FIRST AMENDMENT TO GROUND LEASE AGREEMENT

Southwest Airlines Co. Maintenance Hangar Facility

This **FIRST AMENDMENT TO GROUND LEASE AGREEMENT** (the "First Amendment") is made and entered into by and between the **City and County of Denver,** a municipal corporation of the State of Colorado, (the "**City**"), and **Southwest Airlines Co.,** a corporation organized and existing under and by virtue of the laws of the State of Texas, and authorized to do business in the State of Colorado, (the "**Airline**"), collectively the "Parties."

WITNESSETH

WHEREAS, the City owns and, through the Denver Department of Aviation, operates the Denver International Airport (the "Airport") and has the power to grant rights and privileges with respect thereto, as hereinafter provided; and

WHEREAS, the Airline seeks to design, construct, operate, and maintain an aircraft maintenance hangar (the "Hangar") at the Airport that includes City Components (as hereinafter defined) which are part of the "Project"; and

WHEREAS, on or about March 21, 2019, the Airline entered into the CMR Agreement with Swinerton, Inc., whereby Swinerton, Inc. as the CMR, would provide preconstruction and construction services in connection with the construction of the Project; and

WHEREAS, the Parties previously entered into the Ground Lease (City Contract No. 201947863) through which Airline was given access to begin certain work on the Project (the Ground Lease and this First Amendment are collectively the "Agreement"); and

WHEREAS, through this First Amendment, the Parties seek to finalize the scope of the work and provide other details which shall govern the relationship of the Parties, as it concerns the design and construction of the Project; and

NOW THEREFORE, for and in consideration of the mutual covenants and agreements herein contained, the City and the Airline do hereby mutually undertake, promise and agree, each for itself and its successors, as follows:

ARTICLE I. DEFINITIONS

The defined terms set forth in this First Amendment shall have the meanings set forth in the Ground Lease and the CMR Agreement unless specifically defined or noted herein.

1.1 "Airport" means the Denver International Airport, established and governed by the City and County of Denver Municipal Charter and operated by the DDOA.

1.2 "City Components" means those certain improvements within the Project to and around taxiways and within the airfield fence as designated by the City and set forth in Section 5.5 below.

1.3 "CMR" means the person or entity that entered into the CMR Agreement with the Airline to provide preconstruction and construction services while ultimately serving as a constructor of the Work for the Project during the construction phase. The CMR is at risk for scheduled Project delivery dates at a Final Guaranteed Maximum Price.

1.4 "CMR Agreement" means that certain Construction Manager at Risk Agreement entered into on or about March 21, 2019 between Airline and Swinerton, Inc., including all Contract Documents as defined therein, whereby Swinerton, Inc., as the CMR, would provide preconstruction and construction services in connection with the construction of the Project.

1.5 "DDOA" means the Denver Department of Aviation.

1.6 "Ground Lease" means that certain Ground Lease Contract No. 201947863, dated June 12, 2019, between the City and Airline, through which Airline was given access to the Leased Property to begin certain work on the Project.

1.7 "IFC Plans" shall mean the Approved/Permitted (100%) Issued for Construction Plans approved by the City for the Project.

1.8 "Project" shall mean the construction of site and facility improvements for a new aircraft and maintenance hangar of approximately 150,000 square feet with an apron capacity of eight (8) aircraft.

1.9 "Project Contract Documents" means those documents identified in Article III, Section 3.2 (and subsection 3.2.1) below.

1.10 "Work" means all construction and services, including all preconstruction services and construction services, required by the CMR Agreement, the Contract Documents, and Exhibits, including the City Components, whether completed or partially completed, and includes all other labor, materials, equipment and services provided or to be provided by the CMR to fulfill the CMR's obligations under the CMR Agreement. The Work includes all alterations, amendments, or extensions made by change order or other written orders or directives of Airline. Unless specified otherwise in the CMR Agreement, the Work includes furnishing all materials, supplies, equipment, tools, labor, transportation, supervision, testing, commissioning, training, and providing maintenance and operations manuals and warranties necessary to perform and fully complete the Work. This definition replaces the definition of "Work" set forth in the Ground Lease.

ARTICLE II. AUTHORITY

2.1 Line of Authority. The Chief Executive Officer of the DDOA (the "CEO"), her designee or successor in function, authorizes all Work to construct the Project as set forth in this the Agreement, including the Project Contract Documents. The CEO's authorized representative as it concerns the Project is, in addition to the SVP defined in 4.02 of the Ground Lease, the City Project Manager. The Airline shall submit any reports, memoranda, correspondence and submittals required under the Project Contract Documents to the City Project Manager. The CEO may, from time to time, designate a different City Project Manager, upon written notice to the Airline.

2.2 Limitation on Delegation of Authority. It is expressly understood that although the City Project Manager may gather information about the Project, only the CEO, or the SVP, has the authority to issue any approvals required or allowed, with respect to the DDOA, under the Project Contract Documents.

2.3 Airline Authorized Representative. The Airline's authorized representative as it concerns the Project is its Airline Project Manager. The City and DDOA shall submit any notices, memoranda, correspondence and responses to the Airline's Project Manager. The Airline may, from time to time, designate a different Airline Project Manager, upon written notice to the City.

ARTICLE III. THE PROJECT

3.1 Airline will be exclusively responsible all costs, fees, and expenses associated with the construction of the Project, including the City Components, as set forth in the CMR Agreement and Section 7.1 below. The City is not contributing any funds to the Project but has an interest in the Project as it concerns the functioning of the Airport and the City Components.

3.2 The Project Contract Documents. It is agreed by the Parties that the following list of instruments, drawings and documents, some of which are attached hereto and others incorporated herein by reference, constitute and shall be referred to as the "Project Contract Documents" and all of said instruments, drawings and documents taken together as a whole are as fully a part of the Agreement as if they were set out verbatim and in full herein. The Project Contract Documents represent the entire and complete integration of all understandings between the City and the Airline for the construction of the Project and supersedes all prior negotiations, representations or agreements. No prior or contemporaneous addition, deletion or other amendment hereto shall have any force or effect whatsoever, unless embodied herein in writing. No subsequent novation, renewal, addition, deletion or other amendment hereto shall have any force or effect unless embodied in a written amendatory or other agreement or change order properly executed by the Parties.

3.2.1. The Project Contract Documents include the following:

.1 The Ground Lease;

.2 This First Amendment;

.3 The CMR Agreement (Attached as Exhibit A)[1];

.4 The IFC Plans (Excerpt Attached as Exhibit B)[2];

.5 Airline QA/QC Plans (Attached as Exhibit C);

.6 Airline Construction Safety and Phasing Plan (Attached as Exhibit D);

[1] The CMR Agreement has been redacted to remove CMR's proprietary and confidential business terms with Airline.

[2] Each Party will maintain a complete set of these plans.

.7 Technical Specifications;

.8 Airport Rules, Regulations and Guidelines (Identified in Exhibit E);

.9 Form of CMR Performance and Payment Bonds (Attached as Exhibit F));

.10 Temporary Access Property (Attached as Exhibit G); and

.11 DDOA Inspection Proposal/Scope of Work (Attached as Exhibit H).

3.2.2 The intent of the Project Contract Documents is to include all terms, conditions, work items and services necessary or required for the proper execution and completion of the Project. Airline shall execute the Project as set forth in Project Contract Documents.

3.3 Temporary Access/Use Areas. Section 1.02 of the Ground Lease is modified to add the following provision regarding temporary access/use areas: Airline's right of access, ingress to and egress from the Leased Property shall at all times during the Term of the Agreement include the right to use, access, ingress to, and egress from those certain temporary access/use areas (the "Temporary Access Property") shaded in purple on Exhibit G.

ARTICLE IV. SCOPE OF WORK

4.1 The Airline shall have the right to use the Leased Property for the purposes of designing, constructing, and managing the Project. Specifically, the Airline shall be permitted to perform all work set forth in the IFC Plans, as may be amended from time to time in accordance with the Project Contract Documents. Material modifications of the IFC Plans shall be subject to approval by the DDOA and the City, which shall not be unreasonably withheld. The Airline may commence and undertake the performance of the Work any time after its Effective Date.

4.2 By execution of this First Amendment, the Airline covenants and represents that the Airline is familiar with the Leased Property and the Temporary Access Property and has had sufficient time and opportunity to independently examine and is sufficiently familiar with: the Leased Property, the Temporary Access Property, the character and nature of the Leased Property and Temporary Access Property layout and materials, the character and nature of all Leased Property and Temporary Access Property constraints, restrictions and limitations, and limitations on ingress, egress and construction staging and performance; and the local conditions under which the Work is to be performed, including weather conditions and any other factors which may impact the Work. The Airline's geotechnical investigation shall be the sole basis for knowledge used for design and construction in response to subsurface conditions and for establishment of the Project.

4.3 Airline shall cause the CMR to construct the Project in accordance with the terms of the CMR Agreement, including all applicable laws, the drawings and specifications, other Contract Documents as referenced and defined therein, and the Project Contract Documents. In accordance with the CMR Agreement, Airline shall cause the CMR to perform the Work under the CMR Agreement in the most expeditious and economical manner, consistent with the interests of the Airline and the City, and in a manner which satisfies the City's longstanding commitment to quality, efficiency, value, innovation, partnering, responsiveness to agency and community needs.

ARTICLE V. COORDINATION AND COOPERATION

5.1 The Parties agrees to fully cooperate and coordinate fully with each other in the performance of the Work.

5.2 The Airline shall, as a continuing work item under the Agreement, facilitate coordination, communication and cooperation regarding its performance hereunder with the City and DDOA. In addition, the Airline shall coordinate its efforts under the Agreement with all involved governmental and regulatory entities; provided that any required communications with the FAA for the Project shall only be undertaken by the DDOA.

5.3 Airline General Management and Oversight of the Project. As between the City, DDOA, and Airline, Airline shall have the sole and exclusive right to (a) select any and all design professionals, contractors, and program management professionals as it shall reasonably require to timely and efficiently complete the Project; and (b) manage the design, construction, and operations of the Project and CMR on a day-to-day basis, which shall be exercised in accordance with all applicable laws and requirements as set forth in the Agreement. Airline shall manage the Project in such a manner that the Airport operates efficiently during such construction so as to minimize disruptions to Airport operations.

5.4 Communications with and Approvals by the City and DDOA. The Airline will apply and pay for all applicable costs to obtain required permits for the Work. Where DDOA consent is required, DDOA shall not unreasonably withhold consent. Any Notice to Proceed with the Work shall be provided to the DDOA for approval, which approval shall not be unreasonably withheld. To the extent the Airline is required under the Project Contract Documents to obtain approvals of the DDOA, said approvals (or denials) shall be provided by the DDOA within five (5) business days. To the extent approvals are required by the City, the Airline will obtain such approvals. DDOA agrees to assist Airline, in a reasonable manner, with said City approvals, but Airline acknowledges that DDOA cannot control the response, including response time, of other City departments. In addition to any other notice requirement set forth in this Agreement, the Airline will provide the City Project Manager with monthly reports concerning the ongoing construction of the Project along with appropriate supporting documentation. The City Project Manager will be invited to attend (i) the "Den-Southwest Airlines RON Hangar Construction Coordination Meetings and (ii) any safety meetings conducted pursuant to Section 10.2.B of the General Conditions of the CMR Agreement. Communications concerning the City Components will also be provided pursuant to Section 5.6 below.

5.5 City Components. The Parties acknowledge that the Work includes certain components that may benefit not only the Project, but multiple Airport tenants as well as the City. These City Components include:

5.5.1 Taxiway construction activities including:

.1 Earthwork;

.2 Subbase;

.3 Concrete paving;

.4 Asphalt paving;

.5 Electrical;

.6 Pavement markings;

.7 Stormwater piping;

.8 Seeding;

.9 Signage, and

.10 Fencing.

5.5.2 **S**ite-coordination activities including the following work and locations:

.1 Water line tie-in to Air Operations Area (AOA) side;

.2 Temporary security for gate access;

.3 Construction trailers;

.4 Rubble yard access;

.5 Traffic control;

.6 Temporary Access Property; and

.7 7460 coordination with Denver Operations.

5.6 Coordination of City Components with City/DDOA. The Parties acknowledge that the Airline will design and construct the City Components as part of the Project. In addition to providing the information set forth in Section 5.4 above, any decisions or approvals required of or by the Airline under the CMR Agreement that impact or bear upon the City Components shall also require the approval or consent of the DDOA, which approval or consent shall not be unreasonably denied, delayed or conditioned. Any and all notices, correspondence or other documents required under the Project Contract Documents relating to the City Components to be sent or provided by or to Airline or the PMT shall be simultaneously provided to the City Project Manager. The City Project Manager shall be included in any meeting or discussion concerning the City Components.

ARTICLE VI. CONTRACT TERM AND TIME OF COMMENCEMENT

6.1 Time and Substantial Completion. The Airline, the City, and the DDOA acknowledge that the CMR Agreement requires timely and efficient performance of the Work by the CMR and that time is of the essence thereunder.

6.2 CMR Liquidated Damages relating to Taxiways/Runway closures. The City and Airline acknowledge the Liquidated Damages provision at Section 7.3 and 7.3.2 of the CMR Agreement relating to the closures of runways or taxiways during performance of the Work. Should the CMR fail to reopen any closed runway or taxiway in accordance with the Project Schedule and such delay in reopening any closed runway or taxiway impacts the City or causes damages to be incurred by the City, Airline shall assert a claim for liquidated damages under

Sections 7.3 and 7.3.2 of the CMR Agreement. To the extent Airline recovers any such damages, then after deduction of any costs or expense relating to reopening of any closed runway or taxiway, Airline shall pay to the City 70% of any remaining recovery of liquidated damages. The sharing of liquidated damages is in recognition of the fact that the City will suffer substantial damages, which damages would be difficult to accurately determine, if runways or taxiways fail to reopen in accordance with the Project Schedule. The parties hereto have considered the possible elements of damages and have agreed the amount of liquidated damages for the Airline's failure to reopen the closed runway or taxiway in accordance with the Project Schedule. The Parties agree that the amount of liquidated damages set forth in the CMR Agreement is not a penalty.

6.3 The City reserves the right to seek recovery of liquidated damage amounts from the CMR under the CMR's Performance Bond set forth in 8.1 below. The Parties agree that if liquidated damages are paid to the City, then such liquidated damages shall be the sole remedy for the City for said closures. Nothing contained herein, however, shall waive the City's rights or the Airline's defenses with respect to injuries or losses suffered from the acts or omissions of the other Party, including but not limited to any other breach or default of the Agreement.

6.4 Term of Agreement. Section 5.01 of the Ground Lease is hereby replaced with the following: The Term of the Agreement shall commence on the Effective Date of the Ground Lease and shall terminate on the earlier to occur of (a) the date on which the Airline Support Facilities Lease becomes effective under its terms (acknowledging that the signature date may differ from the effective date); (b) December 31, 2019 (unless extended by request of Airline and approved by CEO), if the Parties have not executed the Airline Support Facilities Hangar Lease Agreement; (c) any early termination in accordance with Article V or Article VIII of the Ground Lease; or (d) at the City's or Airline's option, the date on which the Airport Use Agreement expires or terminates in accordance with its terms, and no new replacement use and lease agreement is executed.

ARTICLE VII. PROJECT COST

7.1 General. As between the City and the Airline, the Airline shall be responsible for all costs associated with the Project and the Work necessary to complete the Project. Those costs include those set forth in the CMR Agreement. In addition, the Airline shall be responsible for the following costs and expenses:

7.1.1 Wages, salaries, and other such costs for Airline personnel dedicated to the Project and for taxes, employee insurance benefits, contributions, assessments and benefits required by law or collective bargaining agreements applicable to those persons.

7.1.2 Permit and inspection coordination, submission and any permit fees.

7.1.3 Costs of the premiums for all bonds and liability insurance that the Airline is required to maintain by the Agreement.

7.1.4 Costs of reproduction, telegrams, facsimile transmissions, long-distance telephone calls, and postage & express delivery charges in connection with the Work.

7.1.5 Costs of the reasonable travel expenses incurred while traveling in discharge of duties in connection with the Work.

7.1.6 Costs associated with the implementation of any safety program for the Project, including any City inspection or audit of such safety program.

7.1.7 Costs incurred by Airline for any design professionals, consultants or third parties providing services to the Project.

7.1.8 Governmental sales, use or similar taxes directly attributable to the Work for which the Airline is liable and not subject to exemption.

7.1.9 Mock-up costs, and the costs of all tests, inspections and approvals, as may be required by the Project Contract Documents or applicable laws, ordinances or public authority for the performance of the Work.

7.1.10 Intellectual property royalties and licenses for items specifically required by the Contract Documents which are, or will be, incorporated into the Work.

7.1.11 Costs of debris and waste removal from the Leased Property and Temporary Access Property and its proper and legal disposal.

7.1.12 Costs for temporary and permanent power, lighting, heat, sewer and water services as required to complete the Work at the Leased Property and Temporary Access Property, and costs for snow removal as required.

7.1.13 Costs incurred by the Airline resulting from the failure of Airline or its consultants to coordinate their work with that of the City and its consultants, if any, after agreeing to the schedules thereof, or failure of **Airline to comply** with directives of the City not in conflict with said schedules.

7.1.14 Costs incurred by the DDOA for independent inspection of the Work as set forth in the DDOA Inspection Proposal/Scope of Work attached as Exhibit H; provided, however, that the amount Airline shall be obligated to pay the DDOA under this section shall be capped at $143,600.00. DDOA will provide Airline monthly invoices for the inspection work, with supporting documentation, and Airline will reimburse DDOA for each invoice within fifteen (15) days of Airline's receipt of the invoice.

SECTION VIII. BONDS AND INSURANCE

8.1 Performance and Payment Bonds.

8.1.1 **Bonds Required of CMR.** Airline shall require payment and performance bonds from the CMR as set forth in Section 11.4 of the CMR Agreement in such format as provided in Exhibit F. CMR shall name the City and County of Denver and the Denver Department of Aviation as dual obligees on said Bonds with the appropriate rider. Payment and performance bonds must be issued by a corporate surety authorized to do business in the State of Colorado and approved by the Mayor and the CEO. Before the Work can begin on the Project, Airline shall have furnished such surety bonds and appropriate Powers of Attorney.

8.2 Insurance.

8.2.1 Airline Insurance. Airline agrees to secure, at or before the execution of this First Amendment, and shall maintain at all times during the term of the performance of the Work under the Agreement, the insurance coverages with the policy limits required under Section 6.03 of the Ground Lease.

8.2.2 CMR Insurance. Airline has required certain insurance coverages of the CMR under the terms of the CMR Agreement. Airline will provide the City with copies of all insurance policies required under Section 11.2 of the CMR Agreement and demonstrate compliance with the insurance requirements in the CMR Agreement.

SECTION IX. ADDITIONAL PROVISIONS

9.1 Unless specifically changed herein, all terms, conditions and requirements set forth in the Ground Lease remain in full force and effect.

9.2 Applicability of Laws. The Agreement between the Airline and the City shall be deemed to have been made in the City and County of Denver, State of Colorado, and shall be subject to, governed by and interpreted and construed in accordance with the laws of the State of Colorado and the Charter, the DRMC, Rules, Regulations, Executive Orders and fiscal rules of the City. As such, the Airline shall at all times comply with the provisions of the Charter, DRMC, Rules, Regulations, Executive Orders and fiscal rules of the City, and those of the State of Colorado and Federal Laws and Rules and Regulations, which in any manner limit, control or apply to the actions or operations of the Airline, any employees, agents or servants of the Airline engaged in the Work or affecting the materials and equipment used in the performance of the Work, as the same may be, from time to time, promulgated, revised or amended.

9.3 Conflict of Interest. The parties agree that no official, officer or employee of the City shall have any personal or beneficial interest whatsoever in the services or property described herein and the City further agrees not to hire or contract for services with any official, officer or employee of the City or any other person which would be in violation of the DRMC Chapter 2, Article IV, Code of Ethics, or Denver City Charter provisions 1.2.9 and 1.2.12.

9.4 City Proprietary or Confidential Information. The Airline understands and agrees that, in performance of the Agreement, the Airline may have access to private or confidential information that may be owned or controlled by the City and that such information may contain proprietary or confidential details, the disclosure of which to third parties may be damaging to the City. The Airline agrees that all information disclosed by the City to the Airline shall be held in confidence and used only in performance of the Agreement. The Airline shall exercise the same standard of care to protect such information as a reasonably prudent Airline would to protect its own proprietary data.

9.5 Notices.

9.5.1. Any notices, demands, or other communications required or permitted to be given by any provision of the Agreement shall be given in writing, delivered personally or sent by registered mail, postage prepaid and return receipt requested, addressed to the parties at the addresses set forth herein or at such other address as either party may hereafter or from time to time designate by written notice to the other party given in accordance herewith.

9.5.2 Section 9.09 of the Ground Lease is hereby replaced with the following notice provision:

Notice shall be considered received on the day on which such notice is actually received by the party to whom it is addressed, or the third (3rd) day after such notice is mailed, whichever is earlier. Unless changed in writing, such notices shall be mailed to:

If to the Airline:	Southwest Airlines Co. 2702 Love Field Drive, HDQ/4PF Dallas, Texas 75235-169311 Attn: Corporate Real Estate Representative
If to the City:	Chief Executive Officer Denver Department of Aviation Airport Office Building 8500 Peña Blvd. Denver, CO 80249-6340
With a copy to:	Airport Legal Services Airport Office Building 8500 Peña Blvd. #9810 Denver, CO 80249-6340
With a copy to:	City Project Manager Southwest Hangar Project Airport Office Building 8500 Peña Blvd. #9810 Denver, CO 80249-6340 Attn: Matt Nutter

9.6 Survival of Certain Provisions. The parties understand and agree that all terms, conditions and covenants of the Agreement, together with the exhibits and attachments hereto, any or all of which, by reasonable implication, contemplate continued performance or compliance beyond the expiration or termination of the Agreement (by expiration of the term or otherwise), shall survive such expiration or termination and shall continue to be enforceable as provided herein. Without limiting the generality of the foregoing, the Airline's obligations for the provision of insurance, for indemnity to the City and for preserving confidentiality of trade secrets and other information shall survive for a period equal to any and all relevant statutes of limitation, plus the time necessary to fully resolve any claims, matters, or actions begun within that period.

9.7 No Personal Liability. No director, officer or employee of either party shall be held personally liable under the Agreement or because of its execution or attempted execution.

9.8 Contract Binding. It is agreed that the Agreement shall be binding on and inure to the benefit of the parties hereto, their heirs, executors, administrators, successors and duly authorized assigns.

9.9 Paragraph Headings. The captions and headings set forth herein are for convenience of reference only and shall not be construed so as to define or limit the terms and provisions hereof.

9.10 Severability. It is understood and agreed by the parties hereto that, if any part, term, or provision of the Agreement, except for the provisions of the Agreement requiring prior appropriation and limiting the total amount to be paid by the City, is by the courts held to be illegal or in conflict with any law of the State of Colorado, the validity of the remaining portions or provisions shall not be affected, and the rights and obligations of the parties shall be construed and enforced as if the Agreement did not contain the particular part, term or provision held to be invalid.

9.11 Counterparts. The Agreement may be executed in counterparts, each of which shall be deemed to be an original, and all of which taken together, shall constitute one and the same instrument.

9.12 Electronic Signatures and Electronic Records. The Parties agree to the use of electronic signatures. This First Amendment, and any other documents requiring a signature hereunder, may be signed electronically by either Party in the manner specified by the City. The Parties agree not to deny the legal effect or enforceability of the Agreement 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 Agreement 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.

