSIBILITY FOR THE IMPLEMENTATION OF THE REQUIREMENTS, TERMS AND CONDITIONS OF THESE BID CONDITIONS.

MICHAEL D. MUSGRAVE Manager of Public Works City and County of Denver

A. REQUIREMENTS --AN AFFIRM ATIVE ACTION PLAN:

Contractors shall be subject to the provisions and requirements of these bid conditions including the goals and timetables for minority' and female utilization, and specific affirmative action steps set forth by the Office of Contract Compliance. The contractor's commitment to the goals for minority, and female utilization as required constitutes a commitment that it will make every good faith effort to meet such goals.

1. **GOALS AND TIMETABLES**:

The goals and timetables for minority¹ and female participation, expressed in percentage terms for the contractor's aggregate workforce in each trade are as follows:

GOALS FOR MINORITY PARTICIPATION FOR EACH TRADE

GOALS FOR FEMALE PARTICIPATION FOR EACH TRADE

From January 1, 1982 to 21.7% - 23.5% Until Further Notice to 6.9% Until Further Notice

The goals for minority and female utilization above are expressed in terms of hours of training and employment as a proportion of the total number of hours to be worked by the contractor's aggregate workforce, which includes all supervisory personnel, in each trade, on all projects for the City and County of Denver during the performance of its contract (i.e., The period beginning with the first day of work on the City and County of Denver funded construction contract and ending with the last day of work).

The hours of minority and female employment and training must be substantially uniform throughout the length of the contract in each trade and minorities and females must be employed evenly on each of a contractor's projects. Therefore, the transfer of minority or female employees from contractor to contractor or from project to project for the purpose of meeting the contractor's goals shall be a violation of these Bid Conditions.

If the contractor counts the nonworking hours of apprentices they must be employed by the contractor during the training period; the contractor must have made a commitment to employ apprentices at the completion of their training subject to the availability of employment

¹ "Minority" is defined as including, Blacks, Spanish Surname Americans, Asian-Americans, and American Indians, and includes both men and Minority women.

opportunities; and the apprentices must be trained pursuant to training programs approved by the Bureau of Apprenticeship and Training.

2. SPECIFIC AFFIRM ATIVE ACTION STEPS:

No contractor shall be found to be in noncompliance solely on account of its failure to meet its goals, but will be given an opportunity to demonstrate that the contractor has instituted all the specific affirmative action steps specified and has made every good faith effort to make these steps work toward the attainment of its goals within the timetables, all to the purpose of expanding minority and female utilization in its aggregate workforce. A contractor, who fails to comply with its obligation under the Equal Opportunity Clause of its contract and fails to achieve its commitments to the goals for minority and female utilization has the burden of proving that it has engaged in an Affirmative Action Program directed at increasing minority and female utilization and that such efforts were at least as extensive and as specific as the following:

- a. The contractor should have notified minority and female organizations when employment opportunities were available and should have maintained records of the organization's response.
- b. The contractor should have maintained a file of the names and addresses of each minority and female referred to it by any individual or organization and what action was taken with respect to each such referred individual, and if the individual was not employed by the contractor, the reasons. If such individual was sent to the union hiring hall for referral and not referred back by the union or if referred, not employed by the contractor, the file should have documented this and their reasons.
- c. The contractor should have promptly notified the Department of Public Works, and Mayor's Office of Contract Compliance when the union or unions with which the contractor has collective bargaining agreements did not refer to the contractor a minority or female sent by the contractor, or when the contractor has other information that the union referral process has impeded efforts to meet its goals.
- d. The contractor should have disseminated its EEO policy within its organization by including it in any employee handbook or policy manual; by publicizing it in company newspapers and annual reports and by advertising such policy at reasonable intervals in union publications. The EEO policy should be further disseminated by conducting staff meetings to explain and discuss the policy; by posting of the policy; and by review of the policy with minority and female employees.
- e. The contractor should have disseminated its EEO policy externally by informing and discussing it with all recruitment sources; by advertising in news media, specifically including minority and female news media; and by notifying and discussing it with all subcontractors.
- f. The contractor should have made both specific and reasonably recurrent written and oral recruitment efforts. Such efforts should have been directed at minority and female

- organizations, schools with substantial minority and female enrollment, and minority and female recruitment and training organizations within the contractor's recruitment area.
- g. The contractor should have evidence available for inspection that all tests and other selection techniques used to select from among candidates for hire, transfer, promotion, training, or retention are being used in a manner that does not violate the OFCCP Testing Guidelines in 41 CFR Part 60-3.
- h. The contractor should have made sure that seniority practices and job classifications do not have a discriminatory effect.
- i. The contractor should have made certain that all facilities are not segregated by race.
- j. The contractor should have continually monitored all personnel activities to ensure that its EEO policy was being carried out including the evaluation of minority and female employees for promotional opportunities on a quarterly basis and the encouragement of such employees to seek those opportunities.
- k. The contractor should have solicited bids for subcontracts from available minority and female subcontractors engaged in the trades covered by these Bid conditions, including circulation of minority and female contractor associations.

NOTE: The Director and the Mayor's Office of Contract Compliance will provide technical assistance on questions pertaining to minority and female recruitment sources, minority and female community organizations, and minority and female news media upon receipt of a request for assistance from a contractor.

3. NON-DISCRIMINATION:

In no event may a contractor utilize the goals and affirmative action steps required in such a manner as to cause or result in discrimination against any person on account of race, color, religion, sex, marital status, national origin, age, mental or physical handicap, political opinion or affiliation.

4. **COMPLIANCE AND ENFORCEMENT**:

In all cases, the compliance of a contractor will be determined in accordance with its obligations under the terms of these Bid Conditions. All contractors performing or to perform work on projects subject to these Bid Conditions hereby agree to inform their subcontractors in writing of their respective obligations under the terms and requirements of these Bid Conditions, including the provisions relating to goals of minority and female employment and training.

A. Contractors Subject to these Bid Conditions:

In regard to these Bid Conditions, if the contractor meets the goals set forth therein or can demonstrate that it has made every good faith effort to meet these goals, the contractor shall be presumed to be in compliance with Article III, Division 2, Chapter 28 of the Revised Municipal Code, the implementing regulations and its obligations under

these Bid Conditions. In the event, no formal sanctions or proceedings leading toward sanctions shall be instituted unless the contracting or administering agency otherwise determines that the contractor is violating the Equal Opportunity Clause.

- Where the Office of Contract Compliance finds that a contractor failed to comply with the requirements of Article 111, Division 2, Chapter 28 of the Revised Municipal Code or the implementing regulations and the obligations under these Bid Conditions, and so informs the Manager, the Manager shall take such action and impose such sanctions, which include suspension, termination, cancellation, and debarment, as may be appropriate under the Ordinance and its regulations. When the Manager proceeds with such formal action it has the burden of proving that the contractor has not met the goals contained in these Bid Conditions. The contractor's failure to meet its goals shall shift to it the requirement to come forward with evidence to show that it has met the good faith requirements of these Bid Conditions.
- 2. The pendency of such proceedings shall be taken into consideration by the Department of Public Works in determining whether such contractor can comply with the requirements of Article 111, Division 2, Chapter 28 of the Revised Municipal Code, and is therefore a "responsible prospective contractor".
- 3. The Mayor's Office of Contract Compliance shall review the contractor's employment practices during the performance of the contract. If the Mayor's Office of Contract Compliance determines that the contractor's Affirmative Action Plan is no longer an acceptable program, the Director shall notify the Manager.

B. **Obligations Applicable to Contractors**:

It shall be no excuse that the union with which the contractor has a collective bargaining agreement providing for exclusive referral failed to refer minority or female employees. Discrimination in referral for employment, even if pursuant to provisions of a collective bargaining agreement, is prohibited by the National Labor Relations Act, as amended, Title VI of the Civil Rights Act of 1964, as amended, and Article III, Division 2, Chapter 28 of the Revised Municipal Code. It is the policy of the Department of Public Works that contractors have a responsibility to provide equal employment opportunity, if they wish to participate in City and County of Denver contracts. To the extent they have delegated the responsibility for some of their employment practices to a labor organization and, as a result, are prevented from meeting their obligations pursuant to Article III, Division 2, Chapter 28 of the Revised Municipal Code, such Contractors cannot be considered to be in compliance with Article III, Division 2, Chapter 28 of the Revised Municipal Code, or its implementing rules and regulations.

C. General Requirements

Contractors are responsible for informing their subcontractors in writing regardless of tier, as to their respective obligations. Whenever a contractor subcontracts a portion of work in any trade covered by these Bid Conditions, it shall include these Bid Conditions in such subcontracts and each subcontractor shall be bound by these Bid Conditions to the full extent as if it were the prime contractor. The contractor shall not, however, be held accountable for the failure of its subcontractors to fulfill their obligations under these Bid Conditions. However, the prime contractor shall give notice to the Director of any refusal or failure of any subcontractor to fulfill the obligations under these Bid Conditions. A subcontractor's failure to comply will be treated in the same manner as such failure by a prime contractor.

- Contractors hereby agree to refrain from entering into any contract or contract
 modification subject to Article 111, Division 2, Chapter 28 of the Revised
 Municipal Code with a contractor debarred from, or who is determined not to be
 a "responsive" bidder for the City and County of Denver contracts pursuant to
 the Ordinance.
- 2. The contractor shall carry out such sanctions and penalties for violation of these Bid Conditions and the Equal Opportunity Clause including suspension, termination and cancellation of existing subcontracts and debarment from future contracts as may be ordered by the Manager pursuant to Article 111, Division 2, Chapter 28 of the Revised Municipal Code and its implementing regulations.
- 3. Nothing herein is intended to relieve any contractor during the term of its contract from compliance with Article III, Division 2, Chapter 28 of the Revised Municipal Code, and the Equal Opportunity Clause of its contract with respect to matters not covered in these Bid Conditions.
- 4. Contractors must keep such records and file such reports relating to the provisions of these Bid Conditions as shall be required by the Office of Contract Compliance.
- 5. Requests for exemptions from these Bid Conditions must be made in writing, with justification, to the Manager of Public Works, City and County Building, Room 379, Denver, Colorado 80202, and shall be forwarded through and with the endorsement of the Director.

Appendix No. 1

Standard Federal Assurances and Nondiscrimination

APPENDIX 1(A)

COMPLIANCE WITH NONDISCIRIMINATION REQUIREMENTS

NOTE: As used below the term "Contractor" shall mean and include Concessionaire, and the term "sponsor" shall mean the "City." During the term of this Contract, the Contractor, for itself, its assignees and successors in interest (hereinafter referred to as the "Contractor") agrees as follows:

- 1. Compliance with Regulations. The Contractor will comply with the Title VI List of Pertinent Non-Discrimination Statutes and Authorities, as they may be amended from time to time, which are herein incorporated by reference and made part of this Agreement.
- 2. **Nondiscrimination**. The Contractor, with regard to the work performed by it during this Agreement, will not discriminate on the grounds of race, creed, color, national origin, or sex in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The Contractor will not participate directly or indirectly in the discrimination prohibited by the Acts and Regulations, including employment practices when the Agreement covers any activity, project, or program set forth in Appendix B of 49 CFR Part 21.
- 3. Solicitations for Subcontractors, Including Procurements of Materials and Equipment. In all solicitations, either by competitive bidding or negotiation, made by the Contractor for work to be performed under a subcontract, including procurements of materials or leases of equipment, each potential subcontractor or supplier will be notified by the Contractor of the Contractor's obligations under this Agreement and the Acts and Regulations relative to nondiscrimination on the grounds of race, color, or national origin.
- 4. Information and Reports. The Contractor will provide all information and reports required by the Acts, Regulations or directives issued pursuant thereto and will permit access to its books, records, accounts other sources of information, and its facilities as may be determined by the sponsor or the Federal Aviation Administration (FAA) to be pertinent to ascertain compliance with such Acts, Regulations, and instructions. Where any information required of a Contractor is in the exclusive possession of another who fails or refuses to furnish this information, the Contractor shall so certify to the sponsor or the FAA, as appropriate, and will set forth what efforts it has made to obtain the information.

- 5. **Sanctions for Noncompliance**. In the event of a Contractor's noncompliance with the nondiscrimination provisions of this Agreement, the sponsor will impose such Contract sanctions as it or the FAA may determine to be appropriate, including, but not limited to:
 - a. Withholding of payments to the Contractor under this Agreement until the Contractor complies, and/or;
 - b. Cancelling, terminating, or suspending this Agreement, in whole or in part.
- 6. **Incorporation of Provisions**. The Contractor will include the provisions of paragraphs one (1) through six (6) in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations or directives issued pursuant thereto. The Contractor will take action with respect to any subcontract or procurement as the sponsor or the FAA may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the Contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, the Contractor may request the sponsor to enter into such litigation to protect the interests of the sponsor. In addition, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

APPENDIX 1(C)

STANDARD FEDERAL ASSURANCES AND NONDISCRIMINATION IN CONSTRUCTION, MAINTENANCE, OPERATION OF FACILITIES

As used below, the term "sponsor" will mean City.

Concessionaire, for himself/herself, his/her heirs, personal representatives, successors in interest, and assigns, as part of consideration hereof, does hereby covenant and agree, as a covenant running with the land that:

- 1. In the event facilities are constructed, maintained, or otherwise operated on the property described in this Agreement for a purpose for which a FAA activity, facility, or program is extended or for another purpose involving the provision of similar services or benefits, the Concessionaire will maintain and operate such facilities and services in compliance with all requirements imposed by the Nondiscrimination Acts and Regulations listed in the Pertinent List of Nondiscrimination Authorities, as may be amended from time to time, such that no person on the grounds of race, color, or national origin, will be excluded from participation in, denied the benefits of, or be otherwise subjected to discrimination in the use of said facilities.
- 2. With respect to this Agreement, in the event of breach of any of the above Nondiscrimination covenants, sponsor will have the right to terminate this Agreement, and to enter, re-enter, and repossess said lands and facilities thereon, and hold the same as if this Agreement had never been made or issued.

APPENDIX 1(D)

STANDARD FEDERAL ASSURANCES AND NONDISCRIMINATION IN CONSTRUCTION, USE, OR ACCESS TO FACILITES

As used below, the term "sponsor" will mean City.

- A. Concessionaire for himself/herself, his/her heirs, personal representatives, successors in interest, and assigns, as part of the consideration hereof, does hereby covenant and agree, as a covenant running with the land, that (1) no person on the ground of race, color, or national origin, will be excluded from participation in, denied the benefits of, or be otherwise subjected to discrimination in the use of said facilities, (2) that in the construction of any improvements on, over, or under such land, and the furnishing of services thereon, no person on the ground of race, color, or national origin, will be excluded from participation in, denied the benefits of, or otherwise be subjected to discrimination, (3) that the Concessionaire will use the Premises in compliance with all other requirements imposed by or pursuant to the List of Pertinent Nondiscrimination Authorities.
- B. With respect this Agreement, in the event of breach of any of the above nondiscrimination covenants, sponsor will have the right to terminate this Agreement and to enter, re-enter, and repossess said land and the facilities thereon, and hold the same as if this Agreement had never been made or issued.

APPENDIX 1(E)

TITLE VI LIST OF PERTINENT NONDISCRIMINATION AUTHORITIES

As used below, the term "Contractor" will mean and include Concessionaire and the term "sponsor" will mean City.

During the performance of this Agreement, the Contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "Contractor") agrees to comply with the following nondiscrimination statutes and authorities; including but not limited to:

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d et seq., 78 stat. 252), (prohibits' discrimination on the basis of race, color, national origin);
- 49 CFR part 21 (Non-discrimination In Federally-Assisted Programs of The Department of Transportation-Effectuation of Title VI of The Civil Rights Act of 1964);
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 U.S.C. § 4601), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- Section 504 of the Rehabilitation Act of 1973, (29 U.S. C. § 794 et seq.), as amended, (prohibits discrimination on the basis of disability); and 49 CFR part 27;
- The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 et seq.), (prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982, (49 USC§ 471, Section 47123), as amended, (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987, (PL 1 00-209), (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms "programs or activities" to include all of the programs or activities of the Federal-aid recipients, sub-recipients and Contractors, whether such programs or activities are Federally funded or not);
- Titles II and III of the Americans with Disabilities Act of 1990, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131 -12189) as implemented by Department of Transportation regulations at 49 CFR parts 37 and 38;
- The Federal Aviation Administration's Non-discrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);

- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures discrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;
- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);
- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S. C. 1681 et seq).

APPENDIX 2

DISADVANTAGED BUSINESS ENTERPRISES- REQUIRED STATEMENTS

As used below, the term "Contractor" will mean and include Concessionaire and the term "sponsor" will mean City.

Contract Assurance (§ 26.13) – The Contractor or subcontractor will not discriminate on the basis of race, color, national origin, or sex in the performance of this Contract. The Contractor will carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT assisted Contracts.

Failure by the Contractor to carry out these requirements is a material breach of this Contract, which may result in the termination of this Contract or such other remedy, as the recipient deems appropriate.

Prompt Payment (§26.29) – The prime Contractor agrees to pay each subcontractor under this prime Contract for satisfactory performance of its Contract no later than thirty (30) days from the receipt of each payment the prime Contractor receives from Contractor. The prime Contractor agrees further to return retainage payments to each subcontractor within thirty (30) days after the subcontractor's work is satisfactorily completed. Any delay or postponement of payment from the above referenced time frame may occur only for good cause following written approval of the sponsor. This clause applies to both DBE and non-DBE subcontractors.



December 16, 2020

Tunnel Sewer Repairs IFB

CONTRACT NO. 202056250

ADDENDUM NUMBER ONE

This Addendum Number One supersedes and/or supplements all portions of the Request for Proposal documents with which it conflicts. *Proposers must acknowledge receipt of this addendum on Page 37 of the Bid Forms*.

Paul Gilchrist

Contract Administrator

Tunnel Sewer Repairs IFB



CONTRACT NO. 202056250

ADDENDUM NUMBER ONE

Scope of this Addendum

Addendum Number One includes modifications to the following Invitation for Bid documents issued November 20, 2020. These modifications are deemed necessary by the City and County of Denver.

Invitation for Bid (IFB)

Prequalification

Prequalification is being replaced as follows:

Each bidder must be prequalified in one of the following categories: 1E(2) Sewer Rehabilitation, 1E(4). Piped Sewer, 2B. General Buildings – Occupied Buildings, or 2C. Active High Security Facility Renovation at or above the \$9,000,000.00 monetary level in accordance with the City's Rules and Regulations Governing Prequalification of Contractors. Each bidder must have submitted a prequalification application a minimum of ten (10) calendar days prior to the response due date. Applications must be submitted via email to pw.prequal@denvergov.org. To view the Rules and Regulations and to obtain a prequalification application, please visit our website at www.denvergov.org/prequalification.

QUESTIONS AND ANSWERS

RFP updated to include questions and answers in attachment Q&A Document 1

The total number of pages (including cover sheet) contained in this Addendum Number One is eight (8)

* * * * * * *

End of Addendum Number One

Questions & Answers - 1

Solicitation 202056250 - Tunnel Sewer Repairs

Buying Organization City and County of Denver Department of Aviation

No	Question/Answer	Question Date
Q1	Question: Pre-Bid Attendance Please provide the attendance list from the mandatory pre-bid held on December 01, 2020.	12/03/2020
	Answer: Attendance list, presentation slides, and Q&A from the 12/1 pre-proposal conference were posted as a communication.	
Q2	Question: Tunnel maximum clearance height What is the maximum clearance height for vehicle/equipment access in the tunnels?	12/09/2020
	Answer: Minimum height is approximately 3 to 3.5 ft at the pinch point at Grid N179 if the overhead door on the West side of the AGTS maintenance access is used.	
	Maximum height will be around 9.5 ft since the tunnel floor slopes at points.	
	Please refer to the site walk video for visual reference of these min/max numbers.	
Q3	Question: Pre-Bid Q & A For the CIPP, does there need to be saw cutting/excavation? If so how deep/wide?	12/10/2020
	Answer: Saw-cutting and excavation would be at the discretion of the CIPP sub-contractors means and	
	methods for installation and should be included in the price (alternate) along with any excavation and	
	the repair of the concrete. There isn't any specific saw-cutting and excavation required in the east baggage tunnel.	
Q4	Question: CIPP Piping Mains Please confirm all existing piping mains east of column W1 that are to receive CIPP lining are direct buried, and that none of this piping is accessible within the Utility Tunnel.	12/10/2020
	Answer: As far we know, those pipes are not accessible within the Utility Tunnel.	
Q5	Question: Existing Videos of Piping Mains Are there any existing videos of the piping mains that are to receive CIPP liner? If so, can they be provided?	12/10/2020
	Answer: There are some old videos but the locations are unknown and undocumented, so the information is not useful.	
Q6	Question: Clean Outs at Existing Piping Mains Do the clean outs that tie into the existing piping mains need to receive CIPP liner as well? If so, please identify the diameter to assume for each clean out.	12/10/2020
	Answer: CIPP is not required for the cleanouts and piping from the cleanout to the main. However,	
	ensure there is an opening in the CIPP at the piping juncture to facilitate the function of the cleanout.	

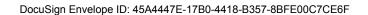
No	Question/Answer	Question Date
Q7	Question: Contaminated Soils Please confirm the base price should exclude remediation and removal of any contaminated soils or hazardous materials. Answer: Include that information separately as Alternate 4	12/10/2020
Q8	Question: Fireproofing Patch Please clarify the extent of fireproofing patch work that will be required as part of this contract. Is the fireproofing patch limited to new hangars installed for the new IS piping? How will DEN assess whether existing areas that require fireproofing patch are the responsibility of the contractor to repair? Answer: Any fireproofing disrupted in the line of performing the Scope of Work is required to be patched/repaired/replaced to match the existing fireproofing material/system. At the area north of Conc C, fireproofing is not required but contractor needs to apply a product to replace the insulation (Monoglass) removed. The R value is (Monoglass insulation) 4. If there are other locations that have fireproofing then the contractor is to replace with same material (DEN standard is Monokote MK6 (usually used by DEN by may not match existing) - if applicable.	12/10/2020
Q9	Question: Cracked Concrete Repair Please confirm that repair of any of the existing cracked concrete on the floors and walls of the Utility Tunnel are excluded from this scope of work. Answer: Keep the work limited to what is on the contract documents in order to accomplish this scope.	12/10/2020
Q10	Question: Material Testing & Inspections Please clarify who is responsible for 3rd party material testing and inspections? Please also identify the scope of work that will require 3rd party material testing and inspections Answer: Contractor to provide ALL Quality Control inspections and tests as required.	12/10/2020
Q11	Question: Building Permit & Plan Check Fees Please clarify who is responsible for paying for the Building Permit. Please also clarify who is responsible for paying for the Plan Check fees.	12/10/2020
	Answer: Contractor to pay for permits as per contract documents. DEN is paying plan check fees.	

Q12 Question: Temporary Bypass Systems Please clarify DEN's expectations for temporary bypass systems that may be	12/10/2020
main line replacement at Discharge Stations 1-4. If temp bypass systems at the anticipated flow rate and volumes through the existing 12" main lines be to be diverted. Please also clarify if temporarily shutting off the flow of these	re required, please identify eing replaced that will need
Answer: Anticipated flows are small and come from water dripping from the	e baggage totes when wet
outside or condensate from cooling equipment. Temp flex piping or troughs	can be routed above grade
for the lines that connect into the 12" main and routed to the area drain that	is located next to the DS
vaults for conditions of wet floors and condensate in the baggage tunnels. M	Main flows come from the
deluge system serving the AGTS trains when at the concourse stations. A S	Shutdown Request will
probably be required for coordination of the work in the tunnels with the test	ting of the deluge system but
the deluge system needs to be able to remain functional. If an event triggeri	ing the deluge system
occurs, it is not anticipated that the temporary system will be large enough t	to handle the flows and
water will enter the utility tunnel. Minimum size for the temp piping would be	e 6" for pipes 6" and larger
and line size for the smaller pipes. Include an overflow riser consisting of a	line size tee on its back and
a short section of vertical pipe on any temp pipe size reductions in case of a	an event to prevent the
drains from backing up on the level above	
Q13 Question: Permanent Trench at Discharge Station 4 Please confirm the permanent trench called for on Keynote 29 on sheet P50 Discharge Station 4 does not require any cast-in-place concrete at the trench confirm what slope the trench ends should be contoured to. Answer: The intent of the trench is to maintain a 24" clearance from the new	ch embankment. Please also
concrete is required (at the trench embankment, except what is shown on the	he drawings).
Q14 Question: Water Source for Testing Please identify the nearest source of water throughout the Utility Tunnel that and pressure testing of the new IS piping. Answer: Closest source is in the pump rooms (west side Center core concerns)	·
Q15 Question: Clean up of Existing Debris Please confirm pricing should exclude the clean up of any existing debris th scope of work.	12/10/2020 nat was not caused by the
Answer: Keep the work limited to what is on the contract documents in order	er to accomplish this scope.
Q16 Question: Leveling of Subgrade Please confirm pricing should exclude leveling of the existing subgrade thro that have been caused by leaks, ruts, and moisture accumulation prior to co of work.	•
Answer: Keep the work limited to what is on the contract documents in order	er to accomplish this scope.
Q17 Question: Vertical Length of Piping for CIPP Liner At each of the Discharge Stations 1-4, the existing 12" piping within the discreceive CIPP liner, including the elbow down. Please clarify the vertical dim	-
the elbow that needs to receive CIPP liner.	