9.13 Conduct of Contractor's Personnel.

9.13.1 All contractors or subcontractors hired by Airline, including CMR, must conduct themselves in an orderly and disciplined manner while engaged in the performance of the Project both on and off of the Leased Property. The DDOA expects and will demand that the Airline enforce acceptable and appropriate conduct by all contractors or subcontractors to enhance job and public safety and to present to the public the best possible image of City and DDOA construction activities.

9.13.2 Should any employees or agents of contractors or subcontractor, including CMR, behave in a disorderly manner or be abusive to others by language or actions while engaged in the performance of the Project either on or off the Leased Property or the Temporary Access Property, and if the Airline fails to properly discipline the offender and provide satisfactory assurance that such

behavior will not recur, the City or DDOA is authorized to demand that the Airline no longer assign the offender to the Project. Upon such written demand, the Airline shall promptly remove that individual from the Project.

[END OF FIRST AMENDMENT]

Contract Control Number:

IN WITNESS WHEREOF, the parties have set their hands and affixed their seals at Denver, Colorado as of

SEAL

CITY AND COUNTY OF DENVER

ATTEST:

By_____

_____

APPROVED AS TO FORM:

REGISTERED AND COUNTERSIGNED:

By_____

By_____

By_____

Contract Control Number: PLANE-201947863-01

Contractor Name: Southwest Airlines Co.

By: _____

Name: Stephen F. Sisneros
(please print) Managing Director-Airport Affairs

Title: _____
(please print)

ATTEST: [if required]

By: Hollye Gaman

Name: Hollye Gaman
(please print)

Title: Executive Assistant
(please print)

First Amendment to Ground Lease Agreement
Exhibit A – CMR Agreement

CONFIDENTIAL

CONSTRUCTION MANAGER AT RISK ("CMR") AGREEMENT
FOR PRECONSTRUCTION AND CONSTRUCTION SERVICES

FOR THE

SOUTHWEST AIRLINES CO.
MAINTENANCE HANGAR FACILITY
Denver International Airport
Denver, Colorado

THIS CONSTRUCTION MANAGER AT RISK AGREEMENT ("Agreement") is made and entered into this 21 day of March, 2019 ("Effective Date") by and between:

SOUTHWEST AIRLINES CO.
2702 Love Field Drive
Dallas, Texas 75235

and

SWINERTON, INC.
6890 WEST 52ND AVENUE, SUITE 100
ARVADA, CO 80002

for Preconstruction and Construction Services related to the

SOUTHWEST AIRLINES CO. MAINTENANCE HANGAR FACILITY (the "Project")
Denver International Airport (the "Airport")
26405 E 107th Ave,
Denver, CO 80249

The Architect is:

GHAFARI ASSOCIATES, LLC
17101 Michigan Avenue
Dearborn, MI 48126

In consideration of the mutual covenants and obligations contained herein, **Southwest Airlines Co**. ("Southwest") and **Swinerton, Inc.** ("CMR") agree as set forth herein.

The parties understand and acknowledge that Southwest and the City of Denver (the "City") intend to enter into a lease or other agreement that may include requirements relevant to the construction of the Project. The Project includes the construction of site and facility improvements for a new aircraft and maintenance hangar of approximately [#] [redacted] SG to accommodate [redacted] [type of] aircraft and an apron capacity of [number of aircraft] [redacted]. The Project will have a paving capacity of [as set forth in the plans] [type of] [redacted] aircraft and potential additional expansion. CMR shall coordinate all Project efforts with Southwest and its consultants such that Southwest may meet all requirements imposed upon Southwest in any subsequent lease or other agreement between Southwest and the City. Except as expressly excluded by the terms of this Agreement, the CMR shall be bound by and shall comply with the provisions and requirements pertaining to the CMR and/or construction activities for the Project as set forth in any subsequent lease or other agreement or any other Contract Documents.

This Agreement contains the following Articles:

Article 1

SCOPE OF WORK

1.1 CMR shall perform all Preconstruction and Construction Services as defined in Articles 4 and 6 below by providing all labor, materials, equipment, tools, transportation and supplies necessary to complete the Work described in and reasonably inferable from the Contract Documents for the Project (the "Work"). The CMR accepts the relationship of trust and confidence established between it and Southwest by this Agreement and agrees to furnish its best skill, attention and judgment to, and cooperate with, Southwest and the City in furthering the interests of the Project. The CMR shall furnish design reviews, estimating, scheduling, all other Preconstruction Services, bidding, self-performed work, construction management and administration services and all other Construction Services as may be required and use its best efforts to perform the Work in the most expeditious, economical and thorough manner consistent with Southwest's interests and the interests of the Project. Construction Services as provided in Article 6 may commence before the Preconstruction Phase is completed, in which case, both phases will proceed concurrently.

1.2 The CMR is required, under this Agreement, to provide Preconstruction and Construction Services for the Work on the Project which is located at a busy metropolitan airport. Detailed requirements for conducting construction activities at an operational airport under secure conditions can be found at www.flydenver.com as detailed in the Airport Rules and Regulations.

1.3 The Project is the new maintenance hangar at the Denver International Airport, consisting of Preconstruction and Construction Services for the Work as described in the second paragraph on page 1 of this Agreement. It includes various Project components to be constructed pursuant to certain Specifications and Drawings.

1.4 CMR acknowledges that Southwest and the City may be performing other projects involving procurement and/or construction of systems and appurtenances that require coordination with the ongoing construction of the Project. CMR will be responsible to provide access to the Work area and will coordinate its efforts with Southwest's Separate Contractors and City contractors involved in the design and construction of these other projects. Other projects not constructed by CMR for Southwest or the Airport Authority are critical for the function of the Project and the CMR agrees to develop the Project Schedule with consideration given to these other activities. CMR's overall rights, responsibilities and obligations with respect to the activities of the Separate Contractors are set forth the General Conditions and unless provided for in Article 6 therein, the CMR is not eligible to receive any additional compensation or fee markup on the other elements of work performed by Southwest's Separate Contractors and/or the City.

1.5 **Definitions**. Except as otherwise expressly provided herein, those terms set forth in "Definitions" in the General Conditions shall, when used in this Agreement and in the General Conditions, have the meanings as therein provided.

Article 2

CONTRACT DOCUMENTS

2.1 The Contract Documents are comprised of the following:

2.1.1 This Agreement, including all Exhibits, Attachments, Addenda, and/or Change Orders issued in accordance with this Agreement;

2.1.2 The General Conditions for the Construction Manager at Risk Agreement (the "General Conditions");

2.1.3 The Drawings and Specifications, to be added by Change Order once developed by Southwest, the CMR, and any other required parties;

2.1.4 Any lease entered into between Southwest and the City.

2.1.5 The Airport Authority's Airport Rules and Regulations.

The various documents included as Contract Documents are further defined in the General Conditions of the Contract. Any references to Contract Documents (as noted above) that are not in existence as of the Effective Date of this Agreement or the General Conditions shall not be effective until such time as such Contract Documents have been added to the Agreement by mutually agreed to Change Order.

2.2 This Agreement and the General Conditions include and incorporate the following Exhibits:

Exhibit A: CMR's General Conditions Costs Schedule
Exhibit B: CMR's Preconstruction Schedule of Values
Exhibit C: CMR Conditional Waiver and Release on Progress Payment
Exhibit D: CMR Conditional Waiver and Release on Final Payment
Exhibit E: CMR Unconditional Waiver and Release on Final Payment
Exhibit F: Final Guaranteed Maximum Price Change Order

Exhibit F-1:	List of Drawings/Specifications
Exhibit F-2:	Allowances
Exhibit F-3:	Clarifications and Assumptions
Exhibit F-4:	FGMP Statement and Supporting Documentation
Exhibit F-5:	Construction Schedule of Values
Exhibit F-6:	CMR's Project Construction Schedule
Exhibit F-7:	CMR's Key Personnel

Any references to Exhibits in development that are included in the Agreement or the General Conditions shall not be effective until such time as these Exhibits have been added to the Agreement by mutually agreed to Change Order.

Article 3

INTERPRETATION AND INTENT

3.1 CMR shall perform and complete all Work required under this Agreement, including but not limited to the Preconstruction and Construction Services in a good and workmanlike manner and in strict accordance with all Applicable Laws, the Contract Documents, and all obligations required therein within the Contract Time(s) and Contract Sum, keeping in mind the operational requirements of the Airport. Each Contract Document is an integral part of the Contract, and a requirement occurring in one is as binding as though occurring in all. The Contract Documents shall be interpreted as being explanatory and complementary in requiring complete work ready for use and occupancy or operation in reasonably satisfactory working condition with respect to the functional purposes of the installation. In the event of any inconsistency, conflict, or ambiguity between or among the Contract Documents, the Contract Documents shall take precedence in the order in which they are listed in Section 3.2 below.

3.1.1 **Coordination and Cooperation**. CMR shall coordinate all Preconstruction and Construction Services with all Governmental Authorities, utilities, and all other parties either involved in infrastructure improvements or otherwise affected by the construction requirements. CMR shall assist Southwest's staff and reasonably cooperate with Southwest's legal, financial, design and construction consultants and all other designated representatives during the Preconstruction and Construction phases of the Project.

3.2 To the extent any inconsistency, ambiguity, or discrepancy is found within the Contract Documents, precedence shall be given in the following order of priority, unless otherwise expressly set forth in this Agreement: (1) Change Orders issued after execution of this Agreement, including the FGMP Change Order (except for Exhibit F-3 which shall have the rank of (6) below); (2) this Agreement, including the Exhibits attached hereto and incorporated fully herein; (3) Addenda issued prior to the execution of this Agreement, with the Addenda bearing the latest date taking precedence; (4) the General Conditions; (5) the Lease; (6) Exhibit F-3 of the FGMP Change Order; (7) the Specifications; and (8) the Drawings. Without limiting the foregoing, the terms of the General Conditions of the Contract shall control over any terms in the Drawings or Specifications inconsistent therewith.

3.3 Terms, words and phrases used in the Contract Documents, including this Agreement, shall have the meanings given them in the General Conditions, or as further defined in the Contract Documents.

3.4 The Contract Documents form the entire agreement between Southwest and CMR and by incorporation herein are as fully binding on the parties as if repeated herein. No oral representations or other agreements have been made by the parties except as specifically stated in the Contract Documents. The Contract Documents represent the entire and integrated agreement between the parties hereto and supersede prior negotiations, representations or agreements, either written or oral. CMR and all Subcontractors and Suppliers shall fully comply with the Contract Documents and Applicable Laws.

3.5 By executing this Agreement, CMR represents and acknowledges that, as of the date of the execution of this Agreement, it has examined the Contract Documents and the Project site, and that it has generally satisfied itself as to the nature, location, character, quality and quantity of the Work required by the Contract Documents. CMR acknowledges that the Work includes providing, in addition to Construction Services, Preconstruction Services in connection with the design, constructability, quality and scope of the Work included in the Project. The failure of the CMR to acquaint itself fully with any of the above-described conditions or matters shall not in any way relieve the CMR from the responsibility for performing the Work in accordance with Applicable Laws, the Contract Documents, within the Contract Sum, and within the Contract Time contemplated by the Project Schedule. CMR acknowledges that, through providing the Preconstruction Services, it has participated in the design process sufficiently to understand the design intent, budgetary constraints, scope, quality considerations, nature and constructability of Work as required by the Contract Documents and the Applicable Laws.

3.6 **Prevailing Wage Rates**. CMR acknowledges and represents that it shall, at all times during the performance all Work provided under this Agreement, comply with, and require its Subcontractors to fully comply with Section 20-76 of the Denver Revised Municipal Code that prescribes payment of workers in accordance with prevailing wage rates. To that end, CMR agrees that the rate of wages and fringe benefit payments for all laborers, mechanics, and apprentices employed by the CMR or any Subcontractor on the Project shall not be less than the scale of wages and fringe benefit payments for similar skills or classifications of work as provided for under Denver Revised Municipal Code Sections 20-76(b) and (c). CMR shall provide to all Subcontractors with the applicable prevailing wage rates when soliciting bids and quotes.

3.6.1 CMR and its Subcontractors shall pay all construction workers, mechanics and other laborers at least once a week the full amounts of wages and fringe benefits accrued at the time of payment, computed at wage rates not less than those stated in Denver Revised Municipal Code Sections 20-76(b) and (c), except that the CMR and its Subcontractors shall make such payments to janitorial or custodial workers, and oil and gas employees and contractors, at least biweekly. Current rates are posted on the City of Denver's Auditor's website at www.denvergov.org/auditor under the Prevailing Wage section. CMR and all Subcontractors shall submit weekly payroll reports in LCPtracker which can be accessed at www.lcptracker.com.

3.6.2 CMR shall post in a prominent and easily accessible place at the Project site the scale of wages to be paid by CMR and its Subcontractor and that complaints by third parties, including employees of CMR and its subcontractors, of violations may be submitted to the Auditor of the City of Denver, pursuant to Denver Revised Municipal Code Section 20-76(f).

3.6.3 Should CMR or any subcontractor fail to pay such wages as are required herein, payment to the CMR may be withheld until the CMR furnishes Southwest and the City Auditor satisfactory evidence that such wages have been paid as herein required. Partial payments may be made for those amounts for which proper accounting has been made and support has been provided. Procedures to satisfy these requirements can be found at DRMC § 20-76(d)(4).

3.6.4 CMR shall submit, with each application for payment to Southwest, a true and correct electronically certified copy of the weekly payroll records of all worker, laborers, and mechanics employed by CMR and its Subcontractors on the Project. Such records shall include information showing the number of hours worked by each worker,

laborer or mechanic employed, the hourly pay of such worker, laborer or mechanic, any deductions made from pay, and the net amount of pay received by each worker, laborer or mechanic for the period covered by the payroll. CMR shall attest to compliance with the Prevailing Wage requirements provided in Section 20-76 of the Denver Revised Municipal Code.

3.6.5 CMR shall provide to Southwest, and shall require all Subcontractors to provide to CMR for providing to Southwest, a list of all Subcontractors who will be providing any services under this Agreement. This information shall be submitted to the City of Denver in accordance with prevailing wage requirements.

3.6.6 If any laborer, worker or mechanic employed by the CMR or any Subcontractor has been or is being paid a rate of wages less than the rate of wages required to be paid as indicated herein, Southwest may, by written notice to CMR, suspend or terminate the CMR's right to proceed with the work, or such part of the work as to which there has been a failure to pay the required wages, as provided in Article 12 and General Conditions Article 13.

3.6.7 CMR shall incorporate the provisions set forth in this Section 3.6 into all Subcontracts as required under Section 20-76 of the Denver Revised Municipal Code.

Article 4

PRECONSTRUCTION PHASE SERVICES

The CMR shall perform the services described in this Article which constitute Preconstruction Services. All Preconstruction Services shall be performed in a professional manner and in strict accordance with the Contract Documents and all Applicable Laws. The Preconstruction Phase will begin with Notice to Proceed with Preconstruction Services and will continue until establishment of the Final Guaranteed Maximum Price ("FGMP") unless otherwise terminated or restricted by Southwest. Preconstruction Services shall include items set forth in this Article 4 as well as additional items as requested by Southwest. The Construction Services are set forth in detail in Article 6.

4.1 **Preliminary Evaluation and Information**. CMR shall assist Southwest in evaluating the existing conditions so that Southwest may include such information in its preliminary evaluations, Project scheduling, phasing plans, and budget/price estimating and partial Schematic Design submittals for the Project and the Project components ("Preliminary Evaluation Information"). As part of its Preliminary Evaluation services, CMR shall:

4.1.1 Verify dimensions/details, testing for hazardous material, utility service monitoring/metering/testing and where possible investigating "unknown conditions".

4.1.2 Provide equipment and labor where reasonably required to perform investigative demolition.

4.1.3 Preliminary Badging/Security Access. CMR shall obtain badging privileges at the Airport as soon as practical, but no more than sixty (60) days after contract award. CMR may be required to provide badged resources and personnel to

escort unbadged Design Professionals, designers and/or Southwest personnel from time to time throughout the ongoing Project.

Southwest shall furnish to CMR, by electronic copy, all such Preliminary Evaluation Information prepared prior to the effective date of this Agreement at no cost to CMR.

4.2 **Evaluation of the Project**. CMR shall consult with Southwest to ascertain and arrive at a mutual understanding of the Project requirements. The CMR shall evaluate the Project requirements to gain a clear understanding of the Project, all Project components, Work Packages, phasing plans, schedule, and construction budget requirements each in terms of the other. CMR shall provide input into construction feasibility, actions designed to minimize adverse effects of labor or material shortages, time requirements for procurement, installation, and construction completion, and factors related to construction cost. These shall include estimates of the costs of alternative designs or materials, preliminary budgets and possible economies with respect to space requirements, temporary construction requirements, security requirements, flexibility and expandability requirements, special equipment and systems, site requirements, enabling projects and any other requirements for phasing of the Project and possible issuance of Work Packages. CMR acknowledges that it may be required to coordinate its Work on the Project with work performed by others outside the scope of work on this Project. The CMR will provide to Southwest a Project Evaluation report addressing all aspects of this Section within forty-five (45) Calendar Days from execution of the CMR Agreement.

4.2.1 At various intervals throughout the design phase of the Project, design documents, updated Project budgets, schedules, and phasing plans will be reviewed by the PMT and the Architect and, upon approval by Southwest, issued to the CMR for use in performing the Preconstruction Services. CMR shall promptly prepare detailed estimates of the cost elements of the Project as reasonably required to determine whether or not the budget for the Project including all Work Packages remains realistic. This is a fast track Project with completion deadlines that cannot reasonably be extended. When the Construction Documents are complete and the Work is bid, it will be too late in the process to substantially redesign the Project to meet the budget. For that reason, it is the desire of Southwest to recognize any likely budget overruns as soon as possible, and by this Contract it is employing the CMR to perform design monitoring, estimating, value analysis and other functions to help Southwest meet the Project budget. At any time that CMR develops concerns about the integrity of the budget for the Project or any of the Project components, CMR shall promptly advise the PMT of the concerns through a Variance Report. The Variance Report shall at a minimum state: a) CMR's concern; b) the apparent cause of the concern, delay or budgetary issue; c) in the event of a concern about a delay, specifically demonstrate the negative impact of the delay to the critical path for the Project Schedule; d) define any cost impacts to the Project; e) define any time impacts to the Project; and f) provide CMR's options and proposed resolution to the concern.

4.2.2 **Coordination and Progress Meetings**. CMR shall attend weekly meetings with the appropriate member(s) of the PMT, the Architect, and any Southwest consultants, as necessary. CMR shall participate in review sessions for all phases of the Project, including the development of all Project components, and all Work Packages to ensure the Project, the Project components, and Work Packages are integrated with other activities outside the scope of Work under this Agreement. CMR shall document all Project meetings and provide meeting minutes within three (3) days to the PMT for distribution to all stakeholders.

4.2.3 **Preliminary Schedule and Constructability Review Report**. The CMR shall prepare a preliminary Project schedule (the "Preliminary Schedule") for review by the PMT and approval by Southwest. The Preliminary Schedule shall be based upon Critical Path methodology and shall be included in the Project Schedule. The Preliminary Schedule must include a detailed listing for all activities of the Project and integrate the CMR's services with design deliverables, the work of other consultants, Design Professionals, Subcontractors and Suppliers, and the anticipated construction schedules for any other Southwest Contractors whose work affects the Work, including any work it may be required to perform under a separate contract. Once approved, the Preliminary Schedule shall become the Project Schedule which shall govern the progression of the work on the Project expeditiously and with minimal impact to airline/airport operations and traveling public. The Project Schedule must be updated as required but no less than monthly, unless a longer period for reporting is approved by Southwest. The Project Schedule Milestones shall not be changed or amended except by written approval of Southwest. The CMR shall coordinate and integrate the Project Schedule with the other work performed by Southwest or the Airport Authority.

4.2.4 **Constructability Review Report**. Along with the Preliminary Schedule, CMR shall develop a "Constructability Review" report which will outline items that may challenge the way the Project is to be constructed. Updates to the report, including decision logs, shall be provided on no less than a monthly basis throughout the course of the Project. As Project design proceeds, the Project Schedule shall be updated to indicate proposed activity sequences and durations, milestone dates for receipt and approval of pertinent information, submittal of the IGMP and FGMP proposal, preparation and processing of shop drawings and samples, delivery of materials or equipment requiring long-lead-time procurement, coordination of the Project Work, including the various Project components, occupancy requirements showing Project components having occupancy priority, and the proposed Date of Substantial Completion of the Project and other important milestones. If Project Schedule updates indicate that previously approved schedules may not be met, the CMR shall make appropriate recommendations to Southwest for corrective action. The Constructability Review report shall be updated to provide pertinent analysis of the Project Schedule as necessary.

4.2.5 **Submittal Schedule**. CMR's Preliminary Schedule and later, the Project Schedule, will include a Submittal Schedule for major shop drawings, product data, samples, mock-ups, and other submittals. CMR will promptly review the submittals for compliance with the Contract Documents and perform all activities with respect to Submittals, Shop Drawings and Product Data. CMR shall not allow any Work to be performed until the respective submittal has been approved by the Architect. Southwest may elect to reject Work performed in accordance with submittals that have not been reviewed and approved by the Architect. The Work shall be in accordance with approved submittals.

4.2.6 **Phased Construction**. The CMR shall provide feedback to the PMT and the Architect regarding the issuance of Drawings and Specifications to facilitate phased construction of the Work and potential for multiple beneficial occupancies of various areas of the Project, taking into consideration such factors as economies, time of performance, availability of labor and materials, security requirements and provisions for temporary facilities such as those required for construction maintenance of airport operations, and passenger conveniences. The CMR shall confirm the Work Package breakdown structure as to the various Project components and provide any adjustments necessary to the Preliminary or Project Schedule and phasing plans to allow Work Package content and scope

to be defined in detail and published along with adjusted schedule and phasing plans for the Project.

4.2.7 **Work Packages**. It is anticipated that the Work may be divided into one or more phases or packages (such as the "site work package" and/or the "excavation and preliminary foundation package") which will be ready for commencement of construction before it is appropriate to arrive at the FGMP. If Southwest elects to proceed before the parties agree to the FGMP, CMR shall bid and procure proposals from trade contractors for any pre-FGMP Work and/or packages of the Work identified by the CMR as required to maintain the Project Schedule. Unless an alternate approach is approved in writing by Southwest for any specific scope of work, CMR shall competitively bid such work with specific trades with the intention to contract directly with those trades and not through a third party general contractor.

4.2.7.1 When the price proposal for any portion of the Work is agreed upon by the CMR the PMT, it shall be set forth in a Work Package Authorization which (.1) describes the specific scope of the Work to be performed thereunder; (.2) establishes a price based on Costs of the Work as defined in Section 9.1 herein plus CMR's Fee; and (.3) establishes a completion date for such work and liquidated damage provision, if any, as the parties may agree. No Work will be authorized to commence hereunder until the CMR has complied with the requirements of this Section and Southwest and CMR have entered into a written "Work Package Authorization." If Southwest and the CMR are unable to negotiate a mutually agreeable firm fixed price for the Work Package, Southwest is free to procure performance of the construction services for each Work Package independently of this Agreement.

4.2.7.2 The authorized amount of each Work Package Authorization will be included in the IGMP and, later, the FGMP at the time the Construction Documents are sufficiently complete to establish the FGMP. Prior to Southwest's acceptance of the FGMP, CMR shall not incur any cost to be reimbursed as part of the Cost of the Work for Construction Phase services, except as Southwest may specifically authorize in an executed Work Package Authorization. The Fee, if any, to be charged by CMR on any Work performed under any Work Package Authorization will not exceed the Fee for Construction Services [redacted] set forth in Section 8.1.1.