No	Question/Answer	Question Date
Q18	Question: Floor Plans of Tunnel Level Much of the CIPP piping east of column W1 needs to be accessed through cleanouts and floor drains. However, floor plans for the elevation above the Utility Tunnels have not been provided, so it is unclear where those cleanouts and floor drains are located. Without this info, it is not possible to understand access for equipment, if the work occurs within a drive lane, and where traffic control is required. Please provide floors plans of the level above the Utility Tunnels for Concourses A, B & C that show the cleanouts and floor drains so this can be determined. Answer: As mentioned at the pre-bid meeting, the CIPP east side is not a Utility Tunnel (that is on the west side only). It is direct bury pipe.	12/10/2020
Q19	Question: Pre-Bid Q & A What is the specified pipe lining product that's to be used? Where will access be for set up to perform work? Is there any known atmospheric hazard with this product? Answer: See Specifications (reminder - the area is occupied by various airport personnel/stakeholders, therefore no odor, no steam, etc. allowed)	12/10/2020
Q20	Question: Pre-Bid Q & A Can the DS-X milestones overlap? I.e. Can work in different areas/concourses run contemporaneously? Answer: Milestones may overlap, if needed, but coordination is extremely important and may not be allowed by other DEN departments, depending upon impact (esp. airport operations).	12/10/2020
Q21	Question: Pre-Bid Q & A Will DEN allow for a 30-60 Day mobilization period from NTP for GC to complete necessary pre- mobilization administrative tasks? Including but not limited to, site specific safety plan, ROCIP enrollment, etc. Answer: Contract documents allow for certain time limits. There are also specific milestones to meet - the first milestone date provides some additional time for mobilization etc.	12/10/2020
Q22	Question: Pre-Bid Q & A Since much of this work occurs in the drive lanes for the baggage tunnel, will lane closures be allowed to occur during the day with the appropriate traffic control, or will all lane closures need to occur at night? Some closures will need to remain in place for a period of days to complete some of the work, is this acceptable to DEN? Answer: Lane closures are preferred at night. Again detailed coordination (shutdown requests) as per the contract documents will be needed and approved in writing by DEN.	12/10/2020
Q23	Question: Pre-Bid Q & A Is power available within and across the utility tunnel for construction power, or will contractor need to provide temp power as needed? Answer: Temp power is not available in the Utility Tunnel. Temp power for work in the Utility Tunnel for recent projects has been from the pump rooms (one per concourse at Center Core West basement).	12/10/2020
Q24	Question: Pre-Bid Q & A Is there sufficient lighting in the utility tunnels, or will contractor need to provide temp lighting as needed to perform tasks? Answer: LED lights were installed in the Utility Tunnel a few years ago, but be prepared to bring supplemental lighting as needed	12/10/2020

No	Question/Answer	Question Date
Q25	Question: Pre-Bid Q & A Please confirm the only access to the west utility tunnels is at center core of each concourse located with in the existing pump rooms. Answer: As specifically presented at the pre-bid meeting, there is access from the north of the AGTS Maintenance Facility (see site plan) along with access from the concourse center core pump rooms at	12/10/2020
	Baggage Tunnel, West side.	
Q26	Question: Pre-Bid Q & A For all existing IS pipe to receive CIPP, have all the existing lines been video inspected to confirm if CIPP is the proper solution, or is the contractor responsible for video inspecting all IS pipe to receive CIPP?	12/10/2020
	Answer: See contract documents, part of base bid price to survey existing conditions.	
Q27	Question: Pre-Bid Q & A Is the tunnel utility work is considered "permitted confined space"? The question was asked during the pre-bid, but after looking at what is considered confined space, it seems this work meets OSHA's 3 part definition and I believe it meets all 3. 1. The space must be large enough and so configured that an employee can bodily enter & performed assigned work AND 2. The space must have limited or restricted means for entry or exit AND 3. The space must not be designed for continuous employee occupancy.	12/10/2020
	Answer: Contractor must obtain a confined space permit through DFD and adhere to all permit	
	provisions including planning, training and onsite equipment for: self-rescue/retrieval by contractor, DFD	
	cannot be committed to provide Agency Rescue. Note that the utility tunnel is continuous from the	
	overhead door at the AGTS maintenance facility through the CUP with egress locations at each of the	
	concourses, the AGTS maintenance center and the CUP.	
Q28	Question: Pre-Bid Q & A What are DEN's expectations for retrieval of an injured worker should it arise?	12/10/2020
	Answer: Contractor to follow their safety program on retrieval of injured worker. Contractor must obtain	
	a confined space permit through DFD and adhere to all permit provisions including planning, training	
	and onsite equipment for: self-rescue/retrieval by contractor, DFD cannot be committed to provide	
	Agency Rescue but is available from one of the ARFF stations as backup to Contractor's primary rescue.	
Q29	Question: Pre-Bid Q & A Any recent air quality testing been done? Within 6 months Need to test for mold and any potential air contaminants?	12/10/2020
	Answer: Contractor must obtain a confined space permit through DFD and adhere to all permit	
	provisions including planning, training and onsite equipment for: self-rescue/retrieval by contractor, DFD	
	cannot be committed to provide Agency Rescue. Note that the utility tunnel is continuous from the	
	overhead door at the AGTS maintenance facility through the CUP with egress locations at each of the	
	concourses, the AGTS maintenance center and the CUP.	

No	Question/Answer	Question Date
Q30	Question: Pre-Bid Q & A Is there any asbestos exposure in the space? Answer: Area has been surveyed for asbestos and none was detected.	12/10/2020
Q31	Question: Pre-Bid Q & A The area is currently ventilated, what is that ventilation attached to? Is protection of an intake necessary? What would that expectation look like?	12/10/2020
	Answer: Ventilation is through an independent exhaust system located near the concourses, AGTS maintenance building and the CUP. Supply air is transferred through the AGTS tunnel into the utility tunnel.	
Q32	Question: Pre-Bid Q & A During demo/roto hammering and saw cutting will it be expected that the ventilation at that point will be shut off? If so does ventilation need to be in place? At that point is it considered a confined space? Can we roto hammer 6" deep at opening for a davit arm?	12/10/2020
	Answer: See response to questions 27 & 32. Local ventilation will need to be determined by the work means and methods of the contractor and confirmed with DEN safety. Note that a davit arm would not	
	be allowed to be attached to the structure so roto-hammering of a 6" deep hole would not be allowed.	
Q33	Question: Pre-Bid Q & A At the hand digging areas where the removed soils are to be reused as backfill for the IS pipe, do these areas need to meet any soil compaction requirements, or can the soil just be replaced by hand as needed?	12/10/2020
	Answer: It is anticipated that the soil would be replaced by hand. Dirt clods would need to be smashed before becoming useable for fill material. Fill will need to be separated from the hydronic lines that exist by a minimum of 12" to the insulation.	
Q34	Question: CIPP Material Substitution Please review an email sent to contract.procurement@flydenver.com as per Tunnel Sewer Repairs IFB Final Part II-26 and Spec Section 012510 instructions. We are requesting additional CIPP material product approval for the CIPP installation process. The email provides the submittal data as there is no way to upload documents through the Rocky Mtn BidNet question process. Can you please confirm receipt and let us know if additional information is required for approval?	12/10/2020
	Answer: Insituform product may be considered but will need to meet ALL specification requirements and performance standards. It appears to meet specifications. After NTP, if necessary, provide a formal request for substitution identifying all sections of specification 220811 that the product complies with.	





DENVER INTERNATIONAL AIRPORT **TUNNEL SEWER REPAIRS**

CONTRACT NO. 202056250

BID SUBMITTAL REQUIREMENTS

The following is a checklist for reference when compiling the Bid submission. The documents listed below are required:

- □ Bid Forms all complete and signed
 - Bid Letter filled out completely and acknowledge all addenda
 - Bid Data Forms all forms completed and submitted
 - Disclosure of Legal & Administrative Proceedings & Financial Conditions
 - Form W-9
 - · Certificate of Good Standing
 - Bid Bond
- □ DSBO Forms
 - Commitment to MWBE Participation
 - Letter(s) of Intent
 - List of Proposed Subcontractors, Subconsultants, and/or Suppliers (1A)
- □ Diversity Survey
 - Diversity and Inclusiveness in City Solicitations (online survey include the completed survey with your Bid submission)
- Financial Forms
 - Schedule of Prices/Values and Quantities

TAB ONE

Bid Forms

- Bid Letter filled out completely and acknowledge all addenda
- Bid Data Forms all forms completed and submitted
- Disclosure of Legal & Administrative Proceedings & Financial Conditions
- Form W-9
- Certificate of Good Standing
- Bid Bond



VII. <u>ATTACHMENT 1, BID FORMS</u> <u>Attachment 1, Part 1 Bid Acknowledgement Letter</u>

CONTRACT NAME: Tunnel Sewer Repairs

Contract No.: 202056250
Bid Letter
PCL Construction Services, Inc. BIDDER
Chief Executive Officer City and County of Denver Business Management Services (Procurement) Office Airport Office Building, Room 8810 Denver International Airport 8500 Peña Boulevard Denver, Colorado 80249
This letter is in response to the Notice of Invitation for Bids first published on November 20, 2020, for Contract No. 202056250, Denver International Airport, Tunnel Sewer Repairs.
The project is to relocate existing underground plumbing to above ground in the Utility Tunnel area from South of Concourse A to North of Concourse C at Denver International Airport (DEN). Work also includes adding floor drains and flexible connectors, fixing leaking pipes, and rerouting and lining existing underground pipe in the area under the East Baggage Tunnel.
The undersigned Bidder declares that it has carefully examined the location of the proposed work and has carefully read and examined all of the Contract Documents which include, but are not limited to, the Contract Drawings, Technical Specifications, Construction Contract General Conditions, Special Conditions, Instruction to Bidders, and EEO provisions, and hereby proposes to furnish all labor, materials, equipment, tools, transportation and services, and to discharge all duties and obligations necessary and required to perform and complete the Work as required in the Contract Documents which are provided herewith and by this reference made a part hereof for the prices shown in the bid forms and totaled below:
TOTAL BASE BID Amount: Three million five hundred and seventeen
thousand one hundred thirty nine
Dollars and Zero Cents
(\$ <u>3,517,139</u>).

The undersigned acknowledges receipt, understanding and full consideration of the following addenda to the Contract Documents:

The undersigned agrees that this bid is a firm offer to the City to perform and complete the Contract described above which cannot be withdrawn for one hundred fifty (150) calendar days after the bids are opened or until after a contract for the work described in these bid documents is fully executed by the City, whichever date is earlier.

The undersigned Bidder hereby agrees to appear at Denver International Airport, Business Management Services Office, Room 8810, Airport Office Building, at any time within ten (10)) business days from the date of a written notice from the CEO to do so, mailed, emailed, or faxed to the business address of Bidder and at that time the Bidder shall: (1) deliver an executed Contract which conforms with this bid; (2) furnish the required performance and payment bonds in the sum of the Total Contract Bid Amount shown above, executed by a surety company acceptable to the CEO; and (3) furnish the required insurance documents.

Enclosed herewith is a bid guarantee, as defined in the Instructions to Bidders, in the amount of which bid guarantee the undersigned Bidder agrees is to be paid to and become the property of the City as liquidated damages should the bid be considered to be the best by the City and the undersigned Bidder notified that it is the apparent low bidder and it fails to enter into contract in the form prescribed and to furnish the required performance and payment bonds and evidences of insurance within ten (10) business days as stipulated above.

Attached and incorporated herein are the proposed Schedule of Prices and Quantities and Bid Data Forms. All of the forms must be completed. Bidder acknowledges that the City may incorporate, at its option, any or all of the data submitted by the Bidder into a contract arising out of this Bid.

The undersigned Bidder acknowledges the right of the City to waive informalities in the bids, to reject any or all bids submitted, and to re-advertise for bids.

The undersigned certifies that it has examined and is fully familiar with all of the provisions of the Contract Documents and is satisfied that they are accurate; that it has carefully checked all words and figures and all statements made in these Bid forms; and that it has satisfied itself with respect to the actual site conditions and the nature and location of the Work, the general and local conditions which may be encountered in the performance of the Work, and other matters which in any way affect the Work or the cost thereof.

[CERTIFICATION AND SIGNATURE ON FOLLOWING PAGES]

Attachment 1, Part 1 Bid Acknowledgement Letter

This bid is submitted upon the declaration that neither, I (we), nor, to the best of my (our) knowledge, none of the members of my (our) firm or company have either directly or indirectly entered into any agreement, participated in any collusion or otherwise taken any action in restraint of free competitive bidding in connection with this bid.

Dated this 22 day of	20.
BUSINESS ADDRESS OF BIDDER:	2000 S Colorado Blvd, Suite 2-500
City, State, Zip Code:	Denver, CO 80202
Telephone Number of Bidder:	(303) 365.6598
Fax Number of Bidder:	()n/a
Social Security or Employer Id. No. of Bid	der: Dun and Bradstreet: 130856909
Email Address:	rpschmidt@pcl.com
	PRINT NAME OF BIDDER:
Attest:	PCL Construction Servers, Inc.
(Corporate Seal)	Jack Sample
Secretary Secretary SEAL	President

Attachment 1, Part 2 Disclosure of Legal and Administrative Proceedings and Financial Condition

City and County of Denver Denver International Airport (Please use this form)

If no disclo	sure r	equired	in accord	dance w	ith II-1	3, plea	se sig	n affi	rmati	on sta	ateme	ent.			
The under any legal (\$50,000.0 from biddi nor its key (5) years.	or ad 00); ha ng/pro	ministrat s not file oposing o	tive prod d bankru on any Fe	ceeding ptcy wi ederal, S	s which thin the State or	invo last te local g	lve a en (10 goverr	claim) year imen	n in e rs; ha: t proc	excess s not b curem	of Foen (een (ifty debar and r	Thous red oneithe	sand [ersusp erthe	ended Bidder
Signature	N/A					Ti	tle _								
Print Name															
Date															
If disclosur If addition		•				•			ollow	ing sp	ace t	o prc	vide i	inform	nation.
The litigati	on hist	ory for the	Denver D	istrict of	PCL Con	structio	n Serv	ices, Ir	nc. is a	ttache	d here	to. PC	L Cons	tructio	n
Services, In	c., can	affirm that	: it has not	filed bar	nkruptcy	within 1	he las	t ten (1	10) yea	ırs; has	not b	een de	ebarre	d or	
suspended f	rom bio	ding/prop	osing on a	any Feder	ral, State	or loca	gover	nment	t procı	ıremen	ts; and	d neith	ner the	propo	ser
nor its key e	employ	ees have b	een convi	cted of a	bid/prop	osal re	ated c	rime, v	violatio	on or fe	lony ii	n the I	ast five	e (5) ye	ars.
															-

LITIGATION HISTORY

Denver District, PCL Construction Services, Inc. (5 year)

Type of Action	Date of Action	Docket/Case No.	Name of Court/Forum	Names of Parties	Matter Type	Statement of Matter	Status-Outcome
Arbitration	7/21/2016	NA	District Court, Larimer County, Colorado	Tripp Construction, Inc. vs. PCL Construction Services, Inc.	Subcontractor Dispute	Arbitration	Award against PCL (Satisfied)
itigation	10/24/2016	2016CV32557	State of Colorado District Court, Arapahoe County	EIGHTH DISTRICT ELECTRICAL PENSION FUND vs. PCL CONSTRUCTION SERVICES, INC.	Other	Second tier subcontractor on project for PCL failed to pay its fringe benefit contributions in accordance with labor agreements. Plaintiff seeks payment based on bond claim.	Other
itigation	4/18/2017	2017CV30518		BigHorn Plastering of Colorado, Inc. v. PCL Construction Services, Inc.	Subcontractor Dispute	Counterclaim from claim by subrogee of PCL	Settled
itigation	8/23/2017	Case# 2017CV30203		LUDVIK ELECTRIC CO., etc., Pitf. vs. LION VAIL LLC, etc., et al., Dfts	Subcontractor Dispute	Subcontractor dispute	Settled
itigation	9/12/2017	Case # 2017CV30090		SACHA HINDERBERGER, Phf. vs. PCL CONSTRUCTION SERVICES, INC., Dft.	Personal Injury Claim	Personal injury claim	Settled
laim/REA	3/8/2018	Claim #9260157029-001	NA .	250 Columbine Street v. PCL Construction Services, Inc.	Client/Owner Dispute	250 Columbine Project - Construction installation/design requiring reconstruction/repair to several balconies.	Settled
tigation	7/23/2018	Case # 2018CV30622		CPI/MA 9SEVENTY OWNER ILC, ETC., PLTF. vs. PCL CONSTRUCTION SERVICES. INC., ETC., ET AL., DFTS.	Client/Owner Dispute	Construction defect claim	Pending
itigation	9/12/2018	Case # 2018CV32962		Denver Transit Constructors, LLC v. PCL Construction Services, Inc. v. Alliance Glazing Technologies, Inc.	Client/Owner Dispute	Construction Defect. RTD FasTracks - Eagle Project: Pedestrian Bridges and Elevator Shafts	Settled
itigation	8/30/2019	Case # 2019CV33368		PCL Construction Services, Inc v. Monarch Growth Inc, Monarch Casino & Resort, Inc., and Monarch Black Hawk. Inc.	Client/Owner Dispute	Owner nonpayment and interference.	Pending
itigation	10/21/2019	Case # 2019CV30018		WIM 508 LLC v. COOPER STREET DEVELOPMENT, LLC, BILL POSS AND ASSOCIATES, ARCHITECTURE AND PLANNING, P.C. d/b/a POSS ARCHITECTURE + PLANNING, IKE KLIGERMAN BARKLEY ARCHITECTS, PCL CONSTRUCTION SERVICES, INC., CLIMATE CONTROL COMPANY OF GLENWOOD SPRINGS, and ARCHITECTURAL ENGINEERING CONSULTANTS,	Client/Owner Dispute	Construction Defect Claim	Pending

<u>Attach</u>	ment 1, Part 3 Contract Information	
1.	Name of Bidder/Contractor:	PCL Construction Services, Inc.
2.	Type of business entity:	e Contractor
must	rers. Bid must be signed by all joint	or joint venture, give full names of all partners or joint venturers. If bidder is a limited liability company, bid may be signed by member-manager if LLC is organized
3. of De	Prequalified by City and County nver as Construction Contractor :	IA, 2A, 2B Categories:
		Monetary Limit: \$50M
4.	Address of Contractor:	2000 S Colorado Blvd, Suite 2-500
		Denver, CO 80202
	Telephone: 303.365.6598	Fax:
		Email Address: rpschmidt@pcl.com
5.	Established where and when:	Colorado, 1984
6.	Contractor's Banks:	UMB Bank Colorado, n.a.
7.	Principal Officers of Contractor (m	anagers and members if LLC):
Name	Ryan Schmidt	Name: David Clarke
	District Manager	Manager of Finance & Administration Title: Assistant Secretary/ Treasurer
Name	Jack Sample	Name:
	President – PCL Construction Services, Inc	Title:

8.	Bidder's/Contractor's City and Cou Denver Contractor License if it has one:	•	License N 10664 Class: Class A	lo.:	
	A contractor license is required pri submittal.	or to start	t of construction but not prior to bid		
9. partne	Bidder's/Contractor's state of in ership): Colorado	ncorporatio	ion (state of organization if an LLC	or	
10.	Bidder's Surety:	PCL has a joi	oint and serval cop-surety facility, See below for li	st.	
11.	Surety's State of Incorporation:	See Below	, 		
12. areas	Address of Contractor in other (if different from No. 4):	N/A		_	
13.	Name and address of person to e payments:	David Clarl	ırke	_	
receiv	e payments.	2000 S Colorado Blvd, Suite 2-500			
		Denver, CC	CO 80202	_	
14. ventu	•		it shall attach a certified copy of the jowerland in the included as a Contract Docume		
15. the pe	The Bidder/Contractor shall identiferformance of the Work: N/A	fy all applic	icable labor agreements (if any) to be used	ni b	

Sureties are as follows:

IFB No. 202056250 Tunnel Sewer Repairs November 20, 2020

⁻ Fidelity and Deposit Company of Maryland (A Zurich American Insurance Company – LEED cosurety partner) - Incorporated in Illinois

⁻ Travelers Casualty and Surety Company of America - Incorporated in Connecticut

⁻ Federal Insurance Company- Incorporated in Indiana

Attachment 1, Part 4 List of Proposed Non-M/WBE

Bidder Company Name:	PCL Construction Services, Inc.	
IFB Name:	Tunnel Sewer Repairs	
IFB No.:	202056250	

Bidder shall list below the name, business address, work assignment and dollar value of each subcontractor that is **not** a DBE subcontractor that will perform work or labor or provide services to the Bidder relating to this Contract in an amount greater than one and one-half percent (1.5%) of the Bidder's total bid. Only one (1) subcontractor for each portion of the work shall be listed. Any proposed subcontractors to be utilized by the Bidder that are certified as a Small Business Enterprise (SBE) shall <u>also</u> be listed on the "List of Proposed Subcontractors" attached to this IFB.

If the Bidder does not identify a subcontractor to perform portions of the work which could be subcontracted on this form or the <u>List of Proposed DBE Subcontractors</u>, the Bidder, if it is awarded the Contract, agrees not to subcontract such portions that exceed one and one-half percent (1.5%) of the total bid amount until the Contractor has advised the SVP of AIM in writing of the reasons why the subcontractor was not listed in the Bid submission and complied with the requirements of General Condition 502.

If the Bidder is awarded the Contract and does not enter into a subcontract with a subcontractor listed below or on the <u>List of Proposed M/WBE Subcontractors</u>, the Bidder agrees not to subcontract any of the work assignment identified for that subcontractor until the Bidder has advised the SVP of AIM in writing of the reasons why a different subcontractor is being used and has obtained approval.

Subcontractor Information	Work Assignment Subcon				
Name: RK Mechanical	Mechanical	\$1,937,068			
Address: 3800 Xanthia Street					
Denver, CO 80238					
Phone: <u>303-355-9696</u>					

Page 43 Attachment 1, Part 4 List of Proposed Non-DBE Subcontractors

	T	
Name:	CCIP Liner	\$ 362,448
C&L Water Solutions		
Address: 12249 Mead Way		
Littleton, CO 80125		
Phone: 303-791-2521		
1 Holle. <u>300 701 2021</u>		
Name:		
Address		
Address:		
<u></u>		
Phone:		
Name:		
Address:		
71001 0331		
Phone:		
Thore.		
Name:		
Address:		
Phone:		
Name:		
ivallie.		
A daluana.		
Address:		
Phone:		

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IFB No. 202056250 Tunnel Sewer Repairs November 20, 2020

Attachment 1, Part 5 Certification of Non-Segregated Facilities

The Bidder must certify that it does not maintain or provide for its employees any segregated facilities at any of its establishments and that it does not permit its employees to perform their services at any location under its control where segregated facilities are maintained. The Bidder certifies further that it will not maintain or provide for its employees segregated facilities at any of its establishments and that it will not permit its employees to perform their services at any location under its control, where segregated facilities are maintained. The Bidder agrees that a breach of this certification is a violation of the equal opportunity clause in this contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, parking lots, drinking fountains, recreation or entertainment areas, transportation and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, color, religion or national origin because of habit, local custom or any other reason. The Bidder agrees that (except where it has obtained identical certification from proposed subcontractors for specific time period) it will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding Ten Thousand Dollars (\$10,000) which are not exempt from the provisions of the equal opportunity clause and that it will retain such certification in its files.

12-17-2020	
Dated:	_
Р	PCL Construction Services, Inc.
Bidder Company Name:	
Ву:	Par Set I
·	
	District Manager
Title:	

Attachment 1, Part 6 Equal Opportunity Report Statement

The Bidder shall review, complete, sign and submit with its Bid this Equal Opportunity Report Statement (Statement). A Bid may be considered unresponsive and may be rejected, in the City's sole discretion, if the Bidder fails to provide the fully executed Statement or fails to furnish required data. The Bidder shall also, prior to award, furnish such other pertinent information regarding its own employment policies and practices as well as those of its proposed subcontractors as the FAA, the Owner or the Executive Vice Chairman of the President's Committee may require.

The Bidder shall furnish similar Statements executed by each of its first tier and second-tier subcontractors and shall obtain similar compliance by such subcontractors before awarding subcontracts. No subcontract shall be awarded to any non-complying subcontractor.

Equal Opportunity Report Statement as Required in 41 CFR 60-1.7(b)

The Bidder shall complete the following statements by checking the appropriate blanks. Failure to complete these blanks may be grounds for rejection of Bid:

1. The Bidder hasx has not developed and has on file at each establishment affirmative action programs pursuant to 41 CFR 60-1.40 and 41 CFR 60-2.	ent
2. The Bidder has has not participated in any previous contract or subcontr subject to the equal opportunity clause prescribed by Executive Order 11246, as amend	
 The Bidder has x has not filed with the Joint Reporting Committee the ann compliance report on Standard Form 100 (EEO-1 Report). 	ual
4. The Bidder does does not employ fifty (50) or more employees.	
Dated: 12-17-2020	
Bidder Company: PCL Construction Services, Inc. By:	
District Manager	_

Page 46 Attachment 1, Part 7 Bid Bond

Attachment 1, Part 7 Bid Bond

Bidder	PCL C	onstruction	Services.	Inc.

DENVER INTERNATIONAL AIRPORT

Tunnel Sewer Repairs
Contract No. 202056250

Bid Bond

KNOW ALL MEN BY THESE PRESENTS

THAT PCL Construction Services, Inc. ,	as	Principal,	and
Fidelity and Deposit Company of Maryland, a corporation of	rganized and ex	disting under and b	y virtue
of the laws of the State of, and auti	norized to do bu	usiness within the	State of
Colorado as Surety, are held and firmly bound unto the City ar			
in the full and just sum of Five Percent & Amount B.d [ollars and		_ Cents
(\$ 51. & Amount 3:d) lawful money of the United S			
and truly to be made, we bind ourselves, our heirs, executor	rs, administrato	rs, successors and	assigns
jointly and severally, firmly by these presents:			
WHEREAS, the said Principal is herewith submitting its B	id, dated on 🗓	Dumber 22	
2020, for the construction of Contract No. 202056250, Tu	innel Sewer Rep	airs, Denver Inter	national
Airport, as set forth in detail in the contract documents for the	City and Count	y of Denver, Colora	ado, and
said Obligee has required as a condition for receiving said B	id that the Prin	cipal deposit speci	ified bid
security in the amount of not less than five percent (5%) of th	e amount of sai	d Bid, as it relates	to work
to be performed for the City, conditioned that in event of failu			
for such construction and furnish required Performance and			
him, that said sum be paid immediately to the Obligee as liqu			
the Principal's failure to perform.		•	
and the state of t			

The condition of this obligation is such that if the aforesaid Principal shall, within the period specified therefor, on the prescribed form presented to him for signature, enter into a written Contract with the Obligee in accordance with his bid as accepted, and give Performance and Payment Bond with good and sufficient surety or sureties, upon the form prescribed by the Obligee, for the faithful performance and the proper fulfillment of said Contract, or in the event of withdrawal of said bid within the time specified, or upon the payment to the Obligee of the sum determined upon herein, as liquidated damages and not as a Penalty, in the event the Principal fails to enter into said Contract and give such Performance and Payment Bond within the time specified, then this Obligation shall be null and void, otherwise to remain in full force and effect.

[END OF PAGE]

Page 47 Attachment 1, Part 7 Bid Bond

Signed, sealed and delivered this <u>16th</u> day of <u>December</u> Attest: PCL Construction Services, Inc. **PRINCIPAL** Secretary Ву: [SEAL if bidder a corporation] Fidelity and Deposit Company of Maryland SURETY Attorney-in-Fact Sandra M. Winsted (ATTACH POWER OF ATTORNEY) Power of Attorney shall be certified as to the date of bid.