4.2.7.3 By entering into this Agreement, Southwest is not obligating itself to award any Work Packages to the CMR or to continue to award subsequent Work Packages to the CMR once it has awarded one or more Work Packages to the CMR. If Southwest declines to award any Work Packages to the CMR, this Agreement shall be terminated in accordance with Article 13 of the General Conditions. If Southwest determines not to continue to award subsequent Work Packages to the CMR once it has awarded one or more Work Packages, Southwest may provide notice to the CMR that no additional Work Packages will be awarded to it. Upon receipt of such notice, the CMR shall cease all Work under this Agreement except for the Work necessary to complete Work Packages previously awarded to it unless Southwest otherwise directs. CMR shall remain obligated to complete such Work Packages consistent with the terms and conditions of this Agreement and shall be entitled to receive a pro-rata share of its Fee for approved Work Packages based on the percentage value of the approved Work Packages unless Southwest has otherwise terminated CMR's right to proceed.

4.2.8 **Construction Documents Review**: Throughout the Preconstruction process, Construction Documents will continue to be developed by the Architect, reviewed by the PMT, and issued to the CMR at [redacted] completion. CMR will thoroughly review the Construction Documents at each stage and will develop and provide to Southwest a "Construction Documents Review" report based upon its review and understanding of the Drawings, details, Specifications and other construction Contract Documents as they are being developed. Updates to the report, including decision logs, shall be provided by CMR as necessary. Comments received from Southwest and the City will be discussed and reconciled by the PMT and the Architect and included in the updates. CMR will provide evaluation of alternatives and recommendations on:

4.2.8.1 Preparation of work scope descriptions that represent the various Project components and Work Packages and scope of the Project for use with bid documents for the various Work Packages.

4.2.8.2 Discrepancies or deviations from the established Project performance criteria or omissions in the Contract Documents.

4.2.8.3 Areas of conflict and overlap in the work to be performed by other contractors.

4.2.8.4 Any discrepancies that may result in Change Orders during construction.

4.2.8.5 Alternative solutions whenever the design, including selection of materials, building systems and equipment, affects construction feasibility, cost, schedule or risk.

4.2.8.6 Possible cost savings and recommendations on cost factors, including suggested alternative materials or designs.

4.2.8.7 Applicable risk management, code, and regulatory agency reviews and approvals for the Project.

4.2.8.8 Risk assessment and suggestions to reduce or minimize identified risks that could affect Project cost and Project Schedule.

4.2.8.9 Design package schedule review and reconciliation with Project Schedule.

4.2.8.10 Assessment of "scope creep" and recommendations for resolution.

4.2.8.11 Written confirmation that each Component and/or Work Package is within budget at each review stage.

4.2.9 **Budget Cost Consultation and Control**: CMR shall prepare progressively detailed estimates of Project costs at such intervals as reasonably requested by Southwest but at least at two (2) milestones: (1) at the IGMP proposal stage, based on [redacted] Construction Documents, pursuant to Section 5.1 herein; and (2) upon completion of the Construction Documents in connection with the preparation of the FGMP Proposal pursuant to 5.3 herein. CMR shall develop the estimates using quantity surveys, unit prices or lump sum amounts and include all necessary labor, materials, tools, equipment, overhead and profit. The CMR shall provide design alternatives and other recommendations which will contain costs and keep them within the Project budget and FGMP. At the completion of each cost

review and estimate, the CMR is to report to Southwest an opinion of cost and conformance to the approved IGMP. In the event that projected costs exceed the established construction budget for any Work Package, or the Project as a whole, CMR will develop for approval and implement reasonable strategies to reduce the costs.

4.2.10 **Subcontractors and Suppliers**. The CMR shall seek to develop Subcontractor interest in the Project and shall furnish to Southwest a list of possible Subcontractors, including Suppliers who are to furnish materials or equipment fabricated to a special design and from whom proposals will be requested for each principal portion of the Work. During this Preconstruction Phase, CMR shall employ good-faith efforts to identify M/WBEs to perform portions of the Work in accordance with the M/WBE policy as provided in Section 5.2(B) of the General Conditions. Southwest will promptly reply in writing to the CMR if it knows of any objection to such Subcontractor or Supplier. The receipt of such list shall not require Southwest to investigate the qualifications of proposed Subcontractors or Suppliers, nor shall it waive the right of Southwest to later object to or reject any proposed Subcontractor or Supplier. Selection of Subcontractors shall be coordinated with and approved by Southwest.

4.2.11 **Long Lead-Time Items**. The CMR shall recommend to Southwest a schedule for procurement of long lead-time items which will constitute part of the Work to meet the Project Schedule. At Southwest's option, any such long lead-time item may be procured directly by Southwest, to be installed by a "Separate Contractor" or may be procured by Southwest with the intent that CMR shall become responsible for such item as part of its scope of the Work hereunder. If such long lead-time items are procured by Southwest with the intent that CMR shall become responsible for such items, they shall be procured on terms and conditions reasonably acceptable to the CMR. Upon Southwest's acceptance of any FGMP, all contracts for such items for which CMR shall become responsible shall be assigned by Southwest to the CMR, and upon CMR acceptance, CMR shall accept responsibility for such items as if procured by the CMR. The CMR shall expedite the delivery of long-lead-time items.

4.2.12 **Extent of Responsibility**. The recommendations and suggestions of the CMR concerning design alternatives shall be subject to the review and approval of the Architect and Southwest. It is not the CMR's responsibility to ascertain that the Drawings and Specifications are in accordance with Applicable Laws as defined herein. However, if the CMR recognizes that portions of the Construction Documents are at variance with the Contract Documents, industry standards or Applicable Laws, the CMR shall promptly notify the Architect and Southwest of such variances in writing.

4.2.13 **Value Analysis**. CMR will provide value engineering analysis studies on construction systems and major construction components, including but not limited to the mechanical systems, exterior envelopes, structural systems, roofing systems, lighting and power services. The value analysis will be summarized in a detailed report and distributed to Southwest and the Architect. CMR will conduct a series of value analysis workshops both during the design phase of the Project and after the Construction Documents are issued to develop cost saving ideas for the Project. The formal reports will be prepared following these workshops and distributed to Southwest and the Architect.

4.2.14 **Construction Planning**: CMR will develop and update a "Construction Implementation Plan" that details the CMR's approach to accomplishing the Work. The implementation plan should include, at a minimum, the following:

4.2.14.1 Recommendations regarding the division of the Work into bid packages for the various portions of the Work and methods to be used for selection of contractors and Subcontractors and award of agreements for construction of the Work;

4.2.14.2 A statement of estimated costs for the Work including each Work Package, organized into trade categories, with a list of clarifications and exceptions (if applicable), allowances, and proposed Date of Substantial Completion for each Work Package and its impact on the Project as a whole;

4.2.14.3 Preparation of a schedule of values for the Work and each Work Package;

4.2.14.4 A list of proposed Subcontractors, Suppliers and major manufacturers from which CMR proposes to solicit pricing information and coordination of such activities;

4.2.14.5 Verification of the M/WBE status of the proposed Subcontractors, Suppliers and major manufacturers from which CMR proposes to solicit pricing information for the Work.

4.2.14.6 Verification of the proposed packages for Subcontractor bidding that include Drawings, Specifications and work scope descriptions that represent the scope of Work and each particular Work Package;

4.2.14.7 Identification of items requiring extended delivery times ("long lead items"), and proposed methods to expedite the procurement of such items to ensure their delivery by the required dates;

4.2.14.8 Identification of any testing to be performed by third party testing laboratories and consultants and assist in their selection;

4.2.14.9 The proposed Project-specific Safety Plan for the Project which shall address assignment of responsibilities for safety precautions and programs;

4.2.14.10 Requirements for all temporary facilities and Southwest-furnished equipment necessary to enable the CMR and CMR's Subcontractors to perform the work, including provisions for job site facilities necessary to manage, inspect, and supervise construction of the work and opportunities for facilities and other resources to be shared by the CMR and Southwest's Separate Contractors;

4.2.14.11 Identification of the types and quantities of labor (craft as well as field overhead) required for the Work and each Work Package and review the appropriate categories of labor required for critical phases or stages together with recommendations for actions to minimize adverse effects of labor shortages; and

4.2.14.12 A detailed plan for permitting and inspection activities integral to the published Project Schedule.

4.2.14.13 FAA 7460-1 Temporary Construction: List of proposed construction equipment, and temporary facilities (batch plants, trailers) and their locations, heights, and anticipated schedule durations for use on the project.

4.2.14.14 Construction Safety and Phasing Plan / Safety Plan Compliance Documents: Identify proposed phasing and safety plan for construction at DEN. Include haul routes, temporary facilities, AOA fence alignments, detailed work inside the AOA, Security and Safety during construction.

4.2.14.15 Identify potential borrow sources for imported fill material meeting the requirements for this project.

4.2.15 **Quality Control/Quality Assurance.** CMR shall implement and effectively manage a documented program for quality control of its Work and the work of Subcontractors that is acceptable to Southwest. CMR shall provide throughout the Work, in all phases, regular reports tracking the activity and performance of this program to ensure the quality of the Work being performed will comply with the Contract Documents.

4.3 **Payment for Preconstruction Services**. For Preconstruction Services, CMR shall be paid based upon the Cost of the Work (as defined in Section 9.1 herein) incurred by CMR each month of Preconstruction Services plus a fee of [redacted] Any Work Packages approved and Work begun during the Preconstruction Services phase will be invoiced and tracked as set forth in Section 4.2.7. The CMR shall invoice Southwest monthly for payment on the **25th** day of each month showing the allowable Costs incurred that month for services rendered together with CMR's Fee. Each invoice shall be based on the approved Schedule of Values for the Preconstruction Services, showing the appropriate cost categories and the application of the fee and shall be accompanied by such supporting documentation by Southwest to substantiate the monthly billing. Payments shall be made within thirty (30) Calendar Days after approval of the invoice by Southwest.

4.4 **Changes to Preconstruction Services.** Any changes to the scope of the Preconstruction Services shall be governed by Article 7 of the General Conditions. Delays to the performance of the Preconstruction Services shall similarly be governed by Article 8 of the General Conditions.

4.5 **Insurance for Preconstruction Services and Work Performed During Preconstruction Services Phase**. As of the Effective Date set forth above, and for the duration of the Agreement, including the providing of Preconstruction Services hereunder, the CMR shall maintain in effect insurance policies providing the coverages specified in Section 11.2, subject to the terms, conditions and exclusions stated in such policies (except those exclusions which CMR is specifically required to delete), with limits not less than those set forth therein, with insurers acceptable to Southwest and authorized to do business in the State of Colorado, and under forms of policies reasonably satisfactory to Southwest. In addition, CMR shall meet all insurance requirements set forth in the Lease.

4.6 **Suspension/Termination of Preconstruction Services**. Southwest shall have the sole and exclusive right at any time to suspend or terminate the performance of Preconstruction Services for Southwest's convenience and without cause by giving ten (10) Calendar Days written notice to CMR ("Preconstruction Termination for Convenience"). In such event and provided CMR is not in default of its obligations hereunder, CMR shall immediately surrender any and all work product prepared by CMR for use on the Project and be entitled to payment for Preconstruction Services rendered and accepted by Southwest as having been performed in accordance with this Agreement to the date of suspension or termination. In the event of suspension, but not Termination, of the Work, Southwest shall give ten (10) Calendar Days advance written notice to

CMR of the date Southwest expects to redeploy CMR to complete Preconstruction Services. In the event Southwest does not elect to re-deploy CMR to complete Preconstruction Services within three (3) months of suspension of services, the suspension shall automatically convert to a termination for Southwest's convenience and Southwest shall no longer be obligated hereunder.

Article 5

DEVELOPMENT OF GUARANTEED MAXIMUM PRICE

5.1 **Development of Initial Guaranteed Maximum Price Proposal**. At the time of its bid for the Project and based on [redacted] Construction Documents provided to CMR, the CMR shall prepare, for review and approval by Southwest, an Initial Guaranteed Maximum Price proposal ("IGMP") organized by Project component with subcontractor bids, in a spreadsheet format with sufficient detail and accompanied by supporting data.

5.1.1 The IGMP shall be computed as the sum of the following:

5.1.1.1 [redacted]

5.1.2 The CMR shall meet with Southwest to review the IGMP and the written statement of its basis. In the event that any inconsistencies or inaccuracies in the information are discovered, Southwest shall promptly notify the CMR, who shall make appropriate adjustments to the proposed IGMP, its basis, or both. Southwest may authorize and cause the Architect to revise the Drawings and Specifications to the extent necessary to address any agreed-upon assumptions and clarifications relating to such Drawings and Specifications. Such revised Drawings and Specifications shall be furnished to the CMR in accordance with schedules agreed to by Southwest and the CMR. The CMR shall promptly notify Southwest if such revised Drawings and Specifications are inconsistent with any agreed-upon assumptions and clarifications.

5.1.3 CMR shall finalize [redacted] the IGMP and transmit it to Southwest for review and approval. Prior to approval of the IGMP, the CMR shall not incur any cost to be reimbursed as part of the Cost of the Work, except

as Southwest may specifically authorize in writing through a Work Package Authorization as described in Subsection 4.2.7 above.

5.1.4 Upon approval, the IGMP Proposal shall thereafter become the basis upon which the FGMP shall be established. Prior to approval of the IGMP, the CMR shall not incur any cost to be reimbursed as part of the Cost of the Work, except as Southwest may specifically authorize in writing.

5.2 **Basis of Initial Guaranteed Maximum Price**. The CMR shall include with the proposed IGMP a written statement of its basis, organized by Project Component and including all Work Packages, [redacted]

[redacted]

5.3 **Development of the Final Guaranteed Maximum Price**. The Final Guaranteed Maximum Price for the Project is the "FGMP". The FGMP shall be developed based upon and shall refine and supplement the IGMP in accordance with the following procedure: Within thirty (30) days of the date [redacted] Construction Documents are approved by Southwest and provided to CMR, the CMR shall submit its FGMP Proposal to propose the final guaranteed maximum price of the Project and its components. CMR shall utilize the same spreadsheet format in which the IGMP was presented with the addition of a "cost difference" column. [redacted]

5.3.1 The CMR shall meet with Southwest to review the FGMP Proposal and the written statement of its basis. In the event that any inconsistencies or inaccuracies in the information are discovered, Southwest shall promptly notify the CMR, who shall make appropriate adjustments to the FGMP Proposal, its basis, or both. Southwest shall authorize and cause the Architect to revise the Drawings and Specifications to the extent necessary to address any agreed-upon assumptions and clarifications relating to such Drawings and Specifications. Such revised Drawings and Specifications shall be furnished to the CMR in accordance with schedules agreed to by Southwest and the CMR. The CMR shall promptly notify Southwest if such revised Drawings and Specifications are inconsistent with any agreed-upon assumptions and clarifications.

5.3.2 CMR may, with the written approval of Southwest, submit Construction Documents for permitting at an earlier date. Southwest reserves the right to approve various Work Packages before the FGMP is accepted, by and through the process set forth in Subsection 4.2.7 above.

[redacted]

5.4 **Basis of Final Guaranteed Maximum Price Proposal.** The CMR shall include in the FGMP Proposal a written statement of its basis, [redacted] CMR shall note those portions of the FGMP that are the subject of previously approved Work Package Authorizations.

5.5 **Final Guaranteed Maximum Price ("FGMP") Change Order**. CMR shall prepare the FGMP Proposal so as to meet the deadline for submittal of the FGMP proposal provided in Section 5.3 above. If the parties agree upon the Guaranteed Maximum Price and other items comprising the FGMP Proposal, Southwest shall issue a Change Order (the "FGMP Change Order") thereby establishing the FGMP for the Work, the GCs, the final Project Schedule, completion dates and other portions of the Agreement to provide a fully functional project. The FGMP Change Order shall set forth the FGMP; the Schedule of Values, allowances, assumptions on which the FGMP is based, contingency, alternates, unit prices (if any), GCs, Substantial Completion Date, Final Completion Date, Construction Schedule, and other documentation and information required by Southwest and shall be made a part of this Agreement as Exhibit F. If Southwest, in its discretion, determines that the parties are unable or unwilling to agree upon an FGMP, Southwest may, at its election may take one or more of the following actions:

5.5.1 terminate this Agreement by providing the CMR with notice of termination under Section 4.6 of this Agreement. Promptly after such termination, receipt of final conditional releases from the CMR, its Subcontractors and others performing Work, and the receipt of all documents reasonably requested by Southwest, Southwest shall pay the CMR incurred Preconstruction Costs plus the CMR's Preconstruction Fee thereon as set forth in Section 4.3, as full payment for all Work and services performed by the CMR to that point, which shall be the exclusive and total

amount due the CMR in connection with the Agreement and the termination thereof pursuant to this Section; or

5.5.2 direct the CMR to proceed under a Work Package Authorization as provided in Section 4.2.7; or

5.5.3 direct the CMR to continue to participate in value engineering exercises so that the CMR can submit another FGMP Proposal at a reduced cost, in which case Southwest shall decide whether to accept the revised FGMP Proposal or terminate this Agreement and shall have the rights to proceed or terminate as to that revised FGMP Proposal as set forth in this Section.

5.6 Prior to the issuance of the FGMP Change Order and a written Notice to Proceed with the Construction Phase, the CMR shall not incur any cost to be reimbursed as part of the Cost of the Work for the FGMP, except as Southwest may specifically authorize in writing. Once accepted, the FGMP Change Order shall supersede the IGMP.

5.7 Not later than the approval of the FGMP Change Order by Southwest and issuance of [redacted] Construction Documents, CMR shall submit Construction Documents for permitting and/or approval of the work provided in and approved by the FGMP Change Order by the City permitting offices.

5.8 **Southwest Access to the GMP Process**. Southwest shall be entitled to full access to the details of the CMR's process to arrive at any Work Package Authorization, the IGMP and the FGMP. It is the intent of this Agreement that allowances, assumptions, clarifications, and any other elements that could lead to change orders after the FGMP is determined be held to a minimum.

5.9 **CMR Contingency**. It is understood and agreed that the FGMP Change Order shall include a CMR's Contingency for the purpose of reasonably protecting the CMR's IGMP and FGMP budget and CMR's Preliminary and/or Project Schedule against unanticipated costs incurred and unplanned impacts which must be addressed in order to complete the Work in accordance with the Contract Documents. CMR's use and expenditure of CMR's Contingency shall be strictly governed by the terms and conditions of Section 8.3.

5.9.1 The CMR will provide a monthly accounting to Southwest of all expenses associated with the utilization of the CMR's Contingency. To the extent the CMR utilizes CMR Contingency during any particular month, it shall be entitled to charge its Fee percentage on contingency expended during that month. Fee shall be charged only on contingency sums approved by Southwest and actually expended by CMR.

5.9.2 Periodically, as the CMR is able to fix the Cost of the Work through binding price commitments from Subcontractors or from executed subcontracts, supply agreements, or purchase orders and as the CMR's risk of unforeseen losses is further reduced by the completion of portions of the Work through Work Package Authorizations, the CMR's Contingency shall be reduced by the written agreement of Southwest and the CMR, such agreement not to be unreasonably withheld. Upon the reduction of the CMR's Contingency, Southwest, in its discretion, may cause the FGMP to be reduced by the amount the CMR's Contingency is reduced or may cause such reduction in the CMR's Contingency to be used to pay for a change in the Work authorized pursuant to Article 7 of the General Conditions.

Article 6

CONSTRUCTION PHASE SERVICES

6.1 **Construction Phase Services**. CMR shall construct, supervise and direct the Work and shall be solely responsible for all construction means, methods, techniques, sequences and procedures in connection with the Work, all of which shall be performed in a good and workmanlike manner, in strict compliance with the Contract Documents and all Applicable Laws, within the Contract Time, and not to exceed the Contract Sum. CMR shall provide everything required for the orderly progress and proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated into the Work, including, but not limited to labor, materials, equipment, furnishings, tools, construction equipment and machinery, utilities, transportation and other facilities and services.

6.1.1 **Subcontractors.** Those portions of the Work that CMR does not perform with its own personnel shall be performed under contracts with CMR whereby appropriate Subcontractors provide all labor, materials, equipment, tools, transportation and supplies for the construction of the Project. CMR shall manage the solicitation, assembly and buyout of all subcontractor bid packages under Southwest's direction. CMR shall include specific Agreement clauses in all subcontracts and purchase agreements (exactly as worded except as necessary to properly identify the contracting parties) such as, but not limited to, insurance, Audit and Records Clause, Partial Payments, Termination for Convenience and other clauses as may be appropriate or required by Southwest. CMR will be required to submit its subcontract and/or purchase order form to Southwest for approval prior to any execution or use of same. CMR shall keep a copy of all executed subcontracts and purchase orders entered in connection with this Agreement at the job site and available for inspection by Southwest upon request.

6.1.1.1 CMR shall obtain a minimum of three (3) competitive bids from the Subcontractors, Suppliers and second-tier subcontractors with whom it intends to contract for any portion of the Work or any portion of any Work Package with in excess of [redacted] Pre-qualification of subcontractors should be reviewed Southwest and the PMT. After analyzing such bids, CMR shall deliver such bids to Southwest for coordination with the PMT.

6.1.1.2 **Self-Performed Work**. CMR may self-perform Work but must disclose to Southwest its intention to perform any Work, other than supervision of the Work, by the CMR's own forces. Southwest will require the CMR to submit a proposal along with other subcontractors for work the CMR intends to self-perform. Self-performed work by the CMR should be limited only to those areas where it is in the best interest of the project to do so. [redacted] In order for Work to be self-performed, the CMR must submit a proposal 48 hours in advance of competing bids. CMR must obtain a minimum of [redacted] additional bids from similarly qualified bidders. CMR may execute the Work only after approval by Southwest following review of all bids. CMR acknowledges that the PMT will participate fully in the bid review process and will review any CMR bid using the same criteria.

6.1.1.3 With respect to Subcontractors, second tier subcontractors, and any lower tier subcontractors, CMR shall provide Southwest advance notice and

get Southwest's written concurrence for any proposed subcontract Change Order which exceeds [redacted] regardless of whether or not any such commitment will affect the FGMP. Overhead/Profit markups for Subcontract and lower-tier subcontract Change Orders shall only be allowed as provided in Section 7.5 of the General Conditions.

6.1.2 Southwest will obtain input from CMR as to which bids will be accepted, and will seek approval of the selections by the PMT, which must approve same. Southwest may, at its discretion, award separate contracts for work related to the Project with notice to the CMR, but CMR shall not be required to contract with anyone to whom CMR, Southwest and/or the PMT has reasonable objection.

6.2 **Project Administration, Budgeting and Scheduling**. CMR shall establish and maintain an on-site organization of competent, full-time personnel to conduct the administration of the Project, including coordination with Southwest's Separate Contractors and those furnishing Southwest-furnished materials, furnishings or other items identified in the Construction Documents, provide budgeting and cost control measures, scheduling, review of shop drawings and submittals, and general direction over the Work and progress of the Subcontractors, all of which shall include at least the following:

6.2.1 **Project Budget Control**: Throughout the duration of the Project on a monthly basis, the CMR shall provide updates of ongoing cost and budget impact and provide on-going cost consultation services including procurement and construction cost estimates for the Work, including all Work Package Authorizations and components of the Cost of the Work. In addition, the CMR shall:

6.2.1.1 Maintain cost accounting records in good form on expenditures for materials, labor, or for any other expenditures requiring accounting records, affording Southwest access to these records and preserve them for a period of seven (7) years after final payment is made to the CMR;

6.2.1.2 Comply with Southwest's requirements for submission of progress and final pay applications;

6.2.1.3 Prepare and administer the Schedule of Values together with sworn statements and waivers of lien, contract and disbursement summaries, change order listings and change orders, and budget cost summary reports and submit same to Southwest on a monthly basis;

6.2.1.4 Prepare and administer Subcontractors' schedule of values, sworn statements and waivers of lien, contract and disbursement summaries, change order listings and change orders, and budget cost summary reports and submit same to Southwest on a monthly basis.

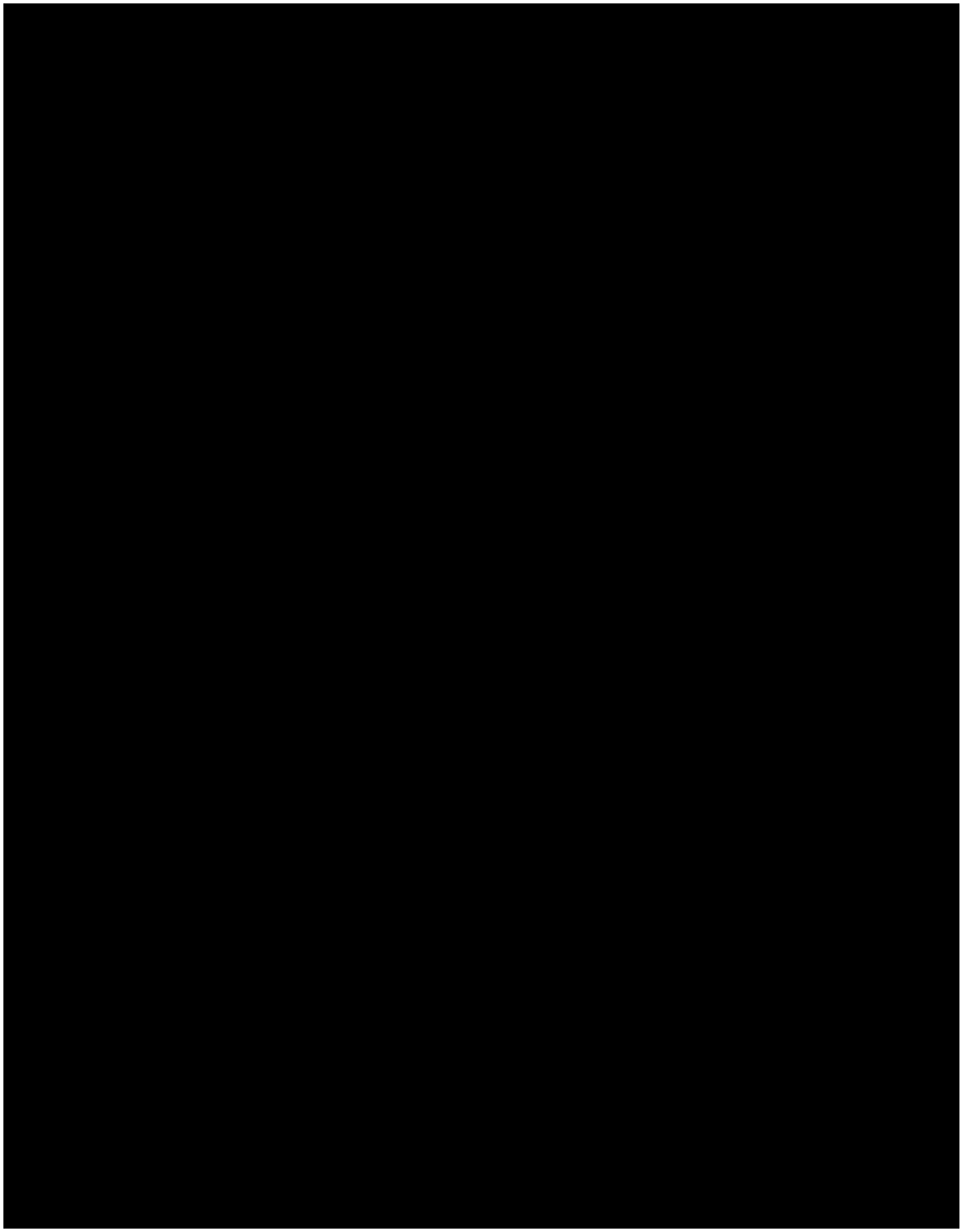
6.2.1.5 Identify all variances (increases or decreases) between estimated costs and actual costs and report such variances to Southwest within five (5) Business Days, along with recommendations for corrective action; and

6.2.1.6 Notify Southwest of approval of all modifications to any budget established by Southwest or the CMR; and

6.2.1.7 Notify Southwest within five (5) Business Days of identification of any item or portion of the Project that CMR contends is not within

the scope of the Project, or if CMR contends that an adjustment to the FGMP or contract duration should be made due to a deviation from the established performance criteria. In the event of a dispute, the parties may proceed through the appropriate processes to resolve the dispute as set forth herein.

6.2.2 **Project Schedule Control**: The CMR shall achieve Substantial Completion of the Project and all Work Package Milestones not later than the dates set out in the Project Schedule. The CMR shall perform scheduling during the Construction Phase including:



6.2.3 **Project Administration and Reporting**: CMR's site personnel shall include its Authorized Representative with full authority to contractually commit CMR to any and all Work Package Authorizations, contract, financial and schedule related decisions and agreements as well as appropriate Project Superintendent(s), Project Engineer(s), Quality Control personnel, and administrative support personnel. In addition, CMR shall:

6.2.3.1 Provide monthly written reports on the progress of the Work in a form and format approved by Southwest;

6.2.3.2 Provide safety reporting and all copies of all incident reports to Southwest as requested or required;

6.2.3.3 Maintain a daily report of Project activities containing a record of weather, Subcontractors working on the site, number of workers, work accomplished, problems encountered, and other relevant data, providing a copy of said report to the PMT on a daily basis;

6.2.3.4 Schedule, direct and attend weekly and monthly meetings with Southwest, various members of the PMT, and the Architect during the construction of the Project to discuss progress, problems, procedures and scheduling. CMR shall also prepare and distribute a written agenda for the meeting and list of critical activities and record and distribute the minutes of each meeting as directed by Southwest;

6.2.3.5 Obtain any and all construction permits and any special permits for permanent improvements as required by Applicable Law or the Contract Documents as well as assist Southwest in obtaining all approvals required from authorities having jurisdiction over the Project;

6.2.3.6 Cooperate fully with Southwest, the City, and the Airport Authority in the enforcement of prevailing wage requirements in accordance with Denver Revised Municipal Code Section 20-76. CMR shall follow established payroll procedures including submission of payroll records and other documentation for the CMR and Subcontractors as set forth in Section 3.6 herein;

6.2.3.7 Create and maintain a photo gallery of existing conditions and weekly job progress; and

6.2.3.8 Maintain all records, logs, test reports, material tickets and certifications to comply with Project documentation requirements.

6.2.4 **Requests for Information ("RFI's"), Document Control, and Submittals**. CMR shall request information from the Architect through formal processes established by Southwest as needed to facilitate the CMR's prosecution and management of the Project. In addition, and as part of its documentation responsibilities, CMR shall:

6.2.4.1 Obtain and finalize all necessary construction permits.

6.2.4.2 Establish and implement procedures for expediting the processing and required approvals of Shop Drawings and other submissions in accordance with Southwest procedures. CMR shall review all Shop Drawings and other submissions from Subcontractors for conformance with the Construction

Documents and to coordinate Shop Drawings and other submissions prior to submitting them to the Architect to review for compliance with design intent.

6.2.4.3 Maintain and make available at the Project site updated records of subcontracts, drawings, samples, manuals, procedures, Project correspondence and all other construction related documents, including all changes and revisions. Records shall include a current directory of all personnel involved with the Project including emergency contact information. CMR shall obtain data from Subcontractors and maintain a current set of As-Built Drawings and record drawings in accordance with Southwest requirements.

6.2.4.4 Cooperate with PMT in the development and implementation of a system for the preparation, review and processing of Change Orders, change order requests, and requests for information, in accordance with Contract Documents.

6.2.4.5 Coordinate and facilitate the creation of As-Built Drawings, and the procurement of warranties and guarantees.

6.2.4.6 Provide Southwest with complete, unaltered copies of all subcontracts, and all Change Orders thereto.

6.2.5 **BIM Modeling**. CMR shall monitor, manage, maintain and coordinate the Building Information Model ("BIM") utilized on the Project and shall provide interface requirements to enable CAD drawings files to be imported into the BIM, manage the process of conflict resolution, coordinate drawings into and out from the BIM, manage process of conflict documentation and resolution including frequency of meetings, and provide reports and other BIM deliverables to PMT on an ongoing basis. Deliverables include:

6.2.5.1 Information technology requirements including specific hardware/ software to be utilized in the BIM approach;

6.2.5.2 Software requirements and other interface requirements required from the Architect or Southwest to enable CAD drawings files to be imported into the BIM;

6.2.5.3 Process and management of conflict resolution, conflict documentation process and conflict resolution process including frequency of meetings; and

6.2.5.4 Reports and other BIM deliverables that CMR will provide to the PMT on a recurring basis.

6.3 **Use of Site**. CMR acknowledges that it is performing the Work at a busy metropolitan airport that shall be, and must continue to be, secure and fully operational during the construction on a 24 hour/day, 7 days/week basis. CMR's use of the Project Site is limited because of the ongoing nature of the Airport operations and occupancy by Southwest. CMR shall be responsible for the safety and security of the Project Site, aircraft, equipment and existing facilities, signs on Airport property. At all times, CMR shall comply with all safety rules and regulations and all other Applicable Laws, Airport Authority, and City requirements respecting the Project Site. CMR shall coordinate use of premises under direction of the PMT. CMR shall be responsible for monitoring use of premises by employees and Subcontractors. All access routes for delivery of materials and equipment shall be as indicated on Contract Documents and as

approved by appropriate City authorities. CMR shall assume full responsibility for protection and safekeeping of materials and products as stored on Project site and shall store materials and products only in those areas indicated for staging. The Project site shall not be unnecessarily encumbered with materials or equipment.

6.4 **Hazardous Materials.** Southwest and the City will endeavor to provide the CMR with information on all known locations of Hazardous Materials. CMR shall not, however, be responsible for the handling, removal, or disposal of any Hazardous Materials occurring or existing on the Site, unless such Hazardous Materials were released or brought onto the site by the CMR or any entity for which the CMR is responsible, unless directed by Southwest in writing. If, after the commencement of the Work, Hazardous Materials are discovered at the Site, the CMR shall immediately stop Work in the affected area and report the condition to Southwest. The CMR shall not be required to perform any Work relating to or in the area of Hazardous Materials except as directed by Southwest through a written mutual agreement and CMR shall cooperate with Southwest regarding remediation efforts and mitigate the impact of such remediation on progress of the Work. All of CMR's activities with respect to Hazardous Materials shall be strictly governed by Section 10.4 of the General Conditions and all Applicable Laws. CMR shall comply with all Applicable Laws, including those that govern Hazardous Materials or relate to the protection of human health, safety or the environment. Any fines, penalties, or remediation costs that may be levied against Southwest, the Airport Authority, the City, the Environmental Protection Agency or any other Governmental Authority for the failure of CMR (or anyone for whom CMR is responsible) to comply with Environmental Laws as required herein shall be reimbursed to Southwest within fourteen (14) days of receipt of an invoice from Southwest for such fines or penalties.

6.5 **National Pollutant Discharge Elimination System program ("NPDES")**. CMR acknowledges that the Airport is subject to the National Pollutant Discharge Elimination System program ("NPDES") and its regulations relating to stormwater discharges, 40 CFR Part 122, for operations that occur at the Airport. CMR further acknowledges that it is familiar with these NPDES stormwater regulations, that it will conduct operations at the Project in compliance with 40 CFR Part 122 or any applicable NPDES permit, as either may be amended from time to time. CMR will be bound by the permit and shall meet all deadlines that may be imposed or agreed to by the City or Southwest. Time is of the essence.

6.6 **Safety and Inspections**: CMR shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work as provided in Article 10 of the General Conditions of the Contract. CMR shall schedule construction inspections with the Airport Authority, as necessary, and shall track, responds to and resolve notices to the satisfaction of the Airport Authority.

6.7 **Assignment of Contracts with Separate Contractors**. Southwest may contract with Separate Contractors to provide Preconstruction and/or Construction Services on various portions of the Project which Southwest may, after execution of such contracts, assign the scope of work included in the contract to CMR as a new component under this Agreement (provided that CMR had an opportunity to review and assist in the negotiation of the terms of any such contract, and as it relates to any assigned scope, CMR shall be entitled to the same limitations of liability Southwest agreed to with the Separate Contractor). Any such assignment shall be executed as a Change in the Work as provided in Article 7 of the General Conditions which shall adjust the Contract Time and the FGMP accordingly. No assignment shall be made without the written consent and approval of CMR, which shall not be unreasonably withheld. Upon approval of the assignment, the performance of the assigned contract shall be incorporated as an obligation of the CMR under this Agreement and the assigned contractor shall be considered a Subcontractor for purposes of this Agreement. CMR's

overall rights, responsibilities and obligations with respect to the activities of the Separate Contractors are set forth in Article 6 of the General Conditions. The CMR is not eligible to receive any additional compensation or fee markup on the other elements of work performed by Southwest's Separate Contractors unless specifically provided herein.

Article 7

CONTRACT TIME

7.1 **Date of Commencement**. The Date of Commencement of the Construction Phase of the Work shall be the date specified in the Notice to Proceed with Construction Phase. The Project Substantial Completion Date shall be designated, along with any substantial completion dates for authorized Work Packages, in the approved Project Schedule, as documented by and confirmed in the FGMP Change Order. Notices to proceed with any Work Package shall be set forth in the Work Package Authorization.

7.2 **Time is of the Essence.** Southwest and CMR mutually agree that time is of the essence with respect to the dates and times set forth in the approved Project Schedule as documented by and confirmed in each Work Package Authorization and/or the FGMP Change Order.

7.3 **Liquidated Damages.** CMR shall achieve Substantial Completion of the Project no later than the Date of Substantial Completion set forth in the Project Schedule approved by Southwest. To the extent any Work Package is authorized, CMR shall achieve Substantial Completion of that Work Package by the Substantial Completion date in the Work Package Authorization. CMR acknowledges that the Work includes constructing in and around airport runways and taxiways. Accordingly, CMR agrees that if CMR fails to (a) reopen a closed runway or taxiway on or before the scheduled date for reopening a runway or taxiway; or (b) achieve Substantial Completion of the Project on or before the dates of Substantial Completion as so designated in the Project Schedule, it would be extremely difficult and impracticable under the circumstances to ascertain and fix the actual damages Southwest will incur by reason of such failure(s). Southwest and CMR, therefore, agree as follows:

7.3.1 **Project Completion**. If CMR fails to achieve Substantial Completion of Project by the date of Substantial Completion set forth in the Project Schedule, CMR shall pay Southwest, or Southwest will deduct from payments due under this Agreement, as liquidated damages, the sum of **FIVE THOUSAND AND NO/100 DOLLARS ($5,000.00)** per Calendar Day for failure to meet the overall Project Substantial Completion Date.

7.3.2 **Runways/Taxiways**. Independent of, and in addition to, the liquidated damages obligations set out in 7.3.1 above, if CMR fails to reopen a closed runway or taxiway according to the Project Schedule (or in any Work Package Authorization), the CMR shall pay Southwest, or Southwest will deduct from payments due under this Agreement, as liquidated damages, the sum of **ONE THOUSAND AND NO/100 DOLLARS ($1,000.00)** for each **hour** of delay, or any part thereof.

7.3.3 **Work Package Completion**. Independent of, and in addition to, the liquidated damages set forth in 7.3.1 and 7.3.2 above, if a Work Package Authorization contains a particular date of substantial completion and CMR fails to achieve Substantial Completion of the Work by the date set forth in the Work Package Authorization, Southwest may assess liquidated damages for the late completion. In such case, CMR

shall pay to Southwest, the liquidated damages on a per day basis as set forth in the Work Package Authorization for failure to meet the Work Package Completion Date.

7.3.4 Southwest and CMR agree that each amount of liquidated damages provided in this Agreement is neither a penalty nor forfeiture. Southwest and CMR further agree that, all other provisions of the Contract Documents notwithstanding, the Liquidated Damages are intended to compensate Southwest, as its exclusive remedy, for all damages arising out of CMR's delays in performance and failure to timely achieve Substantial Completion of the Construction Phase Work or any portion or phase thereof under this Agreement. CMR acknowledges that the liquidated damages referred to in this Article are intended to be and are cumulative. CMR further acknowledges that the liquidated damages are intended to compensate Southwest solely for CMR's delayed performance and shall not excuse CMR from liability from any other breach of the Agreement requirements, including any failure of the Work to conform to applicable requirements or other non-delay damages arising as a consequence of the performance of the Work. These non-delay damages shall specifically include but shall not be limited to any actual, direct costs incurred by Southwest in supplementing, accelerating, completing or correcting the Work resulting from CMR's breach of its obligations arising under the Contract and all design and consulting costs also arising therefrom. The fact that Southwest has agreed to accept Liquidated Damages as its exclusive remedy for damages associated with delay shall not preclude Southwest from exercising its other rights and remedies under Article 12 of this Agreement and Article 13 of the General Conditions regarding termination and suspension. Notwithstanding any term of any performance bond furnished by the CMR pursuant to the terms of this Agreement, CMR's performance bond surety expressly agrees and acknowledges that its obligations under the performance bond include the obligation to reimburse or pay Southwest for any unpaid or unreimbursed liquidated damages incurred by CMR pursuant to the terms hereof, subject to the penal limits of the bond.

7.3.5 In the event this liquidated damages provision is determined to be unenforceable for a reason other than a Southwest challenge, CMR agrees that it shall be liable to Southwest for actual damages incurred by Southwest arising out of CMR delays in achieving Substantial Completion within the time required by this Agreement, as it may be modified by approved time extensions.

7.4 **Consequential Damages**

7.4.1 **Mutual Waiver**. Notwithstanding any other provision of the Contract Documents and except as set forth in Subsection 7.4.2 herein, CMR and Southwest waive claims against each other for consequential damages arising out of or relating to this Agreement. This mutual waiver includes:

7.4.1.1 Damages incurred by Southwest for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and

7.4.1.2 Damages incurred by the CMR for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of anticipated profit, including that relating to unperformed Work.

7.4.2 **Exclusions from Waiver**. Notwithstanding any other provision of the Contract Documents, CMR and Southwest mutually agree that the following liabilities, obligations and damages are specifically excluded from any waiver of consequential damages set forth in Subsection 7.4.1 herein:

7.4.2.1 Damages or loss of any type incurred by Southwest to the extent such loss or damage is covered by any insurance policy(ies) related to the Project, with amounts recoverable up to policy(ies) limits.

7.4.2.2 Any actual, direct or "non-consequential" damage(s) incurred by Southwest for any reason.

7.4.2.3 Damages incurred by Southwest and covered in, arising out of, or related to the indemnification obligations provided in Section 11.1 herein.

7.4.2.4 Damages, loss, or expense of any type incurred by Southwest not related to a delay in completion of the Work.

7.4.2.5 CMR's obligation to pay liquidated damages, as set forth in Section 7.3 herein.

Article 8

COMPENSATION FOR CONSTRUCTION PHASE SERVICES

8.1 **Contract Sum for Construction Services.** For CMR's performance of Construction Phase Services as described in Article 6 above, Southwest shall pay CMR, in current funds, the Contract Sum, consisting of the Cost of the Work as defined in Section 9.1 (including CMR's GCs) plus the CMR Fee, not to exceed the FGMP.

8.1.1 **CMR Fee**. The CMR's Fee for the Construction Services is [redacted] percent [redacted] of the Cost of the Work. CMR's Fee for Preconstruction Services is set forth in Section 4.3. The CMR's Fee may be changed only by executed Change Order. [redacted] The CMR's Fee will be advanced at the same time as the progress payments described in Article 10, and shall be in accordance with the percentage of the Work which has been completed as of the date of the Application for Payment.

8.2 **Final Guaranteed Maximum Price.** The FGMP shall be determined pursuant to the procedure set forth in Sections 5.3 through 5.7 herein. CMR shall comply with all instructions of Southwest as to detailed invoicing necessary to properly account for Costs of the Work and Fee on the Project. The FGMP Change Order and all Work Package Authorizations shall reflect such separate amounts.

8.2.1 The FGMP Change Order shall contain a Schedule of Values to allocate the entire Cost of the Work for the FGMP. Such line item schedule of values shall be in the same format and shall provide the same level of detail as the schedule of values for CMR's Applications for Payment as required by Section 10.1 below.

8.2.1.1 Allowances on which the Cost of the Work for the FGMP is based shall be fully identified in the FGMP Schedule of Values. Allowances may be used in whole, in part, or not at all as determined by Southwest. Whenever costs of the Work included in the Allowance item are more or less than the specified Allowance amount, the FGMP will be adjusted accordingly by Change Order. The CMR shall make no claim nor receive any compensation for anticipated profits, loss of profit, damages, or any extra payment due to any difference between the amount of work actually completed, or materials or equipment furnished, and the quantities for the Allowance.

8.2.2 The Cost of the Work for the FGMP shall be based upon the Drawings and such other Construction Documents described in the List of FGMP Documents which shall be attached as an exhibit to the FGMP Change Order. The Cost of the Work under the FGMP Change Order shall be further based upon a List of the FGMP Qualifications and Assumptions attached to the FGMP Change Order.

8.2.3 The sum of the Cost of the Work and the CMR's Fee is guaranteed by the CMR not to exceed the FGMP set out in the FGMP Change Order, subject to additions and deductions by changes in the Work as provided in the Contract Documents. Such maximum sum as adjusted by approved changes in the Work for the FGMP Change Order is referred to in the Contract Documents as the "FGMP." Costs which would cause the FGMP to be exceeded shall be paid by the CMR without reimbursement by Southwest.

8.3 **Contingency Expenditures.** As provided in Section 5.9 of this Agreement, the CMR's Contingency has been established to protect the CMR's IGMP and FGMP budget and CMR's Project Schedule against unanticipated costs incurred and unplanned impacts which must be addressed in order to complete the Work, including Work authorized by Change Order, in accordance with the Contract Documents. [redacted]

8.3.1 Except as agreed in writing by Southwest and the CMR, Contingency is not intended for use in upgrading or enlarging the scope of the Work. [redacted]

8.3.2 Notwithstanding anything in the Contract Documents to the contrary, no charge against CMR's Contingency or transfer of CMR's Contingency to a line item shall be made without Southwest's written consent, such consent not to be unreasonably withheld.

8.4 **CMR's General Conditions Costs ("CMR's GCs")**. The FGMP shall not be increased for CMR's GCs (as provided in Article 9 below) as those costs are Costs of the Work. Southwest's responsibility for CMR's GCs shall be limited to the actual costs of such Cost of Work items incurred by the CMR and as set forth by CMR in its General Conditions Costs Schedule [redacted] Southwest shall have the right to audit CMR's GCs to determine that all sums billed have actually been expended for such costs as authorized hereunder.

8.5 **Changes in the Work**. Changes in the scope of Work shall only be deemed to have occurred if during the progression of the Work, Southwest directs and/or approves a change that requires work of a materially different nature, character, scope and quality than the general scope of the Work reasonably inferable by CMR as an experienced and prudent contractor/CMR under the Agreement. A Change in the scope of the Work may be accomplished after execution of this Agreement only by Southwest's issuance of a Change Order, subject to the terms and conditions stated in Article 7 of the General Conditions. Changes in the scope of the Work that result in a change in the FGMP or Contract Time, if any, will be reflected in the Change Order ordering CMR to perform such Changes in the Work.