ZURICH AMERICAN INSURANCE COMPANY COLONIAL AMERICAN CASUALTY AND SURETY COMPANY FIDELITY AND DEPOSIT COMPANY OF MARYLAND POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS: That the ZURICH AMERICAN INSURANCE COMPANY, a corporation of the State of New York, the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, a corporation of the State of Illinois, and the FIDELITY AND DEPOSIT COMPANY OF MARYLAND a corporation of the State of Illinois (herein collectively called the "Companies"), by Robert D. Murray, Vice President, in pursuance of authority granted by Article V, Section 8, of the By-Laws of said Companies, which are set forth on the reverse side hereof and are hereby certified to be in full force and effect on the date hereof, do hereby nominate, constitute, and appoint Sandra M. WINSTED, Diane M. O'LEARY, Susan A. WELSH, Judith A. LUCKY-EFTIMOV, James B. MCTAGGART, Debra J. DOYLE, Sandra M. NOWAK, Jessica B. DEMPSEY, Christina L. SANDOVAL, Kristin L HANNIGAN and Samantha CHIERICI, all of Chicago, Illinois, EACH, its true and lawful agent and Attorney-in-Fact, to make, execute, seal and deliver, for, and on its behalf as surety, and as its act and deed: any and all bonds and undertakings, and the execution of such bonds or undertakings in pursuance of these presents, shall be as binding upon said Companies, as fully and amply, to all intents and purposes, as if they had been duly executed and acknowledged by the regularly elected officers of the ZURICH AMERICAN INSURANCE COMPANY at its office in New York, New York., the regularly elected officers of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND at its office in Owings Mills, Maryland, in their own proper persons.

The said Vice President does hereby certify that the extract set forth on the reverse side hereof is a true copy of Article V, Section 8, of the By-Laws of said Companies and is now in force.

IN WITNESS WHEREOF, the said Vice-President has hereunto subscribed his/her names and affixed the Corporate Seals of the said ZURICH AMERICAN INSURANCE COMPANY, COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, and FIDELITY AND DEPOSIT COMPANY OF MARYLAND, this 8th day of April, A.D. 2020.







ZURICH AMERICAN INSURANCE COMPANY
COLONIAL AMERICAN CASUALTY AND SURETY COMPANY
FIDELITY AND DEPOSIT COMPANY OF MARYLAND

By: Robert D. Murray Vice President

Dawn E. Brown

State of Maryland County of Baltimore

Secretary

On this 8th day of April, A.D. 2020, before the subscriber, a Notary Public of the State of Maryland, duly commissioned and qualified, **RobertD. Murray**, **Vice President and Dawn E. Brown, Secretary** of the Companies, to me personally known to be the individuals and officers described in and who executed the preceding instrument, and acknowledged the execution of same, and being by me duly sworn, deposeth and saith, that he/she is the said officer of the Company aforesaid, and that the seals affixed to the preceding instrument are the Corporate Seals of said Companies, and that the said Corporate Seals and the signature as such officer were duly affixed and subscribed to the said instrument by the authority and direction of the said Corporations.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my Official Seal the day and year first above written.

Pure de la contraction de la c

Constance a. Dunn Notary Public

Constance A. Dunn, Notary Public My Commission Expires: July 9, 2023

EXTRACT FROM BY-LAWS OF THE COMPANIES

"Article V, Section 8, <u>Attorneys-in-Fact</u>. The Chief Executive Officer, the President, or any Executive Vice President or Vice President may, by written instrument under the attested corporate seal, appoint attorneys-in-fact with authority to execute bonds, policies, recognizances, stipulations, undertakings, or other like instruments on behalf of the Company, and may authorize any officer or any such attorney-in-fact to affix the corporate seal thereto; and may with or without cause modify of revoke any such appointment or authority at any time."

CERTIFICATE

I, the undersigned, Secretary of the ZURICH AMERICAN INSURANCE COMPANY, the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, and the FIDELITY AND DEPOSIT COMPANY OF MARYLAND, do hereby certify that the foregoing Power of Attorney is still in full force and effect on the date of this certificate; and I do further certify that Article V, Section 8, of the By-Laws of the Companies is still in force.

This Power of Attorney and Certificate may be signed by facsimile under and by authority of the following resolution of the Board of Directors of the ZURICH AMERICAN INSURANCE COMPANY at a meeting duly called and held on the 15th day of December 1998.

RESOLVED: "That the signature of the President or a Vice President and the attesting signature of a Secretary or an Assistant Secretary and the Seal of the Company may be affixed by facsimile on any Power of Attorney...Any such Power or any certificate thereof bearing such facsimile signature and seal shall be valid and binding on the Company."

This Power of Attorney and Certificate may be signed by facsimile under and by authority of the following resolution of the Board of Directors of the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY at a meeting duly called and held on the 5th day of May, 1994, and the following resolution of the Board of Directors of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND at a meeting duly called and held on the 10th day of May, 1990.

RESOLVED: "That the facsimile or mechanically reproduced seal of the company and facsimile or mechanically reproduced signature of any Vice-President, Secretary, or Assistant Secretary of the Company, whether made heretofore or hereafter, wherever appearing upon a certified copy of any power of attorney issued by the Company, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

IN TESTIMONY WHEREOF, I have hereunto subscribed my name and affixed the corporate seals of the said Companies, s







By:

Brian M. Hodges Vice President

Burn Hodges

TO REPORT A CLAIM WITH REGARD TO A SURETY BOND, PLEASE SUBMIT A COMPLETE DESCRIPTION OF THE CLAIM INCLUDING THE PRINCIPAL ON THE BOND, THE BOND NUMBER, AND YOUR CONTACT INFORMATION TO:

Zurich Surety Claims
1299 Zurich Way
Schaumburg, IL 60196-1056
www.reportsfclaims@zurichna.com
800-626-4577

(Rev. October 2018) Department of the Treasury Internal Revenue Service

Request for Taxpayer Identification Number and Certification

▶ Go to www.irs.gov/FormW9 for instructions and the latest information.

Give Form to the requester. Do not send to the IRS.

			CONTRACTOR OF THE PARTY OF THE		Schiller.							
	1 Name (as shown on your income tax return). Name is required on this line; do PCL Construction Services, Inc.	not leave this line blank.										
	Business name/disregarded entity name, if different from above											
page 3.	3 Check appropriate box for federal tax classification of the person whose name is entered on line 1. Check only one of the following seven boxes.					he 4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):						
e. ns on	Individual/sole proprietor or C Corporation S Corporation Partnership Trust/estate single-member LLC					Exempt payee code (if any)						
typ	Limited liability company. Enter the tax classification (C=C corporation, S=		ACCORDING TO THE PARTY OF THE P									
Print or type. Specific Instructions on page	Note: Check the appropriate box in the line above for the tax classification LLC if the LLC is classified as a single-member LLC that is disregarded from the owner for U.S. federal tax puris disregarded from the owner should check the appropriate box for the tax.	om the owner unless the our poses. Otherwise, a sing	owner of t gle-memb	he LI	LC is	code	ption fr (if any)		ATCA	\ repo	rting	
)eci	☐ Other (see instructions) ▶				THE STREET	(4.000.32	s to accou		GMAN ALVERT	outside	the U.	S.)
S	5 Address (number, street, and apt. or suite no.) See instructions.		Request	ter's	name	and ad	dress (c	ption	ial)			
See	2000 S. Colorado Blvd., Suite 2-500 6 City, state, and ZIP code											
	1.000 (1.											
	Denver, CO 80222 7 List account number(s) here (optional)							_				
Par	Taxpayer Identification Number (TIN)											
Enter	your TIN in the appropriate box. The TIN provided must match the name	ne given on line 1 to av	roid	Soc	cial se	curity	numbe	_		_	_	_
	p withholding. For individuals, this is generally your social security nunnulation, sole proprietor, or disregarded entity, see the instructions for I		or a			_		-	_			
entitie	s, it is your employer identification number (EIN). If you do not have a r			Ш								
TIN, la		Alas ass 14/hat Mama		or Em	nlove	r identi	fication	nur	nher		_	
	If the account is in more than one name, see the instructions for line 1. er To Give the Requester for guidelines on whose number to enter.	. Also see what Name	ana	Lin	pioye	- Identi	I	T	T	T		
	3			8	4	- 0	9 !	5 7	7 5	5	2	
Par	Certification											
The state of the	penalties of perjury, I certify that:											
2. I an Ser	number shown on this form is my correct taxpayer identification number not subject to backup withholding because: (a) I am exempt from bac vice (IRS) that I am subject to backup withholding as a result of a failur longer subject to backup withholding; and	ckup withholding, or (b) I have r	not b	oeen r	notified	by th	e Int	ernal	l Revo	enue nat I a	am
3. I an	n a U.S. citizen or other U.S. person (defined below); and											
4. The	FATCA code(s) entered on this form (if any) indicating that I am exemp	ot from FATCA reporting	ng is com	rect.								
you ha	ication instructions. You must cross out item 2 above if you have been not be failed to report all interest and dividends on your tax return. For real estition or abandonment of secured property, cancellation of debt, contribution interest and dividends, you are not required to sign the certification, but the contribution is the certification.	tate transactions, item 2 ons to an individual retire	2 does no rement a	ot ap	ply. F gemer	or mor	tgage i , and g	ntere jener	est pa ally, p	aid, paym	ents	use
Sign Here	Signature of U.S. person ▶		Date ▶	9	11/2	20	ZC)				
Gei	neral Instructions	 Form 1099-DIV (d funds) 	ividends,	, inc	luding	g those	e from	stoc	ks or	muti	ual	
Section noted	on references are to the Internal Revenue Code unless otherwise	• Form 1099-MISC proceeds)	(various	type	es of i	ncome	, prize	s, av	vards	s, or g	gross	S
relate	e developments. For the latest information about developments d to Form W-9 and its instructions, such as legislation enacted hey were published, go to www.irs.gov/FormW9.	 Form 1099-B (stoot transactions by brole 		tual	fund	sales a	and ce	rtain	othe	r		
		• Form 1099-S (pro							Name			
	pose of Form	 Form 1099-K (mer 				m vedilere					areij.	v.
inform	dividual or entity (Form W-9 requester) who is required to file an nation return with the IRS must obtain your correct taxpayer fication number (TIN) which may be your social security number	 Form 1098 (home 1098-T (tuition) 			terest), 109	5-E (Sti	Jaen	t loa	n inte	erest),
(SSN)	, individual taxpayer identification number (ITIN), adoption	 Form 1099-C (can Form 1099-A (acq 			ando	nment	of sec	ured	pror	nert A		
	yer identification number (ATIN), or employer identification number to report on an information return the amount paid to you, or other	Use Form W-9 or								20 20 20 20 E	ent	
amou	nt report on an information return the amount paid to you, or other nt reportable on an information return. Examples of information s include, but are not limited to, the following.	alien), to provide yo	ur correc	ct TII	N.							hŧ
	n 1099-INT (interest earned or paid)	be subject to backu										T.

later.

• Form 1099-INT (interest earned or paid)

OFFICE OF THE SECRETARY OF STATE OF THE STATE OF COLORADO

CERTIFICATE OF FACT OF GOOD STANDING

I, Jena Griswold, as the Secretary of State of the State of Colorado, hereby certify that, according to the records of this office.

PCL Construction. Inc.

is a

Corporation

formed or registered on 09/20/2005 under the law of Colorado, has complied with all applicable requirements of this office, and is in good standing with this office. This entity has been assigned entity identification number 20051354674.

This certificate reflects facts established or disclosed by documents delivered to this office on paper through 11/27/2020 that have been posted, and by documents delivered to this office electronically through 12/01/2020 @ 09:15:11.

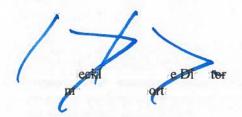
I have affixed hereto the Great Seal of the State of Colorado and duly generated, executed, and issued this official certificate at Denver, Colorado on 12/01/2020 @ 09:15:11 in accordance with applicable law. This certificate is assigned Confirmation Number 12758023 .



Secretary of State of the State of Colorado

Notice: A certificate issued electronically from the Colorado Secretary of State's Web site is fully and immediately valid and effective. However, as an option, the issuance and validity of a certificate obtained electronically may be established by visiting the Validate a Certificate page of the Secretary of State's Web site, http://www.sos.state.co.us/biz/CertificateSearchCriteria.do entering the certificate's confirmation number displayed on the certificate, and following the instructions displayed. Confirming the issuance of a certificate is merely optional and is not necessary to the valid and effective issuance of a certificate. For more information, visit our Web site, http://www.sos.state.co.us/click "Businesses, trademarks, trade names" and select "Frequently Asked Questions."





City and County of Denver Community Planning and Development www.denvergov.org/contractor licensing

License/Registration Number:

LIC10664

Expiration Date: 05/31/2021

License Type: General Contractor - Class A

Issued To:

By Authority of the Executive Director of Community Planning and Development

PCL CONSTRUCTION SERVICES INC. 2000 S COLORADO BLVD TOWER 2 DENVER, CO 80222

> **Amount** \$250.00

Fund/Org/Revenue Code R351800-*-01010-0141200 Payment Date Trans# 05/04/2018

4329656

Status Paid

Wallet Contractor ID Card: MUST BE KEPT IN YOUR POSSESSION AT ALL TIMES.

Cut on outside of line, then fold in half.

City and County of Denver

IDENTIFICATION CARD

License/Registration

No.:

This is to certify that PCL CONSTRUCTION SERVICES INC has been issued a General Contractor - Class A license in the City and County of Denver, beginning on 04 May 2018 and ending on 31 May 2021, unless license is revoked.

> By Authority of the Executive Director of Community Planning and Development

City and County of Denver Community Planning and Development 201 W COLFAX AVE DEPT 205 DENVER, COLORADO 80202



Licenses & Certificates: 720.865.2770 Permit Counter: 720.865.2705 Inspection Administration: 720.865.2505 Automated Inspection Request: 720.865.2501

LIC. 100 (4/100) CPDA

TAB TWO

DSB0 Forms

- Commitment to MWBE Participation
- Letter(s) of Intent
- List of Proposed Subcontractors, Subconsultants, and/or Suppliers (1A)



TOGETHER WE BUILD SUCCESS.