Article 9

COSTS OF THE WORK FOR CONSTRUCTION PHASE

9.1 **Costs of the Work**. Costs of the Work shall mean costs necessarily incurred by the CMR in the proper performance of the Work. Such costs shall be at the actual costs at rates set forth in this Article 9 and, if not specifically set forth herein, then at rates not higher than the standard paid at the place of the Project except with prior consent of Southwest. The Cost of the Work shall include only the items set forth in this Section 9.1.

9.1.1 **Labor Costs**. Actual wages of construction workers (including necessary overtime) directly employed by CMR to perform construction at the site or, with Southwest's approval only, at off-site workshops. Wages paid must meet the prevailing wage rates established by Applicable Law as appropriate to the particular Work performed.

9.1.1.1 Wages or salaries of the CMR's supervisory and administrative personnel when stationed at the Work site as are approved by Southwest. Charges by these personnel will be authorized only when performing their job related duties at the job-site location.

9.1.1.2 No personnel stationed at CMR's home or branch office shall be charged to the Cost of Work without the written approval of Southwest. All non-field office based CMR support personnel who will provide service and advice from time-to-time throughout this Agreement will be considered to be covered by the CMR Fee unless otherwise authorized in writing by Southwest.

9.1.1.3 Costs paid or incurred by the CMR for taxes, insurance, contributions, assessments and benefits required by law or collective bargaining agreements and, for personnel not covered by such agreements, customary benefits such as sick leave, medical and health benefits, holidays, vacations, pensions, and 401(K) programs, provided such costs are based on wages and salaries included in the Cost of Work.

9.1.1.4 Overtime wages paid to salaried personnel (if approved in writing by Southwest) will be reimbursed at the actual rate of overtime pay paid to

the individual, which shall not exceed the individual's straight time rate. No time charges for overtime hours worked on the Project will be allowed if the individual is not paid the overtime worked.

9.1.2 **Subcontractor Costs**. Payments made by CMR to Subcontractors and Suppliers in accordance with the requirements of the subcontracts, any self-performed work proposal or other agreements. The terms of any such agreement must conform to the requirements of this Agreement. Any savings under any FGMP subcontracts shall be applied to reduce the overall Cost of the Work under this Agreement, and no additional Fee (profit) will be payable. Payments will not be made unless CMR has received written concurrence from Southwest for Subcontractors, Suppliers or CMR (in case of self-performed work) to perform the Work.

9.1.3 **Actual Costs of Materials, Equipment, Temporary Facilities and Related Items**: Actual costs (including transportation, installation, maintenance, dismantling and removal) of materials, machinery and equipment incorporated or to be incorporated into the Work and/or, with Southwest's prior written approval for items over [redacted] machinery and equipment purchased for use during construction of the Project (including fuel, operator cost and preventative maintenance, overhauls and repairs). Southwest has the right to confirm that costs submitted do not exceed fair market value and pay only fair market value if costs submitted are not reasonable. Unused excess materials, if any, shall be delivered to Southwest at the completion of the Work and/or any Work Package. Southwest shall not pay for unreasonable quantities of excess materials. CMR shall purchase (and shall require each Subcontractor and/or Supplier to purchase) all incorporated materials and consumables for resale and will provide valid, properly completed resale certificates to all Subcontractors and Suppliers. Southwest will issue an exemption certificate to CMR with respect to incorporated materials and consumables.

Actual costs, including transportation, delivery charges, fuel costs, operator cost, maintenance, dismantling and removal of materials, temporary facilities, machinery, equipment, and hand tools not customarily owned by the construction workers, which are provided by the CMR at the site. Southwest has the right to confirm costs submitted do not exceed fair market value and pay only fair market value if costs submitted are not reasonable. Items not fully consumed during the performance of the Work or any particular Work Package Authorization shall be returned to Southwest unless directed otherwise. If Southwest directs sale of any equipment, the proceeds from the sale will be credited to the Project.

9.1.4 **Rental Charges**. Rental charges for temporary facilities, machinery, equipment, and hand tools not customarily owned by construction workers that are provided by the CMR at the site, whether rented from the CMR or others, and costs of transportation, installation, minor repairs and replacements, dismantling and removal. Rental charges for CMR- or Subcontractor-owned equipment and/or equipment rented from third parties will be paid only as outlined in the following subsections:

9.1.4.1 **Rentals for CMR and Subcontractor-Owned Equipment**. Proposed rental rates and related fair market values for CMR owned (affiliate owned, subsidiary owned, Subcontractor-owned or related party owned) equipment with a rental rate of more than [redacted] (total) over the estimated term of the rental and/or rental period over 12 months shall be submitted to and approved by Southwest. The approval shall be in writing and shall be obtained in advance whenever practicable. Southwest may request that this rental approval request

include the current hours or mileage reading from the equipment, the projected usage of each piece of equipment and purchase price of that equipment new. The rental rates are subject to audit and adjustment by Southwest.

9.1.4.2 For equipment values greater than [redacted] CMR may also be requested to perform a lease versus purchase analysis as set forth herein before a rental decision is made by Southwest. If the probable duration of the proposed rental multiplied by the rental rate exceeds or equals the sum of (i) purchase price of the item in a similar condition, (ii) the cost of purchasing the item (e.g., taxes, registration, and brokerage fees), and (iii) the cost of maintenance included in the rental rate of the item minus (iv) the projected resale value of the item all as determined by Southwest, Southwest shall have the option to purchase items where the analysis indicates purchase to be in the best interest of Southwest. The original purchase price and date of purchase of the equipment will be documented with a copy of the purchase invoice and submitted to Southwest. Any lease/purchase arrangements must have advance concurrence from Southwest before entering into such an arrangement and/or charging lease/purchase rental charges as a reimbursable job cost.

9.1.4.3 **Cap on Aggregate Rentals Paid for CMR-Owned Equipment**. With respect to those items that Southwest elects not to purchase under Subsection 9.1.4.2 above, the aggregate rentals which Southwest will reimburse for each piece of CMR-owned or Subcontractor-owned special tools or equipment shall not exceed [redacted] of the fair market value of each item at the time of its commitment to the Work. Such aggregate limitations will apply and no further rentals shall be charged even if a piece of equipment is taken off the job and is later replaced by a similar piece of equipment. For purposes of computing the aggregate rentals applicable to aggregate rental limitations, rental charges for like pieces of equipment will be combined; provided, however, if more than one similar pieces of equipment are working simultaneously, the lower rental cost shall be included in the calculations.

9.1.4.4 Rental charges for equipment which are not owned by CMR or any of its affiliates, subsidiaries, or other related parties and is rented from third parties for use in proper completion of the Work, will be reimbursed at [redacted] of the published rates based on the latest edition of "Rental Rates and Specifications" published by the Associated Equipment Distributors (AED). If the AED publication does not contain information related to the types of equipment rented CMR shall be based upon actual costs as long as rental rates do not exceed those prevailing in the Denver area. For equipment with a rental rate of more than [redacted] (total) over the estimated term of the rental and/or over 12 months, the CMR may be requested from time-to-time to provide documentation (a lease vs. purchase analysis) to justify the reason for renting the equipment rather than purchasing it. Any lease/purchase arrangements must have advance concurrence from Southwest before entering into such an arrangement and/or charging lease/purchase rental charges as a reimbursable job cost.

9.1.4.5 All costs incurred for minor maintenance and repairs shall be reimbursed at actual costs. Such costs include routine and preventative maintenance, minor repairs and other incidental costs. Repairs and/or replacement of a capital nature are considered to be covered by the rental rates. Major repairs and overhauls

are not considered routine and the cost of such repairs shall not be reimbursable under this Agreement.

9.1.4.6 Rental equipment shall be paid for on an hourly, daily, weekly or monthly rate (or some combination) whichever arrangement is in Southwest's best interest. Payment will not be made for the equipment while it is inoperative due to breakdowns or for time in which no changed work was performed. Payment for rentals will include time required to move equipment to the changed work from the nearest available rental source and to return it to the source. However, no moving, loading, or transportation costs will be paid if the equipment is used for any other portion of the Work. Individual pieces of equipment having replacement value of [redacted] or less shall be reimbursed at actual cost. CMR shall select one method and utilize that method throughout the Project.

9.1.4.7 All losses resulting from lost, damaged or stolen tools and equipment (including rental equipment) shall be the sole responsibility of CMR and not Southwest, and the cost of such losses shall not be reimbursable under this Agreement.

9.1.4.8 For all equipment worth [redacted] or more when put into service on this Agreement, the CMR shall be required to maintain a detailed equipment inventory of all job-owned equipment. This inventory shall be submitted to Southwest upon request. For each piece of equipment, the inventory should contain: signed documentation of the original receipt of the equipment at the Project site, signed documentation of the removal of the equipment from the Project site, original purchase price or acquisition cost, acquisition date, mileage or hour reading at acquisition and disposition, and final disposition. At the completion of this Agreement, CMR shall transfer possession of the remaining job-owned equipment to Southwest. At Southwest's option, CMR may keep any such equipment for an appropriate credit to job cost, which will be mutually agreed to by Southwest and the CMR.

9.1.5 Normal and reasonable costs associated with setting up and running a Work site office, if such an office is not provided by Southwest.

9.1.6 Reasonable travel and subsistence expenses of CMR personnel incurred while traveling on Work-related duties. No travel expenses will be reimbursed to CMR's representatives unless Project-related travel required them to travel to a destination more than 50 miles from the Project site. Any travel involving airfare requires advance approval from Southwest. Travel expenses shall not exceed the average amount published in Runzheimer International Guide to Daily Travel Prices and in accordance with Applicable Laws. Costs, including temporary housing, per diem, and moving expenses of relocating any CMR personnel to the Project must be approved in advance by Southwest prior to the cost being incurred.

9.1.7 **Miscellaneous Costs**:

9.1.7.1 Except to the extent excluded as a Cost of the Work in Section 9.2 below, that portion directly attributable to this Agreement of premiums for required insurance and required payment and performance bonds for CMR. All premiums for any insurance and bonds required by this Agreement shall reflect the net actual costs to the CMR after taking into consideration cost

adjustments due to experience modifiers, premium discounts, policy dividends, retrospective rating plan premium adjustments, assigned risk pool rebates, refunds, etc. Southwest will be credited with all insurance policy discounts, rebates or dividends; and a portion of any volume rebates or free material credits earned with purchase of material or other goods and services charged to this Agreement. Subcontractor default insurance ("SDI"), if any, shall be paid to CMR as a Cost of the Work based upon an agreed percentage set forth in the FGMP Change Order.

9.1.7.2 No charges for self-insurance will be considered as a reimbursable cost under the terms of this Agreement unless the arrangements for self-insurance are first disclosed in writing to Southwest and approved by Southwest along with a proposed methodology for determining a fair and equitable portion of the actual cost of the self-insurance out-of-pocket costs incurred to settle claims related to Work performed in this Project. In no event shall the charges for self-insurance costs exceed the comparable costs of purchasing conventional insurance at conventional net or modified rates of similar volumes of work performed under similar conditions.

9.1.7.3 Payroll taxes imposed by a Governmental Authority that are related to the Work.

9.1.7.4 Fees and assessments for permits, licenses and inspections for which the CMR is required to pay according to this Agreement.

9.1.7.5 Sales, use, or similar taxes imposed by any Governmental Authority that are related to the Work or materials, labor or equipment used in the Work, and for which the CMR is liable. Cost of taxes and tariffs imposed or enacted after approval of the FGMP may be the subject of a Change Order but only if such taxes and tariffs were enacted after approval of the FGMP and could not have been reasonably anticipated by CMR in the exercise of due diligence.

9.1.7.6 Fees for testing laboratories for tests required by this Agreement to be performed by or on behalf of the CMR.

9.1.7.7 Other necessary and reasonable costs incurred in the performance of the Work if and to the extent approved by Southwest.

9.1.7.8 Cash discounts obtained on payments made by the CMR shall accrue to Southwest and shall be credited as a deduction from the Cost of the Work.

9.1.8 **Discounts, Rebates and Refunds**. CMR shall advise Southwest of all cash and trade discounts, rebates and refunds available during or as a result of performance of the Work, including, but not limited to, volume and subcontract rebates to which CMR may become entitled based in whole or in part upon the performance of the Work. All discounts, rebates and refunds shall accrue to Southwest, and there shall be a commensurate reduction by Change Order to the FGMP, unless Southwest fails to provide the initial payment for or timely reimbursement to CMR for a payment giving rise to such discounts pursuant to CMR's Application for Payment therefor. All trade discounts, rebates and refunds, and all proceeds from the sale of surplus or salvaged

materials and equipment shall accrue to Southwest by way of a reduction in the Cost of the Work and CMR shall take such steps as shall be necessary to secure the same.

9.1.9 **CMR's GCs**. Southwest and CMR agree that those certain reimbursable Cost of Work items under Subsections 9.1.1 through 9.1.7 above [redacted] shall, notwithstanding the other terms of this Article 9, be reimbursable to the CMR subject to the limitations and restrictions expressly set forth in such Schedule.

9.2 **Costs Not To Be Reimbursed**. The Cost of the Work shall not include the following:

9.2.1 Salaries and other compensation of CMR's personnel stationed at CMR's principal office or offices other than the Project site office, except as specifically provided in Subsection 9.1.1.2 above.

9.2.2 Expenses of the CMR's principal office and offices other than the site office.

9.2.3 Overhead and general expenses except as provided in Section 9.1.9 above.

9.2.4 CMR's capital expenses, including interest on CMR's capital employed for the Work.

9.2.5 Rental costs of machinery and equipment, except as specifically provided in Subsection 9.1.4 above.

9.2.6 Costs resulting from the negligence or intentional acts of, or a default hereunder by, CMR or its officers, executives, general managers, estimators, purchasing and contracting agents, superintendents or supervisory personnel, and CMR's other employees, agents, Subcontractors and/or Suppliers, or any other party directly or indirectly employed by CMR and such agent, Subcontractors, or Suppliers, or for whose acts any of them may be liable, including, without limitation, the costs of (1) correcting defective or nonconforming Work, (2) disposal of materials and equipment wrongly supplied, (3) making good any damage to property, (4) remediating and cleaning-up Hazardous Materials that have been spilled or released by CMR as limited by Section 10.4 of the General Conditions, and (5) Avoidable Delays.

9.2.7 Costs which would cause the FGMP, absent a Change Order, to be exceeded.

9.2.8 Costs of removing and replacing any material condemned or rejected as a result of nonconformance with this Agreement.

9.2.9 Costs associated with CMR's failure to apply for, in a timely manner, any and all permits related to the Work for which CMR is responsible pursuant to this Agreement.

9.2.10 Costs associated with any Change Order or Modification, unless expressly approved in writing by Southwest or otherwise allowed by Article 7 of the General Conditions or any other provision of this Agreement.

9.2.11 (a) Costs incurred by CMR resulting from any Avoidable Delay; (b) Costs incurred by CMR resulting from Unavoidable Delay as precluded by Section 8.4(C)(3) of the General Conditions; (c) Costs incurred due to the failure of CMR or its Subcontractors to coordinate their work with that of Southwest's Separate Contractors, if any; and (d) any Costs incurred resulting from CMR's failure to comply with directives of Southwest.

9.2.12 Any acceleration cost, including any and all overtime wages, arising as a result of delay in carrying out the Work caused in whole or in part by (1) CMR's negligence or failure to satisfy the Contract Documents, or (2) any Subcontractor's negligence or failure to satisfy the requirements of this Agreement.

9.2.13 Costs resulting from the failure of CMR or any Subcontractor to procure and maintain insurance as provided in this Agreement.

9.2.14 Losses and expenses for items not covered by insurance and any insurance deductibles. CMR shall be solely responsible for payment of all insurance deductibles and losses and expenses as a result of items not covered by insurance and these costs shall not be costs reimbursed by Southwest as a Cost of the Work or otherwise.

9.2.15 Overtime, except as may be specifically described in this Agreement or otherwise expressly approved in writing by Southwest.

9.2.16 Wages or other compensation of CMR's officers, executives, general managers, estimators, auditors, safety personnel, accountants, purchasing and contracting agents and other employees or personnel of CMR, other than those specifically provided in this Agreement.

9.2.17 Costs incurred by CMR for any consultation or services rendered prior to the date hereof unless otherwise authorized in writing by Southwest.

9.2.18 Costs incurred as a result of any inspection or test that reveals nonconforming or defective work not performed in accordance with this Agreement.

9.2.19 Bonuses paid to CMR's personnel or other incentive compensation.

9.2.20 Vacation wages paid to CMR's personnel that were not accrued while such personnel were working on the Project.

9.2.21 Any costs which could have been reasonably mitigated and avoided by CMR or any of its Subcontractors or Suppliers.

9.2.22 Costs resulting from the failure of CMR and/or its Subcontractors and/or its Suppliers to pay any required sales or use taxes. CMR shall be solely responsible for the payment of all such taxes.

9.2.23 Costs for additional compensation not expressly approved, in writing, by Southwest or otherwise allowed by Article 7 of the General Conditions or any other provision of this Agreement.

9.2.24 Costs of CMR's principal office computer services or other outside computer processing services shall be considered overhead and general expense and not considered reimbursable Cost of the Work. CMR should not plan to perform any such

computer related services at the field office when such services or functions are normally performed at the CMR's principal or branch office, or at other outside service locations.

9.2.25 Any cost which is not specifically described in Section 9.1 above.

9.2.26 Any taxes based on net income or capital, any franchise taxes, margin taxes, gross receipts, or any excess profit taxes or other taxes levied on CMR and/or its Subcontractors and/or its Suppliers and/or their businesses imposed by any Governmental Authority in connection with this Agreement (and Southwest shall not be responsible for any such taxes). Southwest shall not be responsible for any taxes that it is not explicitly required to pay by this Agreement or the General Conditions.

Article 10

PAYMENTS FOR WORK DURING CONSTRUCTION PHASE

10.1 **Progress Payments**. Based upon Applications for Payment submitted to Southwest by the CMR, Southwest shall make progress payments to the CMR for services provided during the Construction Phase as provided below and elsewhere in the Contract Documents.

10.1.1 **Procedure for Submittal of Applications for Payment**. On or before the **25th** day of each month, the CMR shall prepare and submit to Southwest a preliminary draft of its Application for Payment (hereinafter referred to as a "Preliminary Application for Payment") covering the Work performed and items purchased through the end of that calendar month and for which payment will be sought. Applications for Payment shall be addressed to Southwest and transmitted as follows:

Southwest Airlines Co
ATTN: Corporate Facilities
2702 Love Field Dr.
Dallas, TX 75235

The Preliminary Application for Payment shall be based upon the schedules of values for the Work in progress and shall include that portion of the CMR's GCs for the draw period and any CMR Contingency utilized during that period. The CMR shall revise the Preliminary Application for Payment in accordance with any objections or recommendations of Southwest that are consistent with the requirements of the Contract Documents. Such revised Preliminary Application for Payment shall be resubmitted by the CMR to Southwest as the Formal Application for Payment due on or before the **2nd** day of the month immediately following the month in which the Preliminary Application for Payment was first submitted. The CMR shall also submit, with each Formal Application for Payment, a written narrative describing the basis for any item set forth in the Formal Application for Payment that does not conform to instructions of Southwest in connection with any applicable Preliminary Application for Payment.

10.1.2 The period covered by each Formal Application for Payment shall be one calendar month ending on the last day of the month immediately preceding the month in which the Formal Application for Payment is received.

10.1.3 Provided a Formal Application for Payment consistent with the requirements hereof is received by Southwest not later than the **2nd** day of a month and Southwest approves the Formal Application for Payment, Southwest shall make payment in the amount due to the CMR not later than thirty (30) Calendar Days after approval of the Formal Application for Payment. CMR understands that approval of the Formal Application for Payment by Southwest is required prior to funding any Formal Application for Payment. If a Formal Application for Payment is received by Southwest after the application date fixed above, payment shall be made by Southwest as part of the next monthly progress payment. The payment made to the CMR pursuant to a Formal Application for Payment is the amount approved by Southwest and certified as being due in accordance this Agreement and Article 9 of the General Conditions, less such amount, if any, that Southwest is entitled to withhold from such payment pursuant to Article 9 of the General Conditions.

10.1.4 With each Formal Application for Payment, the CMR shall submit payrolls, petty cash accounts, receipted invoices or invoices with check vouchers attached and any other evidence required to demonstrate that cash disbursements already made by CMR on account of the Cost of the Work equal or exceed (1) progress payments already received by the CMR; less (2) that portion of those payments attributable to the CMR's Fee; plus (3) payrolls for the period covered by the present Formal Application for Payment.

10.1.5 Applications for Payment shall show the percentage completion of each portion of the Work as of the end of the period covered by the Application for Payment. The percentage completion shall be the lesser of (1) the percentage of that portion of the Work which has actually been completed or (2) the percentage obtained by dividing (a) the expense which has actually been incurred by the CMR on account of that portion of the Work for which the CMR has made or intends to make actual payment prior to the next Application for Payment by (b) the share of the FGMP Change Order amount allocated to the Work as set forth in the Schedule of Values.

10.1.6 **Retainage.** [redacted] of each Application for Payment will be retained by Southwest until the Work has been completed and accepted by Southwest. After fifty percent (50%) of the Work has been completed, including approved Change Orders, CMR may request that retainage be reduced to [redacted] Southwest will review the progress to date and the remaining work. If it appears that the work will be successfully completed and is progressing on schedule, Southwest may, in its sole and absolute discretion, process subsequent progress payments with the reduced retainage. Southwest may approve payment of any Subcontractor or Supplier retainage amounts upon written request by CMR but only to the extent that the particular Subcontractor or Supplier has fully completed its scope of work and thirty (30) Calendar Days have elapsed since any work, including any punch list work, has been performed by said Subcontractor or Supplier.

10.1.7 **Computation of Application for Payment**. Subject to other provisions of the Contract Documents, the amount of each Application for Payment shall be computed as follows:

10.1.7.1 Take that portion of the FGMP amount properly allocable to completed Work and Materials stored on site as determined by multiplying the percentage completed or stored for each portion of the Work by the share of the FGMP amount allocated to that portion of the Work. Applications for Payment may include requests for payment on account of Changes in the Work which have been

properly authorized by Construction Change Directives but are not yet included in Change Orders.

10.1.7.2 Add that portion of the FGMP amount properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work or, if approved in advance by Southwest, suitably stored off the site at a City-owned location as agreed upon in writing.

10.1.7.3 Add that portion of approved Contingency.

10.1.7.4 Add the CMR Fee, which shall be paid monthly as a portion of the Cost of Work completed and invoiced monthly against the total project cost of work or the total Project Cost. The CMR Fee shall be computed upon the Cost of the Work described in the two preceding Sections at the rate stated in Subsection 8.1.1.

10.1.7.5 Deduct retainage of [redacted] in each Application for Payment as required by Subsection 10.1.6 herein.

10.1.7.6 Subtract the aggregate of previous payments made by Southwest.

10.1.7.7 Subtract the shortfall, if any, indicated by the CMR in the documentation required by the General Conditions to substantiate prior Applications for Payment, or resulting from errors subsequently discovered by Southwest's accountants in such documentation.

10.1.7.8 Subtract amounts, if any, which Southwest has withheld;

10.1.7.9 Subtract amounts, if any, reasonably necessary to protect Southwest from loss in accordance with Subsection 10.1.8 herein.

10.1.8 **Withholding Payment**. Southwest may withhold a payment in whole or in part to the extent reasonably necessary to protect Southwest as set forth in Article 9 of the General Conditions. When the reasons for withholding payment are removed, payment will be made for amounts previously withheld. Southwest may not withhold from payment the balance of funds, if any, that are not subject to dispute.

10.1.9 **Subcontractor's Applications for Payment**. CMR shall make payment to Subcontractors within seven (7) Calendar Days of receipt of funds from Southwest. Except with Southwest's prior approval, payments to Subcontractors included in the CMR's Application for Payment shall not exceed an amount for each Subcontractor calculated as follows:

10.1.9.1 Take that portion of the Subcontract Sum properly allocable to completed Work as determined by multiplying the percentage completion of each portion of the Subcontractor's Work by the share of the total Subcontract Sum allocated to that portion in the Subcontractor's schedule of values, less retainage in the amount of [redacted] Pending final determination of amounts to be paid to the Subcontractor for changes in the Work, amounts not in dispute may be included even though the Subcontract Sum has not yet been adjusted by Change Order.

10.1.9.2 If approved in advance in writing by Southwest, add that portion of the Subcontract Sum properly allocable to items purchased and delivered and suitably stored at the Project site, or at other designated locations for subsequent incorporation in the Work less agreed upon retainage. All stored items shall either be stored on site or at other locations designated by Southwest.

10.1.9.3 Subtract the aggregate of previous payments by the CMR to the Subcontractor. Subtract amounts, if any, for which Southwest has withheld or nullified a Certificate of Payment by Southwest to the CMR for reasons which are the fault of the Subcontractor.

10.1.9.4 Southwest may approve payment of any Subcontractor or Supplier retainage amounts upon written request by CMR but only to the extent that the particular Subcontractor or Supplier has fully completed its scope of work and thirty (30) Calendar Days have elapsed since any work, including any punch list work, has been performed by said Subcontractor or Supplier.

10.1.10 **Deleted Work**. Southwest may delete from the Work any item or portion of the Work. CMR will be paid for all approved work performed toward the completion of the item prior to omission as provided in the General Conditions, but in no event will the amount paid exceed the FGMP, less the value of the deleted work. CMR shall make no claim, nor receive any compensation for profits, for loss of profit, for damages, or for any extra payment whatever because of any deleted items of Work. CMR shall credit to Southwest all overhead/profit adjustments from deleted Subcontract work in the amounts set forth in Section 7.5 of the General Conditions.

10.1.11 **Extra Work**. Work not covered by Contract Documents but necessary for the proper completion of the Project will be classified as extra work and shall be performed by the CMR when directed in writing by Southwest, in compliance with the Contract Documents. Extra work must be authorized in writing by Southwest before the work is started. Payment for extra work will not be made unless such prior written authorization is obtained. In the event of an emergency or other situation that endangers the Work or endangers public safety, CMR shall perform such extra work necessary to protect the Work or the public.

10.1.12 **Ownership of Property**.

10.1.12.1 Upon submittal of an Application for Payment, CMR warrants that all Work for which Certificates for Payment have been previously issued and payments received from Southwest shall, to the best of the CMR's knowledge, information and belief, be free and clear of liens, claims, security interests or encumbrances in favor of the CMR, contractors, Subcontractors, material Suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work.

10.1.12.2 Southwest acknowledges and agrees that CMR, for itself and its Subcontractors and Suppliers reserves all rights and/or claims (including all statutory and constitutional lien rights, as applicable) respecting any and all payments due for items delivered to the Site in accordance with the terms of this Subsection 10.1.12, as allowed under Colorado law and nothing contained in this Article 10 shall be construed as a waiver, relinquishment or release of any such claims or rights.

10.1.13 In taking action on the CMR's Applications for Payment, Southwest shall be entitled to rely on the accuracy and completeness of the information furnished by the CMR and shall not be deemed to represent that Southwest has made a detailed examination, audit or arithmetic verification of the documentation submitted in accordance with Section 10.1 or other supporting data, or that Southwest has made examinations to ascertain how or for what purposes the CMR has used amounts previously paid on account of the Contract. Such examinations, audits and verifications, if required by Southwest, will be performed by Southwest's accountants acting in the sole interest of Southwest at such times as Southwest may reasonably direct.

10.1.14 No inspection, order, measurement, approval, modification, payment, acceptance of Work or material (including, but not limited to, acceptance of the entire Work), time extension, or possession of the Work or any part thereof shall be a waiver of any of the terms and conditions of this Agreement, the powers reserved by Southwest, or any right of Southwest to damages or to reject the Work in whole or part. No breach of this Agreement shall be construed a waiver of any other or subsequent breach. All remedies provided in this Agreement shall be cumulative and shall be in addition to all other rights and remedies that may exist at law or in equity.

10.2 **Final Payment.** Final payment shall be made by Southwest to the CMR when the Work as provided by this Agreement has been fully performed by the CMR, including the CMR's responsibility to correct nonconforming work and to satisfy all requirements of the Contract which necessarily survive final payment, and all of the requirements to Final Payment as set forth in Subsection 10.2.1 and the Contract Documents have been fully met.

10.2.1 **Final Payment Requirements**. CMR shall certify to Southwest that the Contract has been fully performed, including the CMR's responsibility to correct nonconforming Work as provided in Article 12 of the General Conditions, and the following actions have been met:

10.2.1.1 Final Inspection of the Work as set forth in Article 9 of the General Conditions has occurred;

10.2.1.2 CMR has submitted the documents supporting the Final Application for Payment as required by Section 9.8 of the General Conditions;

10.2.1.3 A Final Accounting for the Cost of the Work has been submitted by CMR and approved by Southwest's accountants and;

10.2.1.4 A Statement of Final Acceptance has been issued by Southwest.

10.2.2 **Prerequisites to the Statement of Final Acceptance**. As a condition precedent to Southwest's issuance of a Statement of Final Acceptance and the issuance of Final Payment, CMR must have provided to Southwest the following:

10.2.2.1 Preliminary Application for Final Payment and Final Accounting. Subsequent to Final Inspection by Southwest of the Work, CMR shall provide a Preliminary Application for Final Payment, segregated as to contract item and Change Order Work and based upon the original Schedule of Values. Together with the Preliminary Application for Final Payment, CMR shall submit to Southwest, a final accounting of the Cost of the Work in a format agreed to by CMR and Southwest. Southwest's accountants will review and report in writing on the CMR's final accounting within forty-five (45) Calendar Days after delivery of the final accounting to Southwest

by the CMR. Based upon such Cost of the Work as Southwest's accountants report to be substantiated by the CMR's final accounting, and provided the other conditions of this Section and Article 9 of the General Conditions have been met, Southwest will issue its Formal Application for Final Payment or notify CMR of the reasons for withholding. All Progress Payments shall be subject to correction in the Formal Application for Final Payment.

10.2.2.2 CMR's Statement of Exceptions. Within fifteen (15) Calendar Days after the proposed Formal Application for Final Payment is received by CMR, CMR shall submit to Southwest a written approval of said Formal Application for Final Payment or a written Statement of Exceptions. The CMR's Statement of Exceptions shall be in sufficient detail for Southwest to ascertain the basis and amount of the exceptions; failure to provide the detail shall be sufficient cause for denial of the exceptions. Any claim of the CMR or the CMR's Subcontractors or Suppliers with respect to the performance or breach of this Agreement or any alterations thereof (except for payment of the balance of the Contract Sum as set forth in the Formal Application for Final Payment) not specifically set forth in the Statement of Exceptions, is waived by the CMR. If the CMR fails to file a Statement of Exceptions within the time allowed, Southwest will infer acceptance of the Formal Application for Final Payment as submitted to the CMR.

10.2.2.3 Objections to Withholding Approvals or Issuance of Formal Application for Final Payment. If Southwest's accountants report the Cost of the Work as substantiated by the CMR's final accounting to be less than claimed by the CMR and the CMR disputes that report, the CMR shall be entitled to proceed through the Claims/Dispute Resolution Process in accordance with Article 14 of the General Conditions. Unless agreed to otherwise, a demand for resolution of the disputed amount shall be made by the CMR within sixty (60) Calendar Days after the CMR's receipt of a copy of Southwest's Formal Application for Final Payment and Accountant's Report. Failure to make such demand within this 60-Calendar Day period shall result in the substantiated amount reported by Southwest's accountants becoming binding on the CMR. Pending a final resolution of any disputed amount, Southwest shall pay the CMR all amounts not in dispute.

10.2.2.4 Southwest's Statement of Final Acceptance. When Southwest finds the Work acceptable, fully performed and in compliance with this Agreement and all exceptions set forth in the Statement of Exceptions have been agreed to or otherwise resolved, the information in the Formal Application for Final Payment has been approved, and Southwest's accountants have approved the Final accounting, Southwest will issue a Statement of Final Acceptance.

10.3 **Amount of Final Payment**. The amount of the Final Payment shall be calculated as follows:

10.3.1 Take the sum of the Cost of the Work substantiated by Southwest's Final Accounting and the CMR's Fee, but not more than the FGMP.

10.3.2 Subtract amounts, if any, for which Southwest withholds, in whole or in part, from the Formal Application for Final Payment upon resolution of the exceptions provided in the Statement of Exceptions or via other provisions of the Contract Documents.

10.3.3 Subtract the aggregate of previous payments made by Southwest.

If the aggregate of previous payments made by Southwest exceeds the amount due the CMR, the CMR shall reimburse the difference to Southwest.

10.4 **No Waiver of Claims by Southwest**. Final payment to CMR by Southwest shall not constitute a waiver of any claims by Southwest against CMR or any other person or entity with respect to the Work. The acceptance of Final Payment shall constitute a waiver of all claims by CMR except those previously made in writing and identified by CMR as unsettled at the time of the Formal Application for Final Payment. CMR shall include a like provision in each Subcontract such that acceptance of final payment by the Subcontractor shall constitute a waiver of claims by the Subcontractor, except as to those previously identified to CMR in writing.

10.5 Within ten (10) days of CMR's receipt of the Final Payment, it shall provide Southwest with an Unconditional Waiver and Release on Final Payment on the form set forth on Exhibit E.

Article 11

INDEMNIFICATION/INSURANCE/BONDS

11.1 **INDEMNITY – GENERAL. CMR AGREES TO INDEMNIFY SOUTHWEST, THE AIRPORT AUTHORITY, AND THE CITY AND COUNTY OF DENVER, AS SET FORTH IN THIS SECTION 11.1:**

11.1.1 **TO THE FULLEST EXTENT PERMITTED BY LAW, CMR HEREBY AGREES TO INDEMNIFY, DEFEND, PROTECT, AND HOLD HARMLESS SOUTHWEST, THE AIRPORT AUTHORITY, AND THE CITY AND COUNTY OF DENVER, AND THEIR RESPECTIVE AFFILIATES, SUBSIDIARIES, OFFICERS, DIRECTORS, SHAREHOLDERS, PARTNERS, REPRESENTATIVES, DESIGNEES, AGENTS, ELECTED OFFICIALS, AND EMPLOYEES (REFERRED TO INDIVIDUALLY AS AN "INDEMNIFIED PARTY" AND COLLECTIVELY AS THE "INDEMNIFIED PARTIES") FROM AND AGAINST ANY AND ALL CLAIMS, DAMAGES, LOSSES AND EXPENSES, OF ANY NATURE WHATSOEVER (INCLUDING, WITHOUT LIMITATION, CLAIMS FOR CONSEQUENTIAL DAMAGES, BODILY INJURY, LOSS OF , AND DAMAGE TO PROPERTY) AND ANY AND ALL LIABILITIES, LOSSES, DAMAGES, DEBTS, COSTS, EXPENSES, INCLUDING REASONABLE ATTORNEYS' FEES AND COURT COSTS (COLLECTIVELY, "CLAIMS") RESULTING FROM OR ARISING OUT CMR'S PERFORMANCE OF THE WORK OR OTHER ACTIVITIES OF CMR OR ANY SUBCONTRACTOR OR SUPPLIER (OR THEIR EMPLOYEES) OF ANY TIER PURSUANT TO THIS AGREEMENT, INCLUDING WITHOUT LIMITATION:**

11.1.1.1 **ANY ACTUAL OR ALLEGED VIOLATION OF ANY LOCAL, STATE OR FEDERAL LAW, ORDINANCE, REGULATION, STATUTE, OR OTHER APPLICABLE LAW BY CMR OR ANY SUBCONTRACTOR OR SUPPLIER (OR ANY OF THEIR EMPLOYEES) OF ANY TIER;**

11.1.1.2 **ANY LIEN CLAIM OR NOTICES OF CLAIM AND CHARGES WHICH MAY AT ANY TIME BE FILED AGAINST OR CLAIMED AGAINST SOUTHWEST OR THE PROJECT SITE OR ANY PORTION THEREOF TO THE EXTENT THAT SOUTHWEST IS NOT IN BREACH OF ITS PAYMENT OBLIGATIONS HEREUNDER;**

11.1.1.3 **ANY CLAIM OF BODILY INJURY, SICKNESSES, DISEASE OR DEATH OF ANY PERSON, OR PROPERTY DAMAGE, INCLUDING LOSS OF USE OF PROPERTY;**

11.1.1.4 **ANY OTHER NEGLIGENT OR WRONGFUL ACT OR OMISSION CAUSED IN WHOLE OR IN PART BY THE CMR, ITS SUBCONTRACTORS, SUPPLIERS, OR ANYONE DIRECTLY OR INDIRECTLY EMPLOYED BY CMR OR ANY SUBCONTRACTOR OR ANYONE FOR WHOSE ACTS CMR MAY BE LIABLE;**

BUT ONLY TO THE EXTENT CAUSED, IN WHOLE OR IN PART, BY ANY NEGLIGENT OR WRONGFUL ACT OR OMISSION OF CMR, OR ANY SUBCONTRACTOR OR SUPPLIER OF ANY TIER, OR ANYONE DIRECTLY OR INDIRECTLY EMPLOYED BY CMR OR ANY SUBCONTRACTOR OR SUPPLIER OF ANY TIER. SUCH OBLIGATION SHALL NOT BE CONSTRUED TO NEGATE, ABRIDGE, OR REDUCE OTHER RIGHTS OR OBLIGATIONS OF INDEMNITY WHICH WOULD OTHERWISE EXIST AS TO A PARTY OR PERSON DESCRIBED IN THIS SECTION.

11.1.2 The indemnification obligations set forth in this Section 11.1 shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or to the CMR under applicable workers' compensation laws and shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described herein.

11.1.3 CMR's indemnification obligations arising under this Section 11.1 shall not be limited by any limitation on the measure of damages as set forth in the Contract Documents. Any waiver or limitation on recovery of consequential damages shall not apply to the amount or type of damages recoverable by an Indemnified Party under Section 11.1 arising from a claim brought by any person or party against an Indemnified Party.

11.1.4 It is agreed with respect to any legal limitations now or hereafter in effect and affecting the validity or enforceability of the indemnification obligations under this Section 11.1 such legal limitations are made a part of the indemnification obligations and shall operate to amend the indemnification obligations to the minimum extent necessary to bring the provision into conformity with the requirements of such limitations, and as so modified, the indemnification obligations shall continue in full force and effect.

11.1.5 **THE PROVISIONS OF THIS SECTION 11.1 SHALL SURVIVE THE TERMINATION, COMPLETION AND/OR EXPIRATION OF THIS AGREEMENT AND SHALL NOT BE LIMITED IN ANY WAY BY THE AMOUNT OR TYPE OF INSURANCE OBTAINED BY SOUTHWEST, THE INDEMNIFIED PARTIES, CMR OR ANY SUBCONTRACTOR, OR SUPPLIER. IN ALL CONTRACTS BETWEEN CMR AND SUBCONTRACTORS AND/OR SUPPLIERS, CMR SHALL CAUSE ALL SUBCONTRACTORS/SUPPLIERS TO INDEMNIFY, DEFEND, PROTECT AND HOLD HARMLESS THE INDEMNIFIED PARTIES FROM ANY CLAIMS OR CAUSES OF ACTION ARISING OUT OF THE WORK PROVIDED BY SUCH SUBCONTRACTOR(S)/SUPPLIER(S) TO THE SAME EXTENT THAT CMR HAS INDEMNIFIED, DEFENDED, PROTECTED AND HELD HARMLESS SUCH INDEMNIFIED PARTIES IN THIS SECTION.**

11.2 **Insurance**. CMR shall maintain in effect at all times during the full term of this Agreement, including during Preconstruction Services, the insurance coverages specified below, with limits not less than those set forth herein under forms of policies reasonably satisfactory to Southwest and with insurers licensed to do business in Colorado. Insurers providing coverage shall have and A.M. Best rating of A-/VII or higher. None of the requirements contained herein

as to types, limits or Southwest's approval of insurance coverage to be maintained by CMR is intended to and shall not in any manner limit, qualify or quantify the liabilities and obligations assumed by CMR under the Agreement or otherwise provided by law. In the event of any failure by CMR to comply with these requirements Southwest may, without in any way compromising or waiving any right or remedy at law or in equity, on written notice to CMR, purchase such insurance, and deduct the cost of such insurance from CMR's progress payments, provided that Southwest shall have no obligation to do so and if Southwest shall do so, CMR shall not be relieved of or excused from the obligation to obtain and maintain such insurance amounts and coverages. CMR's insurance coverages shall be primary and not excess insurance vis-à-vis any coverage, any self-insurance, or other policy of insurance maintained by Southwest or the City. Certificates of insurance and additional insured endorsements required herein shall provide that the policies shall be primary without right of contribution from any insurance carried by Southwest. The obligations set forth in this Section 11.2 shall survive the expiration, completion, abandonment and/or termination of this Agreement.

11.2.1 **Workers Compensation Insurance/Employer's Liability.** CMR shall procure and maintain workers compensation coverage that provides the statutorily-required benefits under the laws of the state of Colorado and employers liability insurance with limits of not less than $1,000,000 bodily injury by accident (each accident), $1,000,000 bodily injury by disease (policy limit) and $1,000,000 for bodily injury by disease (each employee). The policy shall be endorsed to include "all states" coverage and a waiver of subrogation in favor of Southwest, the Airport Authority, the City and County of Denver, and their officers, directors, agents, and employees.

11.2.2 **Commercial General Liability Insurance**. CMR shall maintain commercial general liability (CGL) insurance with limits of not less than $10,000,000 per occurrence, $10,000,000 annual general aggregate and $10,000,000 annual products-completed operations aggregate. Coverage shall be provided on ISO occurrence form (or a substitute form providing equivalent coverage and acceptable to Southwest). CGL insurance shall cover liability including, but not limited to, liability arising from premises, operations, independent contractors, products-completed operations, property damage, explosion, underground and collapse, personal injury, bodily injury, and including, but not limited to, death resulting therefor, contractual liability, and injury to, loss of, loss of use of and damage to, aircraft. Southwest, the Airport Authority, the City and County of Denver, and their officers, directors, agents, and employees shall be included as additional insureds under the CGL Policy, using ISO Additional Insured Endorsements GC 20 10 10 01 "*Additional Insured – Owners, Lessees or Contractors – Scheduled Person or Organization*" and Form GC 20 37 10 01 "*Additional Insured – Owners, Lessees or Contractors – Completed Operations*" (or endorsements providing equivalent coverage and acceptable to Southwest). The CGL policy shall provide for full separation of insureds and shall not include any insured v. insured exclusions or limitations. The CGL policy shall be endorsed so that the annual general aggregate applies separately to the Project. The required CGL and Excess liability insurance and required additional insured coverage shall be maintained continuously during the term of the Agreement and the performance of the Work and covering completed operations until the expiration of all applicable statues of limitations and repose for liability arising out of the Work. This insurance shall apply as primary insurance with respect to any other insurance or self-insurance programs maintained by Southwest. Any deductible or self-insured retention shall be on a "per occurrence" basis and shall be in an amount acceptable to Southwest, but in no event greater than $250,000 per occurrence. There shall be no endorsement or modification of the CGL limiting the scope of coverage for liability arising from damage to aircraft and operations on airport premises, explosion, collapse, underground property

damage. Limits may be satisfied through a combination of primary and excess liability policies.

11.2.3 **Automobile Liability Insurance**. CMR shall maintain automobile liability insurance with a policy limit of not less than $2,000,000 each accident for vehicles used on runways and taxiways; $2,000,000 each accident for vehicles used in aircraft ramp areas; and $2,000,000 each accident for all other vehicles. Total limit requirements can be secured through a combination of primary and excess coverages. Such insurance shall cover liability arising out of any auto (including owned, hired, and non-owned autos). Business auto coverage shall be written on the most recent edition of ISO form CA 00 01 or a substitute form acceptable to Southwest providing equivalent liability coverage. If necessary, the policy shall be endorsed to provide contractual liability coverage equivalent to that provided in the 1990 and later editions of CA 00 01. This insurance shall apply as primary insurance with respect to any other insurance or self-insurance programs maintained by Southwest. Southwest, the Airport Authority, the City and County of Denver, and their officers, directors, agents, and employees, shall be included as additional insureds on this policy through an endorsement acceptable to Southwest. If CMR or any of its Subcontractors or any supplier transports any hazardous materials, substances or waste, such party's or parties' automobile liability policy shall include endorsement forms MCS-90 and ISO CA 99 48 or equivalent endorsements providing coverage for environmental and pollution claims. Limits may be satisfied through a combination of primary and excess liability policies

11.2.4 **Excess Liability Insurance**. CMR shall maintain excess coverage with a limit of not less than $100,000,000 per occurrence, $100,000,000 annual general aggregate, and $100,000,000 annual products-completed operations aggregate, on a "following form" basis, in excess of limits specified for Employer's Liability, CGL, and Automobile Liability, and with respect to CGL, for the same duration as required by Subsection 11.2.2. CMR shall maintain excess coverage with a limit of not less than $75,000,000 per occurrence, $75,000,000 aggregate on a following form basis over Automobile Liability limits. Continuing excess coverage shall include liability coverage for bodily injury and property damage arising out of or related to insured's completed work.

11.2.5 **Professional Liability Insurance**. CMR shall maintain Professional Liability coverage with limits no less than $10,000,000 each claim/$10,000,000 annual aggregate, issued by an insurance carrier approved in advance by Southwest and licensed to provide such coverage in Colorado to insure from and against all negligent acts, errors, and omissions in the professional services performed by CMR, and its agents, representatives, employees, Subcontractors and/or sub-subcontractors. This insurance shall extend coverage to loss of interest, earnings, profit, use and operations interruption, and other special indirect and consequential damages. Upon execution of the Agreement and at every date of renewal of that policy, the CMR shall cause a Certificate of Insurance to be issued. Coverage shall provide full prior acts coverage or a retroactive date not later than the date services are first performed by or for CMR in connection with the Project. This insurance shall be maintained until all claims arising out the Preconstruction Services and Construction Services are barred by applicable statutes of limitation or repose. Any deductible or premium for this coverage shall be the sole responsibility of CMR and shall not be paid as a Cost of the Work.

11.2.6 **Aircraft Liability Insurance**. CMR shall provide evidence of this coverage if the use of an aircraft of any kind is used for this Project. Minimum per occurrence and aggregate limits is $25,000,000. There shall be no 'per seat' limitation.

11.2.7 **Environmental Impairment/Pollution Liability Insurance**. CMR shall provide Pollution Liability coverage for the Project with policy limits of $10,000,000 per occurrence/$10,000,000 annual aggregate. CMR's Pollution Liability shall cover a pollution event or release resulting from the CMR's or any Subcontractor's activities under and during the term of this Agreement including at least the following coverages: (i) coverage for the activities of CMR, Subcontractors, Suppliers and vendors on the Project, (ii) coverage for asbestos abatement and liability arising from the encapsulation, removal, handling, storage, transportation and disposal of asbestos-containing material, (iii) coverage for receiving, dispensing, transporting, removal and handling of aviation fuels or any other pollutants, and (iv) coverage for any other operations involving pollutants. Pollution Liability coverage shall include mold, mold remediation and diminution in value resulting from mold as it pertains to work performed by the CMR or its Subcontractors, and environmental impairment liability with clean-up costs. This policy shall provide for full separation of insureds and shall not include any insured v. insured exclusions or limitations. Southwest, the Airport Authority, the City and County of Denver, and their officers, directors, agents, and employees, shall be included as additional insureds on this policy through an endorsement acceptable to Southwest. Such insurance coverage and additional insured status shall be maintained continuously during the term of the Agreement and the performance of the Work, and covering completed operations until the expiration of all applicable statutes of limitations and repose for liability arising out of the Work.