DIVISION OF SMALL BUSINESS OPPORTUNITY (DSBO) COMMITMENT TO MWBE PARTICIPATION

This page must be completed by all Bidders/Proposers to indicate their commitment towards satisfying the MWBE participation goal. The commitment will be incorporated into the contract and thereby the selected Bidder/Proposer's will be held to that commitment. (Please check the appropriate box):

COMPLETE IF YOU ARE A NON MWBE PRIME:		
\square The City and County of Denver has specified a $\frac{18}{2}$ % N	IWBE Participation goal on this project	Гhe
Bidder/Proposer is committed to meeting $\underline{}$ MWBE	Participation on the contract.	
COMPLETE IF YOU ARE A MWBE PRIME:		
\Box The City and County of Denver has specified a% N	IWBE Participation goal on this project. ⁻	Гhe
Bidder/Proposer is a certified MWBE with the City and Cou	nty of Denver and is committed to meet	ing%
MWBE Participation on the contract.		
COMPLETE IF YOU ARE UNABLE TO MEET PROJECT GOAL:	MDE De attitudit e e e el e e dete e este el T	les Biskles /Bessesses
☐ The City and County of Denver has specified a% M is unable to meet this project goal but is committed t		
Bidder/Proposer must make adequate good faith efforts		
Bidder/Proposer must submit a detailed statement and doc	<u> </u>	•
will be conditioned on meeting the requirements of this s		
Division of Small Business Opportunity.		
The undersigned Bidder/Proposer hereby agrees and u		
commitments in this project in conformity with the	Requirements, Terms, and Condition	s of this MWBE
Procurement/Contract Language.		
Bidder/Proposer (Name of Firm): PCL Construction Services, Ir	nc.	
Firms/a Dangacantativa. Duan Cabusida		
Firm's Representative: Ryan Schmidt		_
Title: District Manager		
Simulatura (Simula Barrara atatica)	Date: 12.22.2020	
Signature (Firm's Representative):	Date: 12.22.2020	
Address: 2000 S. Colorado Blvd, Suite 2-500		
City: Denver	State: CO	Zip: 80202
·	State. 9-	Σιρ
Phone: 303.365.6598	Email: spschmidt@pcl.com	



DIVISION OF SMALL BUSINESS OPPORTUNITY (DSBO) LETTER OF INTENT (LOI)

A. The undersigned Bidder/Proposer intends to engage the undersigned MWBE, SBE, EBE or DBE to perform work

Contract No.: 202056250 Project Name: DEN Tunnel Sewer Repairs

if awarded the contract. This Letter of Intent must be Signed DBE. Certified self-performing Prime must complete both sect lower tier, section C must be completed and signed by the firm	ions A and B. If the MW	BE, SBE, EBE or DBE is a
		Self-Performing:
Bidder/Proposer (Name of Firm): PCL Construction Services, Inc.		☐ Yes 🖾 No
Firm's Representative: Ryan Schmidt	Title: District Manage	r
Signature (Firm's Representative):	Date:	12/22/20
Address: 2000 S. Colorado Blvd. Suite 2-500		
City: Denver	State:CO	zip: 80222
Phone: 303-365-6598	Email: rpschmidt@pc	l.com
B. The Following Section is To Be Completed by the MWBE, SBE, I work and NAICS code(s) to be performed and/or supply item DBE.	•	•
Name of Firm: Gorilla Demolition LLC		 ✓ MWBE(√) ☐ SBE(√) ☐ DBE(√)
Firm's Representative: Ashley Ekwall	Title: Owner	
Signature: Ashley Kewall	Date	: 12/22/2020
Address: 3273 S Santa Fe Drive		
City: Englewood	State: Co	Zip: 80110
Phone: 303-697-1325 Email: ashley@gorillademo.co		
Scope of Work: Demolition		
NAICS Code(s): 02-4199, 02-4119		
<u>The Bidder/Proposer</u> intends to utilize the aforementioned MWBE, SBE above. The cost of the work and percentage of the total subcontractor		
\$ 13,465.00		.38 %
C. Lower Tier Utilization: If the certified firm is <u>not</u> a direct first tier su the Bidder/Proposer, please indicate the name of the firm that is utili	· · · · · · · · · · · · · · · · · · ·	ant, and/or supplier to
Name of Firm:		
Firm's Representative:	Title:	
Signature:	Date	₽:

If the above-named Bidder/Proposer is not determined to be the successful Bidder/Proposer, this <u>Letter of Intent</u> shall be null and void.



Contract No.: 202056250

DIVISION OF SMALL BUSINESS OPPORTUNITY (DSBO) LETTER OF INTENT (LOI)

Project Name: DEN Tunnel Sewer Repairs A. The undersigned Bidder/Proposer intends to engage the undersigned MWBE, SBE, EBE or DBE to perform work if awarded the contract. This Letter of Intent must be Signed by the Bidder/Proposer and MWBE, SBE, EBE or

DBE. Certified self-performing Prime must complete both sections A and B. If the MWBE, SBE, EBE or DBE is a

lower tier, section C must be completed and signed by the firm directly utilizing the certified firm.				
	Self-Performing:			
Bidder/Proposer (Name of Firm): PCL Construction Services, Inc.		☐ Yes ☒ No		
Firm's Representative: Ryan Schmidt	Title: District Manag	er		
Signature (Firm's Representative):	Date	:12/22/20		
Address: 2000 S. Colorado Blvd. Suite 2-500				
City: Denver	State:CO	zip: 80222		
Phone: 303-365-6598	Email: rpschmidt@p	cl.com		
B. The Following Section is To Be Completed by the MWBE, SBE, work and NAICS code(s) to be performed and/or supply item DBE.		•		
Name of Firm: LEI Companies, Inc.		™ MWBE(v)		
Firm's Representative: Terry Haley Title: Senior Estimator				
Signature: Terry Haley	Date: 12/18/20			
Address: 14828 W. 6th Ave.				
City: Golden	State: CO	Zip: 80401		
Phone: 303.961.1435	Email: thaley@leicompanies.com			
Scope of Work: Electrical Installation				
NAICS Code(s): 238210				
<u>The Bidder/Proposer</u> intends to utilize the aforementioned MWBE, SBE above. The cost of the work and percentage of the total subcontractor				
\$ 58,985 1.68%				
C. Lower Tier Utilization: If the certified firm is <u>not</u> a direct first tier st the Bidder/Proposer, please indicate the name of the firm that is util	-	ltant, and/or supplier to		
Name of Firm:				
Firm's Representative:	Title:			
Signature: Date:				

If the above-named Bidder/Proposer is not determined to be the successful Bidder/Proposer, this Letter of Intent shall be null and void.



Contract No.: 202056250

DIVISION OF SMALL BUSINESS OPPORTUNITY (DSBO) LETTER OF INTENT (LOI)

Project Name: DEN Tunnel Sewer Repairs

		the certified firm. Self-Performing:		
Bidder/Proposer (Name of Firm): PCL Construction Se	rvices, Inc.	☐ Yes 🖾 No		
Firm's Representative: Ryan Schmidt	Title: District Ma	anager		
Signature (Firm's Representative):	Date: 12/22/20			
Address: 2000 S. Colorado Blvd. Suite 2-500				
City: Denver	State:CO	Zip: 80222		
Phone: 303-365-6598	Email: rpschmic	lt@pcl.com		
B. The Following Section is To Be Completed by the N work and NAICS code(s) to be performed and/or s DBE.	supply item that will be provid	ed by the MWBE, SBE, EBE or		
Name of Firm: DRC Construction Services, Inc.		✓ MWBE(v) ☐ SBE(v) EBE(v) ☐ DBE(v)		
Firm's Representative: Brittany Carroll	Title: President			
Signature: B. Carrott		Date: 12 21 2020		
Address: 4100 Rio Grande Ave.				
City: Sedalia	State: CO	zip: 80135		
Phone: 303-688-2166	Email: brittany@d	drcconstruction.us		
Scope of Work: Clean, CCTV Inspection, Abandonmen	nt, CIPP Installation of Sanita	ry Sewers		
NAICS Code(s): 237110				
<u>The Bidder/Proposer</u> intends to utilize the aforementioned above. The cost of the work and percentage of the total sub				
\$ 127,475		3.62 %		
C. Lower Tier Utilization: If the certified firm is <u>not</u> a direct the Bidder/Proposer, please indicate the name of the firm				
Name of Firm:				
Firm's Representative: Signature:	Title:	Date:		

If the above-named Bidder/Proposer is not determined to be the successful Bidder/Proposer, this <u>Letter of Intent</u> shall be null and void.



Contract No.:

DIVISION OF SMALL BUSINESS OPPORTUNITY (DSBO) LETTER OF INTENT (LOI)

Project Name:

A. The undersigned Bidder/Proposer intends to engage the undersigned MWBE, SBE, EBE or DBE to perform work if awarded the contract. This Letter of Intent must be Signed by the Bidder/Proposer and MWBE, SBE, EBE or DBE. Certified self-performing Prime must complete both sections A and B. If the MWBE, SBE, EBE or DBE is a				
lower tier, section C must be completed and signed by the firm				
Bidder/Proposer (Name of Firm): PCL Construction Services, Inc.		Self-Performing: ☐ Yes ☒ No		
Firm's Representative: Ryan Schmidt	Title: District Manager	r		
Signature (Firm's Representative):	Date: 12/22/2020			
Address: 2000 S. Colorado Blvd. Suite 2-500				
City: Denver	State: CO	Zip: 80222		
Phone: 303-365-6598	Email: rpschmidt@pcl.com			
B. The Following Section is To Be Completed by the MWBE, SBE, EBE or DBE, at any tier. Identify the scope of the work and NAICS code(s) to be performed and/or supply item that will be provided by the MWBE, SBE, EBE or DBE.				
Name of Firm: Cole Construction, LLC				
Firm's Representative: , Trent Lockett	Title: Director of Oper	rations - Colorado Div.		
Signature: WWW	Date: 12/21/2020			
Address: 20853 Ashburn Road				
City: Ashburn	State: VA	Zip: 20147		
Phone: 303-845-2476	Email: tlockett@coleconstructionteam.com			
Scope of Work:				
NAICS Code(s): 238220				
<u>The Bidder/Proposer</u> intends to utilize the aforementioned MWBE, SBE, EBE or DBE for the Work/Supply described above. The cost of the work and percentage of the total subcontractor MWBE, SBE, EBE or DBE bid amount is:				
above. The cost of the work and percentage of the total subcontractor	IVIVIDE, 3DE, EDE OF DDE I	old amount is.		
\$774,827		22.03 %		
C. Lower Tier Utilization: If the certified firm is <u>not</u> a direct first tier subcontractor, subconsultant, and/or supplier to the Bidder/Proposer, please indicate the name of the firm that is utilizing the certified firm:				
DICE I LIVE	izing the certified firm:			
Name of Firm: RK Mechanical, LLC Firm's Representative: Brandon Evans	Title: Vice Presiden	ıt		
Signature: Brandon Evans	Dat			

If the above-named Bidder/Proposer is not determined to be the successful Bidder/Proposer, this <u>Letter of Intent</u> shall be null and void.



DIVISION OF SMALL BUSINESS OPPORTUNITY (DSBO) 1A - LIST OF PROPOSED SUBCONTRACTORS, SUBCONSULTANTS, AND/OR SUPPLIERS

City & County of Denver Contract No.:	202056250

The undersigned proposes to utilize all listed firms. Any certified firm listed must be certified by the City and County of Denver and a **Letter of Intent (LOI)** submited for each. If additional pages are required, please copy and attach the second page. This form must be updated and sumitted to DSBO when subcontractors, subconsultants, and/or suppliers are added throughout the contract duration.

Contractor/Consultant

Name of Firm: PCL Construction Services, Inc.	□ MWBE (v) □ SBE (v) □ DBE (v) □ EBE (v)		
Firm's Representative: Ryan Schmidt			
Signature:	Date: 12/22/2020		
Address: 2000 S Colorado Blvd, Suite 2-500			
City:Denver	State: _{CO}	Zip: ⁸⁰²⁰²	
Phone: 303-365-6598	Email: rpschimdt@pcl.com		
Total Contract Value \$: 3,517,139	Self-Performing Contract Value \$:689,247		
Subcontractors, Subconsultants, and/or Suppliers			
Name of Firm: Gorilla Demolition		$DBE(V)\;\square\;EBE(V)$	
Firm's Representative: Ashley Ekwall			
Phone: 303-697-1325	Email: ashley@gorillademo.com		
Type of Service: Demolition	Contract Value \$: 13,465		
Anticipated Start Date: May 2021	Anticipated Completion Date: April 2022		
Name of Figure I FI Community Inc.	MANADE (J) MI CDE (J) MI	DDE (-1) 🗆 EDE (-1)	
Name of Firm:LEI Companies, Inc		DRE $(\Lambda) \sqcap ERE(\Lambda)$	
Firm's Representative: Terry Haley			
Phone: 303-961-1435	Email:thaley@leicompanies.com		
Type of Service: Electrical	Contract Value \$: 58,945		
Anticipated Start Date: May 2021	Anticipated Completion Date:	April 2022	
		1	
Name of Firm: DRC Construction Services, Inc.		DBE (√) 🖾 EBE (√)	
Firm's Representative: Brittany Carroll			
Phone: 303-688-2166	Email:brittany@drcconstruction.us		
Type of Service: Electrical	Contract Value \$: 127,475		
Anticipated Start Date: May 2021	Anticipated Completion Date:	April 2022	