11.2.8 **Installation Floater**. CMR shall provide a policy of insurance to cover machinery and equipment of all kinds during transit, installation and testing at the Project. Such insurance shall provide coverage on an "all risk" basis from any external cause, door to door, irrespective of conveyance, with limits set to be the maximum any one shipment inclusive of freight. Coverage will be extended to include consequential loss following physical loss or damage to "critical items", as may be agreed by underwriters. Critical items refers to cargo that, if damaged by a peril insured against, might cause a delayed start-up to the Project because of the length of time required to replace or repair an entire item. Coverage shall start when the items to be installed are transported to the Project and shall remain in place until final acceptance by Southwest. Southwest, the Airport Authority, the City and County of Denver, CMR, and Subcontractors performing Work shall be named insureds. This policy shall contain an endorsement that the policy is primary to any other insurance available to Southwest with respect to claims arising under this Agreement.

11.2.9 **Builder's Risk Insurance**. Builder's risk coverage will be provided **by Southwest**. Such insurance shall be evidenced by the kind of policy which does not have to be adjusted or reported upon periodically but provides constant limits of insurance at full 100% of all insurable values as they are created during construction by performance of this Agreement. The insurance shall apply on a replacement cost basis and shall name Southwest, the Airport Authority, the City, the CMR, and all Subcontractors and sub-subcontractors as insureds. Southwest shall notify CMR in writing of any loss payees that may need to be included in such coverage.

11.2.9.1 The insurance shall be written to cover all risks of physical loss, and shall insure at least against the perils of fire, lightning, explosion, windstorm or hail, smoke, aircraft or vehicles, riot or civil commotion and extended coverage including flood and earthquake and shall include coverage for physical loss or damage including, without duplication of coverage, theft, vandalism, terrorism and malicious mischief, collapse, false-work, temporary

buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for the CMR's services and expenses required as a result of such insured loss. The policy shall include coverage for explosion, collapse and underground (XCU).

11.2.9.2 All insurance provided under this Section shall provide, by endorsement or otherwise, that the insured property may be occupied and that the insurance will remain in full force and effect until the property is fully accepted by Southwest. Southwest may define any risks or other special hazards that are applicable to the Project and include such coverage in the policy provided pursuant to this Section.

11.2.9.3 The insurance shall be specific as to coverage and not considered as contributing insurance with any permanent insurance maintained on the premises.

11.2.9.4 Loss under the Builder's Risk insurance shall be made payable jointly to Southwest, the CMR, and any loss payees that may be identified by Southwest. Southwest shall adjust all claims and, upon receipt of funds from Southwest, CMR shall pay other insureds their just shares of insurance proceeds received from Southwest.

11.2.10 **CMR's Equipment Policy**. Any insurance policy covering CMR's or any Subcontractor's equipment against loss by physical damage shall include an endorsement waiving the insurer's right of subrogation against Southwest, the Airport Authority, the City and County of Denver, and their officers, directors, agents, and employees. Such insurance shall be CMR's and any Subcontractor's sole and complete means of recovery for any such loss. Should CMR or any Subcontractor choose to self-insure this risk, it is expressly agreed that CMR and any Subcontractor hereby waives any claim for damage or loss to said equipment against Southwest, the Airport Authority, the City and County of Denver, and their officers, directors, agents, and employees.

11.2.11 **Additional Insured Status**. Southwest, the Airport Authority, the City and County of Denver, and their officers, directors, agents and employees, shall be included as additional insureds on all policies except worker's compensation and professional liability policies. CMR shall provide to Southwest certificates of insurance and additional insured endorsements enumerating, among other things the additional insured or insured status of Southwest, the Airport Authority, the City and County of Denver, and their officers, directors, agents, and employees. Each policy, other than worker's compensation and any professional liability shall contain a severability of interest clause stating "it is agreed that the insurance afforded by this policy shall apply separately to each insured against whom claim is made or suit is brought except with respect to the limits of the company's liability." Each policy shall provide for full separation of insureds and include no insured v. insured limitations or exclusions.

11.2.12 **Evidence/Proof of Insurance**. Upon execution of this Agreement, CMR shall provide to Southwest a copy of the certificates of insurance and the required additional insured endorsements before any Work is performed on the Project and as coverage renews. The maintenance in full current force and effect of all required coverages shall be a condition precedent to Southwest's obligation to pay CMR. The insurance policies shall provide or be endorsed to include a requirement for each insurer

to give Southwest notice at least thirty (30) days prior to any cancellation or nonrenewal. In addition, the insurer will endeavor to provide Southwest with written notice at least thirty (30) days prior to any other lapse in the policy. CMR shall provide to Southwest a complete copy of each required insurance policy upon written request by Southwest. CMR, upon selection, shall provide to Southwest certificates of insurance evidencing such coverages and enumerating, among other things, the additional insured status of Southwest, the Airport Authority, the City and County of Denver, and their officers, directors, agents and employees, as required herein. A copy of the certificates of insurance shall be provided to Southwest within ten (10) days of notice of intent to award.

11.2.13 Deductibles and/or self-insured retentions shall be the responsibility of the CMR and shall not be paid as a Cost of the Work under the CMR Agreement.

11.2.14 **CCIP Enrollment/Off-Site Coverages**. In the event CMR furnishes the required CGL insurance through a CCIP program, CMR shall procure, and shall require its Subcontractors of every tier to procure, insurance coverages independent of and in addition to the CCIP to cover services and activities of Suppliers, materialmen, vendors, haulers, truckers, and owner/operators whose employee(s) perform no on-site work or are engaged solely in the loading, unloading, stocking, testing, or hauling of equipment, supplies, or materials " ("Off-Site Workers"). These coverages shall at least include worker's compensation/employer's liability, CGL, automobile, excess liability, pollution, and professional liability coverages for services and activities not covered by the CCIP and/or non-enrolled Subcontractors and Off-Site Workers, all in form and with terms, conditions and limits acceptable to Southwest. CMR will be responsible to see that each Subcontractor, vendor, consultant or Off-Site Worker providing services to the Project enrolls in the CCIP and complies with its requirements, including completion of the appropriate enrollment form. Off-site coverages will not be reimbursed as a Cost of the Work.

11.2.15 **Insurance Required of Subcontractors**. If a CCIP is not used on the Project, CMR shall require by written contract that each of its Subcontractors maintain insurance set forth in 11.2.15.1 below to cover their operations performed with respect to this Agreement, including any Preconstruction Services. If a CCIP is provided and Subcontractors are enrolled, CMR shall provide and shall be responsible for requiring all Subcontractors (of every tier) provide, insurance coverages with policy limits as designated by Southwest for off-site operations and operations not covered by the CCIP. Southwest, the Airport Authority, and the City and County of Denver, and their officers, directors, agents, and employees, shall be listed as additional insureds on all policies except professional liability and worker's compensation and, with respect to the CGL and excess liability coverage, CMR and its Subcontractors shall provide additional insured status to such parties for ongoing and products-completed operations by endorsements referenced in Section 11.2.2 or otherwise acceptable to Southwest.

11.2.15.1 Unless reduced limits are approved in advance, in writing, by Southwest on an individual basis, each Subcontractor must provide:

Insurance	Policy Limits
Worker's Compensation/Employer's Liability Insurance	Statutory Bodily Injury by Accident $1,000,000 (accident) Bodily Injury by Disease $1,000,000 (policy limit) Bodily Injury by Disease $1,000,000 (each employee)
Commercial General Liability ("CGL") Coverage shall be primary and non-contributing with any other insurance available to Southwest. Aggregate limits of the insurance shall be provided on a per-project basis.	$5,000,000 per occurrence $5,000,000 annual general aggregate $5,000,000 annual products-completed operations aggregate
Automobile Liability	$10,000,000 each accident for vehicles used on runways and taxiways; $5,000,000 each accident for vehicles used in aircraft ramp areas; $1,000,000 each accident for all others
Excess Liability Excess shall "follow form" of underlying coverages specified for Employer's Liability, Commercial General Liability and Automobile Liability	$10,000,000 each occurrence/combined aggregate in excess of limits specified for Employer's Liability, Commercial General Liability and Automobile Liability.
Pollution Liability Coverage shall be provided for a minimum of five (5) years following Substantial Completion	$2,000,000 per occurrence/annual aggregate
Professional Liability	$5,000,000 each claim/$5,000,000 annual aggregate
Construction Equipment/Tools This coverage shall include an endorsement waiving the insurer's right of subrogation against Southwest, the Airport Authority, and the City and County of Denver	

The CGL policies shall provide for full separation of insureds and shall not include any insured v. insured exclusions or limitations. Each policy shall contain a severability of interest clause stating "it is agreed that the insurance afforded by this policy shall apply separately to each insured against whom claim is made or suit is brought except with respect to the limits of the company's liability."

The CGL policies shall be endorsed so that the annual general aggregate applies separately to the Project. Subcontractors' (of every tier) CGL insurance and required additional insured coverages shall be maintained continuously during the term of the Agreement and the performance of the Work, and covering completed operations until the expiration of all applicable statutes of limitations and repose for liability arising out of the Work. The limits of all required insurance may be adjusted by Southwest in accordance with the nature of each Subcontractor's operations and, in each case, must be submitted to Southwest for approval before any work commences under the contract with the Subcontractor or materials ordered from a Supplier. Insurers providing coverage shall have an A.M. Best rating of A-/VII or higher. Subcontractors and Suppliers shall be required to provide to CMR, who shall provide to Southwest, copies of each Certificate of Insurance and the required additional insured endorsements from each entity before the that entity is permitted to begin providing services or Work in relation to the Project and as coverage renews. The insurance policies shall incorporate a provision or endorsement requiring written notice to Southwest at least thirty (30) days prior to any cancellation or nonrenewal. CMR shall obtain and provide to Southwest a complete copy of each required Subcontractor insurance policy upon written request by Southwest. Southwest shall not be responsible for payment of any deductible or self-insured retention required under any policy furnished hereunder.

11.3 **Waiver of Subrogation**. Each policy of insurance procured by CMR and its Subcontractors (of every tier) as indicated above, except Professional Liability, must contain an endorsement to the effect that the issuer waives any claim or right of subrogation to recover against Southwest, the Airport Authority, the City and County of Denver, and their officers, directors, agents and employees.

11.4 **Bonds.** CMR shall furnish Payment and Performance Bonds and comply with the terms and conditions of the requirements for "Payment and Performance Bonds" as set forth in Section 11.2 of the General Conditions. Payment and Performance Bonds shall cover faithful performance of this Agreement and payment of obligations arising thereunder and shall be issued to comply with Colorado law. Bonds may be obtained through the CMR's usual source, and the cost thereof shall be included in the Cost of the Work. The amount of each bond shall be equal to 100% of the Contract Sum.

Article 12

TERMINATION AND/OR SUSPENSION

12.1 **Termination.** This Agreement may be terminated as provided in Article 13 of the General Conditions except as provided in Section 4.6 of this Agreement as to Preconstruction Phase services and individual Work Packages or in the event the parties cannot agree on an FGMP. Amounts recoverable upon termination of the Contract shall be as provided in Section 4.6 of this Agreement or Article 13 of the General Conditions as applicable.

12.2 **Suspension.** Except as provided in Section 4.6 of this Agreement which provisions shall govern the circumstances for suspension or termination for Preconstruction Services and

Work Packages, the Work may be suspended by Southwest as provided in Article 13 of the General Conditions.

Article 13

MISCELLANEOUS PROVISIONS

13.1 **Authorized Representatives**

13.1.1 **Southwest's Representatives**. Southwest designates the following individuals as its Authorized Representatives ("Southwest's Authorized Representatives") who shall have the authority to act within the scope of the authority given herein below:

13.1.1.1 Chris Edwards, Project Manager
Southwest Airlines Co.
2702 Love Field Drive
Dallas, Texas 75235
214-792-2875

Andy Remstad
Program Manager
Jviation, Inc.
900 South Broadway, Suite 350
Denver, CO 80209
303.524.3052
andy.remstad@jviation.com

Southwest's Authorized Representatives shall have authority to receive and transmit correspondence and direct the day-to-day operations and decisions at the Project on behalf of Southwest.

13.1.1.2 **Expenditure of Funds**. No member of the PMT shall have the authority to bind Southwest or any of its officers, directors, agents, representatives, successors or assigns to the payment of any Project funds. Any Change Order, Modification, or any other document requesting or requiring the expenditure of Project funds must be executed by one or more of the following individuals:

John Zuzu	Authority not to exceed $10,000,000
Paul Cullen	Authority not to exceed $10,000,000
Jason Van Eaton	Authority not to exceed $15,000,000
Mark Shaw	Authority unlimited

CMR acknowledges that any document not executed as provided hereunder is null and void.

13.1.1.3 Southwest may delegate some or all authority in writing to other designated individuals and/or may change the authority of previously designated individuals. Such written delegation of authority shall be delivered to

the CMR in accordance with the requirements of Section 13.2 hereof within five (5) Business Days of any change.

13.1.2 **CMR's Representatives**. CMR designates the individual(s) listed below as its Authorized Representative(s) ("CMR's Authorized Representative(s)"), which have the authority and responsibility for representing the CMR as set forth in the Contract Documents. Key Members of the CMR's Representatives and their authority are:

13.1.2.1 Jobsite Point of Contact:

Scott Hill
6890 West 52nd Ave
Suite 100
Arvada, CO 80002
Phone: (720) 403.3228

Project Executive:

Shawna Tucci
6890 West 52nd Ave.
Suite 100
Arvada, CO, 80002
Phone: (720) 648.0220

Vice President (VP):

Tim Kretzschmar
6890 West 52nd Ave.
Suite 100
Arvada, CO, 80002
Phone: (303) 518.2872

has overall authority with respect CMR's rights and responsibilities under this Agreement.

The CMR Authorized Representative may delegate some or all of such authority in writing to designated individuals. Such written delegation of authority shall be delivered to Southwest within five (5) Business Days of any delegation, in accordance with the requirements of Section 13.2 hereof. CMR shall furnish only skilled and properly trained staff for performance of the Work. The key members of the CMR's staff shall be persons agreed upon with Southwest, which agreement shall not be unreasonably withheld. Such key members of the CMR's staff shall not be changed without the written consent of Southwest, unless such person becomes unable to perform any required duties due to death, disability, transfer, or termination of employment with the CMR.

13.2 **Written Notice.** Any notice, demand, request, consent, or approval that either party hereto may or is required to give the other pursuant to this Agreement shall be in writing and shall be either personally delivered or sent by mail or facsimile transmission, addressed to the individuals identified in Section 13.1 above, Such notice shall be deemed effective upon personal service, by proof of fax receipt, or three (3) Business Days after deposit in the United States mail, postage prepaid. Either party may change the address to which subsequent notice

and/or other communications can be sent by giving written notice designating a change of address to the other party, which shall be effective upon receipt.

13.3 This Agreement represents the entire understanding of Southwest and CMR as to those matters contained herein. No prior oral or written understanding shall be of any force or effect with respect to those matters covered hereunder. This Agreement may only be modified by amendment in writing signed by each party.

13.4 **Assignment**. This Agreement shall be binding on the successors and assigns of the parties hereto. The services called for herein are deemed unique and CMR **shall not** assign, transfer or otherwise substitute its interest in this Agreement, or any of its obligations hereunder, without the prior written consent of Southwest, the Airport Authority, and CMR's surety (unless, in the case of the surety, the surety has waived its right of notice of reassignment). If the CMR attempts to make such an assignment without Southwest's consent, CMR shall nevertheless remain legally responsible for all obligations under this Agreement.

13.5 **Instruments of Service**. All Drawings, Specifications and other documents and electronic data furnished by CMR to Southwest under this Agreement are deemed to be Instruments of Service. Except to the extent such Instruments of Service contain proprietary components or applications the CMR or its Subcontractors and lower tier subcontractors and Suppliers routinely use in the course of their business or to the extent such Instruments contain proprietary components, materials and applications not owned by and for which CMR or its Subcontractors and lower tier subcontractors and Suppliers holds limited rights such as a use license, Southwest shall own all Instruments of Service. CMR may utilize all Instruments of Service for the purposes of Construction and Preconstruction services on the Project and shall provide written and electronic copies to the PMT. Except to the extent such Instruments of Service contain proprietary components or applications the CMR or its Subcontractors and lower tier subcontractors and Suppliers routinely use in the course of their business or to the extent such Instruments contain proprietary components, materials and applications not owned by and for which CMR or its Subcontractors and lower tier subcontractors and Suppliers holds limited rights such as a use license, CMR shall be prohibited from using the Instruments of Service or any one of them for any purpose other than for this Project.

13.6 **M/WBE Participation**. To ensure participation of Minority and Women-Owned Business Enterprises (MWBE), Southwest has established an MWBE participation goal of [redacted] [% is in compliance with DEN requirements]. CMR, its Design Professionals and its Subcontractors shall be required to report participation in support of the overall Project goal on a quarterly basis.

13.7 Should any part of this Agreement be declared by a final decision of a court or tribunal of competent jurisdiction to be unconstitutional, invalid or beyond the authority of either party to enter into or carry out, such decision shall not affect the validity of the remainder of this Agreement, which shall continue in full force and effect, provided that the remainder of this Agreement or any provision can be interpreted to give effect to the intentions of the parties.

13.8 Multiple copies of this Agreement may be executed by the parties and the parties agree that this Agreement of file with Southwest is the version of this Agreement that shall take precedence should any differences exist among counterparts of this Agreement.

13.9 Any disputes arising hereunder shall be governed by the laws of the State of Colorado and each Party hereto submits itself to the jurisdiction of the courts of the State of Colorado. Exclusive jurisdiction and venue of any dispute arising hereunder shall be in Denver

County, Colorado. CMR represents that it is licensed by the state of Colorado to provide the Services required by this Agreement.

13.10 The duties and obligations imposed by this Agreement, and the rights and remedies available thereunder shall be in addition to and not a limitation of the duties, obligations, rights and remedies otherwise imposed or available by law. A party's waiver of the performance of any covenant, condition, obligation, representation, warranty or promise in this Agreement shall not invalidate this Agreement or be deemed a waiver of any other covenant, condition, obligation, representation, warranty or promise. A party's waiver of the time for performing any act or condition hereunder does not constitute a waiver of the act or condition itself.

13.11 CMR is an independent contractor and not an employee, agent or other representative of Southwest, the Airport Authority or the City or County of Denver. Nothing in this Agreement shall be construed to create any relationship of joint venture, partnership or any other association of any nature whatsoever between Southwest and the CMR or between the Airport Authority and the CMR, other than that of CMR acting as an independent contractor of Southwest. Southwest shall have the right to direct the CMR as provided for in this Agreement. This limited right of oversight shall not reduce or abrogate the CMR's liability for any and all damages or injury to persons or property that may arise directly or indirectly from the CMR's execution of the Work.

13.12 Southwest shall be a third-party beneficiary of all contracts between the CMR and any other design or engineering entities, Subcontractors, Suppliers, and other agreements between the CMR and entities for which the subject matter of the contract includes the Work.

13.13 The CMR shall be responsible to Southwest for the performance, acts, or omissions of the Subcontractors, Suppliers, agents, and employees of those in privity of contract with the CMR.

13.14 As it relates to performance of the Preconstruction and Construction Services hereunder, CMR shall observe and comply with all Applicable Laws, regulations and ordinances. CMR shall possess and maintain all necessary licenses, permits, certificates and credentials required by Federal, State, Local and all other appropriate governmental agencies, including any certification and credentials required by Southwest. Failure to maintain the licenses permits, certificates and credentials shall be deemed a material breach of this Agreement.

13.15 In executing this Agreement, Southwest and CMR each individually represents that it has the necessary financial resources to fulfill its obligations under this Agreement, and each has the necessary corporate approvals to execute this Agreement, and perform the services described herein.

This Agreement is executed on the dates set forth below:

SOUTHWEST AIRLINES CO.

By: _____
Name: _____
Its: Managing Dir Corp Facilities

Date 3-21-19

SWINERTON, INC.

By: _____
Name: TIM KRETZSCHMAR
Its: DIVISION MANAGER / V.P.

Date 3/12/2019

CONFIDENTIAL

SOUTHWEST AIRLINES CO. MAINTENANCE HANGAR FACILITY PROJECT

Denver International Airport

GENERAL CONDITIONS for CONSTRUCTION MANAGER AT RISK AGREEMENT

TABLE OF CONTENTS

GENERAL CONDITIONS

ARTICLE 1. GENERAL PROVISIONS

1.1 BASIC DEFINITIONS

A. **SUMMARY**

1. This Section 1.1 includes common phrases, definitions, and acronyms that are used in conjunction with construction and contracting requirements for the Project as herein defined.

2. In the event of a conflict between how the phrases are defined herein and how they are defined in other Contract Documents, the Construction Manager at Risk ("CMR") shall promptly ask Southwest for clarification or resolution.

B. Whenever the following phrases, definitions, and acronyms are used in the Agreement, the General Conditions, or in the Contract Documents, the intent and meaning shall be as herein defined. Working titles having a masculine gender, such as "workman" and the pronoun "he", are utilized for the sake of brevity and are intended to refer to persons of either gender.

ACCEPTANCE – Includes words of similar import, such as "acceptable" or "accepted." Where used in conjunction with the Architect's actions on the CMR's submittals and requests, it is limited to responsibilities and duties of the Architect stated in the Contract Documents. Where used in conjunction with Southwest's actions, acceptance shall be in Southwest's sole, but reasonable discretion and shall be final. Acceptance does not release CMR from responsibility to fulfill Contract Document requirements, unless otherwise provided in the Contract Documents.

AGREEMENT – The written Agreement between Southwest and Construction Manager at Risk for Construction of the Southwest Airlines Co. Maintenance Hangar Facility Project at Denver International Airport, Denver, Colorado, including all exhibits thereto and documents incorporated therein, which describes and governs performance of the Work through the furnishing of labor, materials, tools, and equipment for the Preconstruction and Construction phases of the Project.

AIRPORT – The land and improvements located on and within the confines of Denver International Airport (DEN), Denver, Colorado.

AIRPORT AUTHORITY – The organizational entity of the City, the Department of Aviation, which has responsibility for management and control of the City's airport system.

ALLOWANCE – An amount of money set aside under the Contract Documents for a special purpose or particular element of the Work as identified in the Contract Documents.