Name of Firm: Cole Construction, LLC	\boxtimes MWBE (\lor) \boxtimes SBE (\lor) \boxtimes DBE (\lor) \square EBE (\lor)
Firm's Representative: Trent Lockett	
Phone: 303-845-2476	Email: tlockett@coleconstructionteam.com
Type of Service: Mechanical	Contract Value \$: 774,827
Anticipated Start Date: May 2021	Anticipated Completion Date: April 2022
Name of Firm:	\square MWBE (\forall) \square SBE (\forall) \square DBE (\forall) \square EBE (\forall)
Firm's Representative:	
Phone:	Email:
Type of Service:	Contract Value \$:
Anticipated Start Date:	Anticipated Completion Date:
Name of Firm:	\Box MWBE (\lor) \Box SBE (\lor) \Box DBE (\lor) \Box EBE (\lor)
Firm's Representative:	
Phone:	Email:
Type of Service:	Contract Value \$:
Anticipated Start Date:	Anticipated Completion Date:
Name of Firm:	\square MWBE (\lor) \square SBE (\lor) \square DBE (\lor) \square EBE (\lor)
Firm's Representative:	
Phone:	Email:
Type of Service:	Contract Value \$:
Anticipated Start Date:	Anticipated Completion Date:
Name of Firm:	\Box MWBE (\lor) \Box SBE (\lor) \Box DBE (\lor) \Box EBE (\lor)
Firm's Representative:	
Phone:	Email:
Type of Service:	Contract Value \$:
Anticipated Start Date:	Anticipated Completion Date:
Name of Firm:	\square MWBE (\lor) \square SBE (\lor) \square DBE (\lor) \square EBE (\lor)
Firm's Representative:	
Phone:	Email:
Type of Service:	Contract Value \$:
Anticipated Start Date:	Anticipated Completion Date:

Diversity Survey

Diversity and Inclusiveness in City Solicitations
 (online survey – include the completed survey with your Bid submission)



Reference #	13492419
Status	Complete
Business Email Address	RPSchmidt@PCL.com
Enter Email Address of City and County of Denver contact person facilitating this solicitation.	contract.procurement@flydenver.com
Please provide the City Agency that is facilitating this solicitation:	Denver International Airport
Project Name	TUNNEL SEWER REPAIRS
Solicitation No. (Check Below if Not Applicable)	CONTRACT NO. 202056250
Name of Your Company	PCL Construction Services, Inc.
What Industry is Your Business?	Construction/Landscape/Maintenance Services
Address	2000 S Colorado Blvd., Suite 2-500
City	Denver
State	Colorado
Zip Code	80202
Business Phone Number	13033656500
1. How many employees does your company employ?	Over 100
Number of Full Time:	125
Number of Part Time:	0
2. Do you have a Diversity and Inclusiveness Program?	Yes
2.1. Employment and retention?	Yes
2.2. Procurement and supply chain activities?	Yes
2.3. Customer Service?	Yes
3. Provide a detailed narrative of your company's diversity and inclusiveness principles and programs. This may include, for example, (i) diversity and inclusiveness employee training programs, equal opportunity policies, and the budget amount spent on an annual basis for workplace diversity; or (ii) diversity and inclusiveness training and information to improve customer service. (If Not Applicable, please type N/A below)	PCL values diversity in our clients, projects, workforce, and business partners. We recognize that inclusive practices within our workforce and business partnerships position PCL to advance and sustain our position as a world-class builder by leveraging diverse talent and expertise, backgrounds, and perspectives. Across our organization, our business units employ best practices to meet the diversity and inclusion objectives of PCL, as well as of the clients and communities we serve. Diversity and Inclusion practices align with the core values and guiding principles of the company and

have

been underway for a number of years. PCL's diversity and inclusion programs, practices, and training are implemented and executed by the company's US Director of Diversity and Inclusion with oversight by our

executive leadership team.

Corporate Diversity & Inclusion Statement We've always known that people are our greatest asset.

Construction is a complicated business, and our success

requires the skills and efforts of a diverse group of people, engaged in a wide variety of activities. Our 100-

plus-year tradition of construction excellence is attributable to the efforts of people from different cultures

and backgrounds and with different beliefs. PCL values

the additional perspectives, solutions, and ideas that come from a diverse workforce. We recognize that these

factors allow us to better achieve company objectives and meet the needs of our customers.

We value diversity and are intentionally inclusive in the

areas of:

-Talent

PCL recognizes diversity as a competitive advantage and is focused on attracting and retaining the industry's

best talent through recruitment, engagement, and career

development practices. This provides equitable opportunities for contribution, growth, and advancement.

-Workplace

PCL aspires to be a workplace that represents the diverse communities in which we work, striving to promote a culture that fosters a sense of belonging, equity, mutual respect, and ownership through people, processes, and programs.

-Industry

PCL delivers value for our clients by leveraging diverse,

industry-leading talent charged with providing solutions

through innovative thinking, partnerships, and collaboration.

-Community

PCL invests in the communities we serve, in the spirit of

stewardship and volunteerism, through representation,

involvement, and investment. We support communitybased

organizations that provide education, training, and career assistance to diverse groups of people. PCL is an equal opportunity employer and will not

discriminate against any applicant, employee, vendor or

business partner because of race, religion, color, gender,

sexual orientation, physical or mental disability, age, ancestry, place of origin, national origin, marital status, family status, or veteran status.

What binds us all together, regardless of jobs or personal characteristics, is a shared set of core values:

honesty, integrity, respect, passion, and the development

of a dynamic culture where everyone can learn, teach, improve, and add value for our customers.

At PCL, We Choose to Include.

Corporate Employee Diversity Program – Key Initiatives:

Our employee diversity programs address recruitment,

engagement, advancement, and retention of diverse individuals, as well as veterans and

service members. Under the leadership of PCL's Director

of Diversity and Inclusion, we continue to advance our strategies and efforts to promote workplace diversity to

meet industry and organizational demands. Current efforts include:

Recruitment

- •Partnering and sponsoring diverse student and professional industry organizations to engage diverse potential candidates
- Targeting and attending diversity-focused career fairs to

increase pool of qualified diverse candidates
•Leveraging our social media presence (LinkedIn, Twitter, Facebook, etc.) to share events and key messages that reflect our diversity and inclusion objectives

- •Encouraging women and diverse employees to provide
- referrals of other qualified candidates interested in pursuing a career at PCL
- Supporting organizations focused on providing STEM

and construction education and career opportunities to

girls and historically under-represented youth Internal Engagement

- •Targeted programming designed to promote and increase diverse representation at all levels of the company (Women's Leadership Summit, Diversity in Golfing initiative, Veteran Engagement Task Force)
- •Development of a central internal webpage providing access to diversity-focused education, awareness, and

resource materials

•Conducting internal campaigns such as Women in Construction Week (Aligned with the National

Association of Women in Construction's March celebration) to spotlight the contributions and career

achievements made by women of PCL Promotion of employee involvement in volunteer opportunities in community organizations and events focused on education, training, and support of women, diverse individuals, and veterans/service members Advancement/Retention ·Modification of the company's internal professional/leadership development program to a more inclusive model. The PCL Leadership Academy has recently transitioned into a self-nominating program that is accessible to all eligible employees interested in participating (and not limited only to those nominated management). Ongoing development of employee mentoring and sponsorship programming to increase visibility, access, and advancement opportunities to women, diverse individuals, and veterans/service members employed by **PCL** Consistent assessment of corporate climate and employee engagement through periodic formal companywide engagement surveys Integration of diversity and inclusion themes into new and existing training and leadership development curriculum The targeted budget for 2019 for diversity and inclusion initiatives, education, industry organization memberships, and contributions was \$85,000. A comparable budget has been proposed for 2020. 4. Does your company regularly communicate its Yes diversity and inclusiveness policies to employees? If you answered Yes to Question 4, how does Other ((Periodic publication in weekly corporate email your company regularly communicate its and intranet, initiatives and campaigns)) diversity and inclusiveness policies to employees? (Select all that apply) 5. How often do you provide training and Other ((Upon hire, and as part of a rotating corporate diversity and inclusiveness principles? training/professional development schedule)) 5.1 What percentage of the total number of 51-75% employees generally participate? 6. State how you achieve diversity and PCL values diversity in our clients, workforce, and inclusiveness in supply and procurement partners. We consistently seek relationships with activities. This may include, for example, suppliers and subcontractors that advance our efforts narratives of training programs, equal opportunity policies, diversity or inclusiveness deliver exceptional services and performance to our partnership programs, mentoring and outreach clients. In addition, we strive to form strong bonds programs, and the amount and description of within budget spent on an annual basis for the communities where we work and live. procurement and supplier diversity and PCL staff involved in purchasing and subcontracting

inclusiveness. (If Not Applicable, please type N/A below)

are

encouraged to identify and include diverse suppliers and

subcontractors in the procurement process. Our goal is

to promote inclusive practices that provide maximum opportunity to all companies that meet our purchasing and contracting standards, while:

•Increasing our pool of small, minority, and womanowned

business partners, while maintaining current standards of safety, quality, competitive pricing, and project delivery

•Ensuring that small, minority, and woman-owned businesses are treated fairly during the procurement process

•Helping small and diverse businesses understand PCL's supplier/subcontractor related policies and procedures

•Encouraging small and diverse businesses to become

certified through the appropriate regional, national, and

industry organizations

Supplier diversity classifications include: Small/Disadvantaged, Small, Minority, Women, Veteran, Service-Disabled Veteran, Historically Underutilized Business Zone, Nonprofits, Alaskan Native

Corporations/Indian Tribes, LGBT, physically challenged

or disabled, and other protected groups. Supplier Diversity Activities

Our supplier diversity engagement efforts include outreach, subcontractor mentorship and development, and procurement processes designed to maximize small/diverse company participation. As a company,

are committed to supporting diverse, historically underutilized, and disadvantaged business enterprises.

In addition, we support community-based organizations

that provide education, training and assistance to diverse individuals and businesses.

Outreach/Engagement

PCL understands the importance of providing access to

opportunities through outreach to small and diverse businesses. Our outreach efforts include:

- •Frequent communications via multiple channels to provide businesses with information on outreach activities and subcontracting opportunities
- Large- and small-scale outreach events to build relationships with local small/diverse businesses and provide guidance on PCL prequalification and solicitation

processes

Vendor Database - Small and diverse businesses are

encouraged to register in our Supplier Database to alert

us of their interest in pursuing business/opportunities with PCL and provide basic information that assists us in

soliciting bids.

- •Membership/participation in local small and diverse business organizations
- •Subcontractor mentorship and development: We are committed to the success of our small/diverse business

partners and seek opportunities to provide mentoring and guidance on industry best practices in safety, quality,

and project execution.

Procurement processes to maximize small/diverse company participation:

- •Packaging break-down to identify opportunities that match capabilities within the community
- Maintaining a directory of resources to serve as a reference point for firms seeking assistance and support

services

- •Facilitating relationships and opportunities between subcontractors and for small businesses through networking and referrals
- •Pre-bid screening to identify insurance, liability claims,

safety histories, and financial issues that have the potential of impacting bid participation and performance

In addition to our external engagement efforts, we employ a number of streamlined processes designed to

ensure small business success, including:

- Subcontractor Default Insurance
- Electronic payment system for expedited payments
- Periodic check-ins with small/diverse business partners

to ensure early identification and resolution of issues that

may arise

Annual budget expenditures for procurement and supplier diversity and inclusiveness are based on project

and pursuit load, but average approximately \$25,000 per

year. Supplier diversity budgets are allocated based on

anticipated expenditures for large and small scale outreach events, diverse business organization membership dues, and other engagement activities (such as sponsored workshops).

7. Do you have a diversity and inclusiveness committee?

Yes

7.1 If Yes, how often does it meet?

Monthly

8. Do you have a budget for diversity and

Yes

inclusiveness efforts?

9. Does your company integrate diversity and inclusion competencies into executive/manager performance evaluation plans?	No
I attest that the information represented herein is true, correct and complete, to the best of my knowledge.	Check Here if the Above Statement is True.
Name of Person Completing Form	Valerie Hernandez
Today's Date	12-17-2020
Last Update	2020-12-17 06:55:26
Start Time	2020-12-17 06:49:04
Finish Time	2020-12-17 06:55:26
IP	73.153.16.154
Browser	Chrome
Device	Desktop
Referrer	https://fs7.formsite.com/CCDenver/form161/index.html

TAB FOUR

Financial Forms

- Schedule of Prices/Values and Quantities
- Scope Clarifications



Maria Na	DACE DID DESCRIPTION AND DRICE	Linit	Quantitu	Unit Data	Itom Total
<u>Item No</u> .	BASE BID DESCRIPTION AND PRICE	<u>Unit</u>	Quantity	<u>Unit Rate</u> \$ 3,517,139	<u>Item Tota</u> l \$ 3,517,139
BASE BID	INDUSTRIAL SEWER PIPING SYSTEM SERVING BAGGAGE TUNNEL AND AGTS FLOOR DRAINS, AREA DRAINS AND TRENCH DRAINS - SCOPE OF WORK AS DESCRIBED IN THE DRAWINGS AND SPECIFICATIONS INCLUDING, BUT NOT LIMITED TO THE DEMOLITION OF EXISTING PIPING, NEW FLOOR DRAINS AND CLEANOUTS, FLEXIBLE PIPING JOINTS AND ASSOCIATED NEW PIPING, CAMERA/VIDEO OF 25 LF of 4" WEST OF W1, CIPP OF 12" PIPE INTO DRAINAGE STATIONS, SAW CUTTING/CORE DRILLING OF EXISTING CONCRETE SLAB, BACKFILL, CONCRETE SLAB REPAIRS, FILLING ABANDONED PIPING WITH CONCRETE AND NEW TRENCH AND GRATE OUTSIDE DRAINAGE STATION AT CONCOURSE C.	LUMP SUM	1	\$ 3,317,139	\$ 2,517,139
	Three Million Five Hundred Seventeen Thousand One Hundred Thirty Nine Dollars and No Cents				
	\$3,517,139.00)			
1	IDENTIFY A BREAKOUT COST (INCLUDED IN THE BASE BID) TO MOVE THE EXISTING 6" MAIN IN CONCOURSE C (LOCATED BETWEEN COLUMNS N143 AND N155) APPROXIMATELY 12" TO THE EAST TO LOCATE THE PIPING OUT OF THE EMBANKMENT.	LUMP SUM	REFER TO DRAWINGS	\$ 51,100	\$ 51,100
	Fifty One Thousand One Hundred Dollars and No Cents \$51,100.00				
-		1	REFER TO	\$ 37,848	\$ 37,848
2	IDENTIFY A BREAKOUT COST (INCLUDED IN THE BASE BID) FOR ALL NEW FLOOR DRAINS LOCATED IN THE CENTER CORES OF EACH CONCOURSE, INCLUDING COSTS FOR TRAFFIC CONTROL.	LUMP SUM	DRAWINGS	, ,,,,,	, .,,,,,
	Thirty Seven Thousand Eight Hundred Forty Eight Dollars and No Cents				
	\$37,848.00			Á 505	.
3	IDENTIFY A BREAKOUT COST (INCLUDED IN THE BASE BID) TO REPLACE EXISTING FLOOR DRAIN AND/OR FLOOR CLEANOUT COVER. REFER TO DRAWINGS FOR SPECIFIC LOCATIONS. IDENTIFY QUANTITY OF EACH AND INCLUDE COSTS FOR TRAFFIC CONTROL.	EA	4	\$ 525	\$ 2,100
	Two Thousand One Hundred Dollars and No Cents				
	\$2,100.00				
4	IDENTIFY A BREAKOUT COST (INCLUDED IN THE BASE BID) FOR ALL FLEXIBLE PIPING JOINTS. IDENTIFY QUANTITY AND SIZE.	LUMP SUM	REFER TO DRAWINGS	\$ 161,700	\$ 161,700
	One Hundred Sixty One Thousand Seven Hundred Dollars and No Cents				
	\$161,700.00				

CONTRACT SPECIFCATIONS
SCHEDULE OF PRICES AND QUANTITIES

CONCOURSE A, B, C TUNNEL SEWER REPAIRS 8700, 8900, 9100 PENA BLVD

DENVER INTERNATIONAL AIRPORT CONSTRUCTION CONTRACT: 202056250

IDENTIFY A BREAKOUT COST (INCLUDED IN THE BASE BID) FOR THE NEW TRENCH AND GRATE AT CONCOURSE C.	LUMP SUM	REFER TO DRAWINGS	\$	24,338	\$	24,338
Twenty Four Thousand Three Hundred Thirty Eight Dollars and No Cents						
\$24,338.00						
IDENTIFY A BREAKOUT COST (INCLUDED IN THE BASE BID) FOR CIPP LINER FOR EXISTING PIPING MAINS (WHERE SPECIFICALLY INDICATED ON THE DRAWINGS) WEST OF COLUMN W1.			\$,	\$	362,448
	LUMP SUM					
Three Hundred Sixty Two Thousand Four Hundred Forty Eight Dollars and No Cents						
\$362,448.00						
	AT CONCOURSE C. Twenty Four Thousand Three Hundred Thirty Eight Dollars and No Cents \$24,338.00 IDENTIFY A BREAKOUT COST (INCLUDED IN THE BASE BID) FOR CIPP LINER FOR EXISTING PIPING MAINS (WHERE SPECIFICALLY INDICATED ON THE DRAWINGS) WEST OF COLUMN W1. Three Hundred Sixty Two Thousand Four Hundred Forty Eight Dollars and No Cents	IDENTIFY A BREAKOUT COST (INCLUDED IN THE BASE BID) FOR THE NEW TRENCH AND GRATE AT CONCOURSE C. Twenty Four Thousand Three Hundred Thirty Eight Dollars and No Cents \$24,338.00 IDENTIFY A BREAKOUT COST (INCLUDED IN THE BASE BID) FOR CIPP LINER FOR EXISTING PIPING MAINS (WHERE SPECIFICALLY INDICATED ON THE DRAWINGS) WEST OF COLUMN W1. LUMP SUM Three Hundred Sixty Two Thousand Four Hundred Forty Eight Dollars and No Cents	AT CONCOURSE C. Twenty Four Thousand Three Hundred Thirty Eight Dollars and No Cents \$24,338.00 IDENTIFY A BREAKOUT COST (INCLUDED IN THE BASE BID) FOR CIPP LINER FOR EXISTING PIPING MAINS (WHERE SPECIFICALLY INDICATED ON THE DRAWINGS) WEST OF COLUMN W1. LUMP SUM Three Hundred Sixty Two Thousand Four Hundred Forty Eight Dollars and No Cents	IDENTIFY A BREAKOUT COST (INCLUDED IN THE BASE BID) FOR THE NEW TRENCH AND GRATE AT CONCOURSE C. Twenty Four Thousand Three Hundred Thirty Eight Dollars and No Cents \$24,338.00 IDENTIFY A BREAKOUT COST (INCLUDED IN THE BASE BID) FOR CIPP LINER FOR EXISTING PIPING MAINS (WHERE SPECIFICALLY INDICATED ON THE DRAWINGS) WEST OF COLUMN W1. Three Hundred Sixty Two Thousand Four Hundred Forty Eight Dollars and No Cents	IDENTIFY A BREAKOUT COST (INCLUDED IN THE BASE BID) FOR THE NEW TRENCH AND GRATE AT CONCOURSE C. Twenty Four Thousand Three Hundred Thirty Eight Dollars and No Cents \$24,338.00 IDENTIFY A BREAKOUT COST (INCLUDED IN THE BASE BID) FOR CIPP LINER FOR EXISTING PIPING MAINS (WHERE SPECIFICALLY INDICATED ON THE DRAWINGS) WEST OF COLUMN W1. Three Hundred Sixty Two Thousand Four Hundred Forty Eight Dollars and No Cents	IDENTIFY A BREAKOUT COST (INCLUDED IN THE BASE BID) FOR THE NEW TRENCH AND GRATE AT CONCOURSE C. Twenty Four Thousand Three Hundred Thirty Eight Dollars and No Cents \$24,338.00 IDENTIFY A BREAKOUT COST (INCLUDED IN THE BASE BID) FOR CIPP LINER FOR EXISTING PIPING MAINS (WHERE SPECIFICALLY INDICATED ON THE DRAWINGS) WEST OF COLUMN W1. Three Hundred Sixty Two Thousand Four Hundred Forty Eight Dollars and No Cents

MISCELLANEOUS ITEMS

<u>Item No</u> .	Description and Price	<u>Unit</u>	Quantity	<u>Unit Rate</u>	<u>Item Tota</u> l
	TEXTURA AND USER FEE (IF APPLICABLE) - NO MARKUPS, ONLY TEXTURA INVOICE WILL BE PAID BY DEN.	LUMP SUM	1	\$ 9,100	\$ 9,100
	Nine Thousand One Hundred Dollars and No Cents \$9,100.00				

TOTAL ALL ITEMS (1-7) \$	648 634

<u>Item No</u> .	ADD ALTERNATE DESCRIPTION AND PRICE	<u>Unit</u>	Quantity	<u>Uni</u>	t Rate	<u>ltem</u>	<u>Γota</u> l
1	PROVIDE AN ADD ALTERNATE COST ASSOCIATED WITH PROVIDING SCHEDULE 80 PVC PIPE IN LIEU OF SCHEDULE 40 PVC FOR ALL NEW BURIED PIPING (APPROXIMATELY 180 LF OF 12" AND 1340 LF OF 8", CONTRACTOR TO VERIFY).	LUMPSUM		\$	26,263	\$	26,263
	Twenty Six Thousand Two Hundred Sixty Three Dollars and No Cents \$26,263.00						
2	PROVIDE AN ADD ALTERNATE COST FOR CIPP LINER FOR EXISTING PIPING MAINS (WHERE SPECIFICALLY INDICATED ON THE DRAWINGS) EAST OF COLUMN W1, INCLUDING CAMERA/VIDEO OF EXISTING INDUSTRIAL SEWER PIPING MAIN (EXCLUDE ALL INDICATED BRANCH PIPING). RECORD LOCATION AND EXTENT OF DEFORMATION/DAMAGE OF PIPE. INCLUDE ALL REQUIREMENTS OUTLINED IN THE APPLICABLE SPECIFICATIONS.	LUMP SUM		\$	3,393,875	\$ 3,	393,875
	Three Million Three Hundred Ninety Three Thousand Eight Hundred Seventy Five Dollars and No Cents \$3,393,875.00						
3	PROVIDE AN ADD ALTERNATE COST TO PROVIDE POINT REPAIR OF EXISTING 6" SANITARY MAIN IN THE EAST UTILITY TUNNEL. INCLUDE FURNISHING ALL EQUIPMENT, LABOR AND MATERIALS AND COSTS TO X-RAY SLAB, SAW CUT THE EXISTING SLAB, EXCAVATION, HAUL OFF DAMAGED PIPE, REPLACE 5 LF OF MAIN , IMPORT/HAUL IN IN BACKFIL MATERIAL AND REPLACE THE EXISTING REINFORCED CONCRETE SLAB AND RESTORE SURFACE TO THE SATISFACTION OF THE OWNER.	5 LF	12	\$	39,574	\$	474,888
	Four Hundred Seventy Four Thousand Eight Hundred Eighty Eight Dollars and No Cents \$474,888.00						
1	PROVIDE UNIT PRICE TO REMOVE CONTAMINATED SOILS (FROM THE SITE TO THE NORTH STOCK PILE AREA) THAT IS ENCOUNTERED DURING EXCAVATION/HAND DIGGING. INCLUDE COST FOR TESTING SOIL TO DETERMINE THE CONTAMINATION.	CUBIC YARD	100	\$	10,926	\$ 1,	,092,600
	One Million Ninety Two Thousand Six Hundred Dollars and No Cents \$1,092,600.00						
	\$1,032,000.00		SU	JBTOTAL	ITEMS (1-4)	\$ 4,	987,626



DEN Tunnel Sewer Repairs - Scope Clarifications

DEN Contract Number 202056250 January 19, 2021

General Clarifications

- 1. Our proposal is based on a (365) calendar day schedule with PCL receiving a Notice to Proceed and full authorization to expend costs on or before June 1, 2021.
- 2. Pricing for Add Alternates 1 & 2 is based on receiving notification of their acceptance within 30 calendar days of Notice to Proceed.
- 3. Price includes Building Permit fees. Plan check and permit review fees by DEN.
- 4. Price includes 3rd party material testing and inspections.
- 5. BIM coordination is based on DEN providing existing backgrounds and/or Revit models.

Scope Clarifications

- 1. Base scope includes the CCTV and cleaning of 25' of the 4" IS line west of W1 and 12" IS piping at the Discharge Stations only. CCTV and cleaning of all other existing IS mains are included in Add Alternate #2.
- 2. Pricing for Add Alternate #2 is based on DEN being able to accommodate multiple access pits within the east baggage tunnels that are being worked on concurrently.
- 3. Pricing for Add Alternate #2 excludes repairing any piping with collapsed or missing bottom, sidewall, or top of the pipe greater than 10% of the circumferential area, even if caused during the CCTV and cleaning procedures or if the CCTV equipment gets trapped or lodged. PCL accepts no liability for pipe damage that occurs during normal cleaning actions and/or heavy descaling actions. If either of these conditions are encountered, work to repair the piping will be performed for the Add Alternate #3 unit cost.
- 4. Pricing for Add Alternate #2 & #3 is based on the existing IS mains below the east baggage tunnel being no deeper than 3' below slab. If excavations deeper than 3' are required, additional compensation may be requested to account for temporary shoring, confined space requirements, and/or increase excavation, backfill, flow fill, dewatering, slab demo and slab replacement costs to accommodate a larger slab opening.
- 5. Unit pricing for Add Alternate #3 assumes the point repair work occurs in a location with no obstructions that prevent clear access on all sides of the access hole. Unit pricing excludes temporary shoring or bracing of any existing walls, columns, equipment, or other obstructions that are adjacent to the point repair location.

Exclusions

- 1. Point repair of direct buried Industrial Sewer piping as related to base bid price see Add Alternate #3
- 2. Hazardous material removal or remediation as related to Base Bid scope.
- 3. Repair and impact of damage caused if deluge system in train tunnel is triggered and enters the utility tunnel, provided the triggering of the deluge system is not the fault of Contractor.

Contract & Insurance Clarifications



DEN Tunnel Sewer Repairs - Scope Clarifications

DEN Contract Number 202056250 January 19, 2021

- 1. Delays due to permitting, hazardous material abatement, unforeseen conditions, or other factors beyond the control of PCL will initiate granting of an extension of schedule and associated costs to accommodate the lost time.
- 2. Proposal does not include any potential impacts, costs, charges, delays, or other schedule changes that might arise due to Coronavirus Disease 2019 (COVID-19) or any similar epidemic/pandemic.
- 3. Proposal does not include any potential escalation in the prices of any materials, equipment, or services used in the performance of the Work caused directly or indirectly by the imposition of Canadian, US, or other tariffs. In the event of a change in the prices of any materials, equipment, or services used in the performance of the Work (measured as the difference between the price assumed or incorporated in this Proposal and the price paid by Contractor for the materials or equipment) caused directly or indirectly by the imposition of Canadian, US, or other tariffs, a Change Order shall be issued changing the Contract Price to account for the difference.