APPLICABLE LAWS – Any and all applicable statutes, laws, treaties, rules, codes, ordinances, regulations, circulars, permits, standards, interpretations, or orders of any federal, state, or local Governmental Authority having jurisdiction over the Project, the Contract Documents, and the parties, all as in effect as of the date of the Agreement and as amended during the term of the Agreement including those of the Airport Authority, City, the Transportation Security Administration ("TSA"), and the Federal Aviation Administration ("FAA"), all of which shall be broadly interpreted to include, without limitation (i) federal, state and local building codes, life safety codes, and fire codes, including but not limited to the International Fire Code, NFPA 407, NFPA 30 and NEC, energy codes, electrical codes, and accessibility codes; (ii) zoning codes; (iii) design standards of the U.S. Department of Homeland Security, the TSA, and FAA; (iv) all Federal, State and local security regulations including but not limited to 49 CFR 1500-1550 concerning controlling access to the Project and 14 CFR Parts 107 and 108 regarding unescorted access privileges at the Project; (v) accessibility laws and codes, including the Americans with Disabilities Act of 1990 (42 U.S.C Section 12101 and 28 CFR Part 35, Final Rule 7/26/04), the 2010 ADA Standards for Accessible Design and other accessibility laws and codes of the State of Colorado, (vi) United States Occupational Safety and Health Administration requirements; (vii) FAR 52.203-11 "Certification and Disclosure Regarding Payments to Influence Certain Federal Transactions"; (viii) Prevailing Wage requirements as set forth in Denver Revised Municipal Code Section 20-76 and codes cited therein; (ix) FAR 52.219-8 and FAR 52.219-9 relating to Small Business Concerns; (x) the Age Discrimination in Employment Act requirements and requirements prohibiting discrimination found in 41 CFR 60-1.4(a), 41 CFR 60-300.5(a), and 41 CFR 60-741.5(a); (xi) any Environmental Laws applicable storm water, street, utility and other related infrastructure requirements and requirements related to the use removal, storage, transportations, disposal and remediation of Hazardous Materials (including those related to lead based paint), flood disaster laws, and health laws and regulations; (xii) the National Pollutant Discharge Elimination System program ("NPDES") and its regulations relating to stormwater discharges (40 CFR Part 122); (xiii) all Federal, State and local security regulations and badging requirements including but not limited to 49 CFR 1500-1550 concerning controlling access to the Project, 14 CFR Parts 107 and 108 regarding unescorted access privileges at the Project; (xiv) Airport Authority's rules and regulations; (xv) all Applicable Laws relating to civil/human rights, including but not limited to:(a)Part 21 of the Federal Aviation Regulations; (b) The Civil Rights Act of 1964, as amended; (b) The Equal Pay Act of 1963; (d) The Rehabilitation Act of 1973; and (xv) all United States Department of Transportation requirements, including, but not limited to (a) 49 CFR Part 21(Non-discrimination in Federally Assisted Programs of the Department of Transportation); (b) 14 CFR Part 152, Subpart E (Non-discrimination Airport in Aid Program).

ARCHITECT– An individual or entity duly authorized by Southwest to be responsible for professional services associated with architecture, engineering, or certain other design elements relating to the Project.

AS-BUILT DRAWINGS - Drawings prepared by the CMR that document changes to, additions to, or deductions from the Plans, and which represent the Work as constructed.

AS SHOWN – Where "as shown", "as latest indicated", "as detailed", or words of similar import are used, the reference is to the Agreement unless specifically stated otherwise. Where "as directed", "as permitted", "approved", or words of

similar import are used, they shall mean the direction, permission, or approval of Southwest.

AUTHORIZED REPRESENTATIVE – Each party shall have an Authorized Representative who is designated in writing to provide specific services with specific limits of authority, which may be a team of individuals or single individual, and may be an employee of such party.

BUSINESS DAY – Any day on which national banks in Denver County, Colorado are open for business.

CALENDAR DAY – Every day shown on the calendar. When the Contract Time is stated in Calendar Days, every day will be charged toward the Contract Time.

CHANGE ORDER – An amendment to the Agreement reviewed by the PMT and approved by Southwest and CMR that includes, but is not limited to, alterations, deviations, additions to, or deletions from the Agreement which are required for the proper completion of the Work on the Project.

CITY - The City of Denver, a municipal corporation, organized under and by virtue of Article XX of the Constitution of the State of Colorado , including, but not limited to, any agency, board, authority, or private entity which may succeed to the jurisdiction of City over the Airport.

CONSTRUCTION CHANGE DIRECTIVE – A written order approved by Southwest, directing a change in the Work prior to agreement by Southwest and CMR on adjustment (if any) to the Contract Sum, Contract Time, items in a Work Package Authorization, or the Agreement terms.

CONSTRUCTION DOCUMENTS – The composition of the Drawings and technical Specifications, trade bid packages, and phasing plans and contract drawings, setting forth in detail the requirements for the construction of the Project including plans, cross-sections, elevations, details, schedules, calculations, mechanical, electrical, and plumbing documents, energy calculations and technical specifications, and fire protection designs.

CONSTRUCTION MANAGER AT RISK (CMR) – The person or persons, entity or entities, or combination thereof, private or municipal, that has entered into the Agreement with Southwest to provide Preconstruction scheduling and budgeting services and Construction Services, while ultimately serving as a constructor of the Work of the Project during the construction phase. The CMR is at risk for scheduled Project delivery dates at a Final Guaranteed Maximum Price.

CMR GCs – The CMR's General Conditions Costs or "GCs" [redacted] These costs will be included in the CMR's Cost of the Work, [redacted]

CONSTRUCTION SERVICES – The construction means, methods, techniques, sequences and procedures provided or to be provided to the CMR in connection with the Work, all of which shall be performed in a good and workmanlike manner, in strict accordance with the Contract Documents and all Applicable Laws, within the Contract Time, and not to exceed the FGMP, which are more specifically detailed in Article 6 of the Agreement. Also referred to as "Construction Phase Services."

CONTINGENCY and/or CMR CONTINGENCY – A fund, containing a certain sum of money agreed upon by Southwest and CMR, to be used as authorized by Southwest [redacted]

CONTRACT DOCUMENTS – The Contract Documents consist of the Agreement between Southwest and CMR (the "Agreement"); its attached Exhibits, Attachments, Addenda, and/or Change Orders issued in accordance with the Agreement; these General Conditions; Drawings and Specifications; Addenda issued prior to execution of the Agreement; Change Orders, if any; and other documents listed and more completely defined in Section 2.1 of the Agreement.

CONTRACT SUM – the Contract Sum consists of the Cost of the Work (including CMR's GCs) plus the CMR Fee, not to exceed the Final Guaranteed Maximum Price established by the FGMP Change Order. Contract Sum is further defined in Section 8.1 of the Agreement.

CONTRACT TIME – The time stated in the Contract for achieving Substantial Completion of the Work and Substantial Completion of any Scheduled Milestone Dates. The Contract Time may be a single allotment of time, a group of times specific to portions of the Work or any Work Package, or a combination of the two.

COST OF WORK – The CMR's costs for labor, material, equipment, and services as defined in Section 9.1 of the Agreement, [redacted]

CUTTING AND PATCHING – Includes but is not necessarily limited to the cutting and patching of existing work, in order to accommodate the coordination of work or the installation of new work. "Patching" is also defined as the repair or filling of surfaces where existing items are removed.

DATE OF COMMENCEMENT OF CONSTRUCTION PHASE – The Date of Commencement of the Construction Phase of the Work shall be the date specified in the Notice to Proceed with Construction Phase of the Work and/or as set forth for each Work Package.

DATE OF SUBSTANTIAL COMPLETION – The date recommended by the Architect and approved by Southwest on which the applicable Work Package or the entire Project (or a specified portion thereof) meets the requirements for Substantial Completion defined in Section 9.5 of these General Conditions.

DESIGN DEVELOPMENT DOCUMENTS – the Project design documents prepared by the Architect, based upon the most recent Southwest-approved Project scope, schedule and design cost estimate, refined to establish scaled relationships among the Project components and shall include Plans, Drawings, sections, elevations, standard details, perspective sketches, schematic diagrams, and narratives of major enclosures, electrical, mechanical, and structural systems, survey of applicable codes, engineering studies, energy analyses, analysis of alternative designs, and any value engineering performed or recommended by the Architect to fix and describe the size and character of the Project as to architectural, structural, mechanical, plumbing and electrical systems and such other elements as may be appropriate. The term "Design Development Documents" shall also include "Schematic Design Documents" as and to the extent Design Development Documents are produced from Schematic Design Documents.

DRAWINGS – The plans, drawings, profiles, cross-sections, and supplemental drawings, or reproductions thereof, prepared by the appropriate design professional and approved by Southwest, which show the locations, character, dimensions, and details of the Work for the Project.

ELECTRONIC FILES – AutoCAD, BIM, PDF, JPEG, or other types of electronic files.

ENVIRONMENTAL LAWS – Any and all federal, state or local statutes, ordinances, regulations, rules, policies, codes or guidelines now or hereafter in effect, as same may be amended from time to time, which govern Hazardous Materials or relate to the protection of human health, safety or the environment, applicability of which are invoked by the conduct of business operations at the Airport and shall include, but not be limited to: Resource Conservation and Recovery Act of 1976 and its amendments (the Solid Waste Disposal Act); the Federal Emergency Management Agency, National Flood Insurance Act of 1968/The Flood Disaster Protection Act of 1973; the Handbook; the Federal Insecticide, Fungicide, and Rodenticide Act, 7 U.S.C. Section 136 et seq.; the Safe Drinking Water Act, 42 U.S.C. Section 300(f) et seq.; the Oil Pollution Control Act of 1990, 33 U.S.C. Section 270 et seq.; the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended, 42 U.S.C., Section 9601 et seq.; and as amended by the Superfund Amendments and Reauthorization Act of 1986, Pub. Law No. 99-499, 100 Stat. 1613; the Toxic Substances Control Act, 15 U.S.C., Section 2601 et seq.; the Clean Air Act, 42 U.S.C. 7401 et seq.; the Clean Water Act, 33 U.S.C., Section 1251, et seq.; the Hazardous Materials Transportation Act, 49 U.S.C., Section 1801 et. seq.; the Resource Conservation and Recovery Act, 42 U.S.C., Section 6901 et seq.; or their State counterparts; and all substances defined as hazardous waste or as hazardous substances under the laws of Colorado and/or the United States or in regulations promulgated pursuant to such laws.

EQUIPMENT – Any item or unit used by CMR or a Subcontractor which does not meet the definition for vehicles or supplies, and is not incorporated into the finished construction.

ESTIMATED QUANTITIES – The list of items of Work and the estimated amounts or measure of items associated with the Work which provide the basis for any bid from the CMR or any Subcontractor performing Work on the Project.

FEDERAL AVIATION ADMINISTRATION (FAA) – The Federal Aviation Administration of the U.S. Department of Transportation, which governs the safe and efficient use of the nation's airspace, by military as well as civilian aviation, and promotes civil aeronautics and commercial aviation.

FEE – CMR's compensation for performance of the Work [redacted] Together with the payment for the Cost of the Work, CMR's Fee shall constitute CMR's sole reimbursement for such costs [redacted] arising from or attributable to the performance of the Work as described herein.

FINAL GUARANTEED MAXIMUM PRICE (FGMP) – A final, guaranteed, not-to-exceed amount payable by Southwest to the CMR for performance of all Work. The FGMP for the Project shall include all approved, executed Change Orders and approved Work Packages, as more specifically defined in the definition for Project FGMP below, and shall supersede the IGMP.

FINAL GUARANTEED MAXIMUM PRICE ("FGMP") CHANGE ORDER – That certain Change Order that establishes (1) the Final Guaranteed Maximum Price and basis for it and the Work Packages included therein; and (2) the Date of Substantial Completion for the Project and for the various Project components and Work Packages contained therein, all as more specifically described in Section 5.5 of the Agreement. The FGMP Change Order shall adjust or modify the IGMP in accordance with the terms of the Change Order. The executed FGMP Change Order shall form the basis for the Contract Sum as set forth in Article 8 of the Agreement.

FINAL GUARANTEED MAXIMUM PRICE ("FGMP") PROPOSAL – That certain price proposal by the CMR to Southwest that includes necessary cost and pricing and basis information as required in Section 5.3 of the Agreement and recommends a Final Guaranteed Maximum Price for the Work. The FGMP Proposal shall track the same information provided earlier in the process, during the IGMP stage.

FORCE MAJEURE – The occurrence of any of the following acts: fires, floods, explosions, and other acts of God, war, terrorist acts, riots, court orders, and acts of superior governmental or military authority; provided, however, that in no event shall the term "Force Majeure" include any strike, work slowdown of CMR employees or Subcontractors, economic hardship, or inability to pay debts or other monetary obligations in a timely manner.

FURNISH – This term is used to mean "supply and deliver to the Project Site, ready for unloading, unpacking, assembly, installation, and similar operations."

GENERAL CONDITIONS – This document, the "General Conditions of the Contract," part of the Contract Documents and contains detailed descriptions of the rights, responsibilities, and relationships of Southwest, CMR, and other Project entities.

GENERAL CONDITIONS COSTS – See "CMR GC" as defined in these Definitions.

GOVERNMENTAL AUTHORITY – Any courts, boards, agencies, or authorities having jurisdiction over the Airport or the parties to the Agreement.

HAZARDOUS MATERIALS – Any hazardous material or substance which is or becomes defined as a "hazardous waste," "hazardous substance," "hazardous material," pollutant, or contaminant under Applicable Laws, including Environmental Laws, and as further defined in Section 10.4 of these General Conditions.

INDEMNIFIED PARTY OR INDEMNIFIED PARTIES – means those entities identified as an "Indemnified Party" or "Indemnified Parties" in Section 11.1 of the Agreement.

INDICATED – Graphic representations, notes or schedules on Drawings, other Paragraphs or Schedules in Specifications, and similar requirements in Contract Documents. Where the terms "shown", "noted", "scheduled", and "specified" are used, it is to help locate a reference; no limitation on location is intended except as specifically noted.

INITIAL GUARANTEED MAXIMUM PRICE (IGMP) – The total not-to-exceed amount payable by Southwest to the CMR for performance of all Work under the Agreement, which will be prepared by CMR after Design Development Documents have been prepared by the Architect and approved by Southwest. The IGMP shall be developed as set forth in Sections 5.1 and 5.2 of the Agreement.

I**NITIAL GUARANTEED MAXIMUM PRICE ("IGMP") PROPOSAL** – That certain price proposal by the CMR to Southwest that includes necessary cost and pricing and basis information as required in Section 5.2 of the Agreement and recommends an Initial Guaranteed Maximum Price for completion of the entire Project, [redacted] all as more thoroughly described in Section 5.1 of the Agreement.

I**NSTALL** – Used to describe operations at the Project Site including actual unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

INSTALLER – An entity engaged by CMR, either as employee, contractor, or Subcontractor for performance of a particular construction activity, including installation, erection, application, and similar operations. Installers are required to be experienced in operations they are engaged to perform. Unless otherwise agreed by Southwest, the term "experienced", when used with the term "installer", means having minimum five (5) years previous experience with projects similar in size and scope to this Project, and familiar with precautions required for this Project, and has complied with requirements of authorities having jurisdiction.

LEASE – Any Lease Agreement entered into between the City and Southwest subsequent to this Agreement. The Lease will be a Contract Document.

LEGAL HOLIDAYS – The following days are recognized as "legal holidays" by Southwest:

LEGAL HOLIDAY	CALENDAR DAY
New Year's Day	January First (1st)

Martin Luther King, Jr. Day	Third (3rd) Monday in January
President's Day	Third (3rd) Monday in February
Memorial Day	Last Monday in May
Independence Day	July Fourth (4th)
Labor Day	First (1st) Monday in September
Columbus Day	Second (2nd) Monday in October
Veterans' Day	November Eleventh (11th)
Thanksgiving Day	Fourth (4th) Thursday in November
Thanksgiving Friday	Friday after Thanksgiving
Christmas	December Twenty-fifth (25th)

LEGAL RESIDENT – A citizen of the United States or a person residing in the United States in accordance with Federal Immigration Laws.

MILESTONE – See "Project Milestone."

M/WBE– a naming convention utilized to describe the collection of minority-owned and women-owned businesses.

NOTICE TO PROCEED – The written authorization by Southwest to the CMR specifying the date the Work may begin and any conditions regarding the commencement of the Work.

PERFORM – The operations necessary for CMR, at its own expense, to complete the Work, including furnishing of necessary labor, tools, and equipment and including the installation of materials indicated, specified, or required to complete performance.

PERSON – Any individual, corporation, partnership, limited partnership, limited liability partnership, limited liability company, joint venture, estate, trust, unincorporated association, any other legal entity, including any Governmental Authority and any fiduciary acting in such capacity on behalf of any of the foregoing.

PLANS – See "Drawings."

PRECONSTRUCTION SERVICES – Those preliminary services performed by CMR in accordance with Article 4 of the Agreement.

PRELIMINARY SCHEDULE – A preliminary Project Schedule developed by the CMR during the Preconstruction Phase, and incorporated into the Project Schedule upon approval from Southwest.

PRODUCT DATA – Illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the CMR to illustrate a material, product, or system for some portion of the Work.

PROJECT – The Project is the Preconstruction and Construction Services for site and facility improvements for a new aircraft and maintenance hangar at Denver International Airport of approximately [redacted] [#] SG to accommodate [redacted] [type of] aircraft and an apron capacity [number of] [redacted] aircraft. The Project

will have a paving capacity [as set forth in the plans] [type of] [redacted] aircraft and a potential for additional expansion, all as further defined in Section 1.3 and on page 1 of the Agreement.

PROJECT BUDGET – Southwest's budget to construct the Project including, but not limited to, expenditures for labor, services, materials, and equipment.

PROJECT CRITERIA – The Project Criteria are identified in the Contract Documents and may describe the character, scope, relationships, forms, size, and appearance of the Project, materials and systems, and, in general, their quality levels, performance standards, requirements or criteria, and major equipment layouts

PROJECT MILESTONE – A date identified in the Project Schedule for the Substantial Completion of a Work Package or Project Component. CMR is subject to the withholding of Liquidated Damages pursuant to the Agreement if said Project Milestone dates are not met.

PROJECT MANAGEMENT TEAM (PMT) –A team comprised of Southwest employees and consultants that provide overall management and coordination of the Project. The Project Management Team shall be responsible for the day-to-day management of the Project.

PROJECT SCHEDULE – The approved construction schedule for the Project developed by the CMR and approved by Southwest. The Project Schedule shall be developed from the Preliminary Schedule.

PROJECT SITE – The space available to CMR with the approval of Southwest for performance of Work of the Agreement, either exclusively or in conjunction with others performing construction at the Project Site. The extent of a Project Site is shown in the Contract Documents and may or may not be identical to the description of land upon which Project is to be built.

PROPERTY – The real property owned by the City upon which the Project will be constructed.

PROPOSAL – When submitted on the prescribed Proposal form, properly signed and guaranteed, a Proposal constitutes the offer of the Proposer to complete the Work at the price shown on the Proposal form

PROPOSAL DOCUMENTS – The sum of the documents that comprise the Proposal by a Proposer to perform the Work.

PROPOSER – Any person, persons, firm, partnership, corporation, or combination thereof submitting a Proposal for the Work, acting directly or through a duly authorized representative.

PROVIDE – This term means that the CMR shall, at its own expense, furnish and install Work complete in place and ready for use, including furnishing of necessary labor, materials, tools, equipment, and transportation. The term may mean "contingent upon" some condition or event where context is apparent.

REGULATION – This term includes laws, statutes, ordinances, circulars, and lawful orders issued by authorities having jurisdiction over the Work, the Contract Documents, as well as rules, conventions, and agreements within the construction industry that control performance of Work, whether they are lawfully imposed by authorities having jurisdiction or not.

SAMPLES – Physical examples which illustrate materials, equipment, and workmanship and establish standards by which the Work will be judged.

SCHEDULE OF VALUES – A document in a spreadsheet format furnished by the CMR and reviewed by Southwest reflecting the portions of any Work Package and/or the FGMP allotted for the various parts of the Work for each activity contained on the Project Schedule. [redacted]

SCHEMATIC DESIGN DOCUMENTS – The documents prepared by the Architect which generally consist of drawings and other documents illustrating the scale and relationship of the particular components of the Project integrated with existing airport facilities for which the Architect is under contract. Schematic Design Documents shall include all of the components of the Schematic Design phase for those particular elements including all Project elements, schematic design studies, evaluations of the scope of the engineering systems and preparation of a schematic package consisting of drawings, site plans, floor plans, unit plans, major elevations, and building area data, programming areas, concessions studies, simulations, alternatives analysis, and other documents submitted for review by Southwest.

SEPARATE CONTRACTOR(S) – A contractor retained by Southwest or the City to provide services in connection with other portions of the Project or operations on the Project Site under a contract separate and apart from the Agreement with CMR.

SHOP DRAWINGS – Drawings submitted by CMR showing in detail (a) the proposed fabrications and assembly of structural elements, and (b) the installation (form, fit, attachment details, etc.) of materials or equipment. Shop Drawings include drawings, diagrams, layouts, schematics, illustrations, and similar materials furnished by CMR to explain in detail specific portions of the Work. Shop Drawings are prepared by the CMR as a submittal or a portion thereof and may be specifically requested by Southwest or required in the Agreement, a Change Order, a Construction Change Directive, or other written directive.

SOUTHWEST – Southwest Airlines Co. and its authorized representatives.

SOUTHWEST'S AUTHORIZED REPRESENTATIVE – A person or team of persons designated in writing by Southwest to have specific limits of authority on behalf of Southwest, and may be an employee of Southwest or employee of a firm under contract with Southwest to provide specific services.

SPECIFICATIONS – A component of the Contract Documents that defines the qualitative requirements for materials and workmanship required for the Work.

STATE – The State of Colorado.

SUBCONTRACTOR – A person or entity that has a direct contract with the CMR or a Subcontractor or lower tier Subcontractor to perform a portion of the construction required in connection with the Work on the Project. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" includes sub-subcontractors and lower tier contractors (entities who have contracts with sub-subcontractors) but does not include a Separate Contractor hired by Southwest.

SUBSTANTIAL COMPLETION – Defined in Section 9.5 of these General Conditions.

SUPPLEMENTAL DRAWINGS – Additional drawings that define an item in the Drawings in greater detail by providing additional information that may not have been specifically or clearly shown or called out on the Plans or in the Specifications.

SUPPLEMENTARY CONDITIONS – Specific clauses setting forth conditions or requirements peculiar to the Work and supplementary to the General Conditions.

SUPPLIER – A Supplier is a person or entity that has a direct contract with the CMR to furnish materials or equipment, including materials or equipment fabricated to a special design, for any portion of the Work.

SUPPLIES – Materials or provisions stored for use during the construction of the Project.

TESTING LABORATORY – An independent entity engaged by Southwest or another Project entity to perform specific inspections or tests, either at Project Site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.

TRANSPORTATION SECURITY ADMINISTRATION (TSA) – The governmental organization that oversees civil aviation security.

UNIT PRICE – A price per unit of measurement quoted by a contractor for each item of the Work, which includes labor, material, and other services associated with such item. Estimated quantities of such items or materials will be used as the basis for payment. As the work is completed, actual quantities are measured and the contractor is paid according to the Unit Prices for only those actual quantities.

VEHICLE – Any motorized, self-propelled, street-legal, driver operated unit meeting State of Colorado inspection requirements.

WORK – All construction and services, including all Preconstruction Services and Construction Services, required by the Agreement, the Contract Documents, and Exhibits, whether completed or partially completed, and includes all other labor, materials, equipment and services provided or to be provided by the CMR to fulfill the CMR's obligations under the Agreement. The Work includes all alterations, amendments, or extensions made by Change Order or other written orders or

directives of Southwest. Unless specified otherwise in the Agreement, the Work includes furnishing all materials, supplies, equipment, tools, labor, transportation, supervision, testing, commissioning, training, and providing maintenance and operations manuals and warranties necessary to perform and fully complete the Work.

WORK PACKAGE – A Southwest directive to the CMR describing a particular element of the Work that may be procured and/or constructed prior to the finalization and execution of the FGMP Change Order. The particular element shall be procured and constructed in such a manner so as to be delivered to Southwest in accordance with the Contract Time and Contract Sum and within the Project Budget and Project Schedule.

WORK PACKAGE AUTHORIZATION – A written agreement between Southwest and CMR for performance of the Work of a Work Package, which describes the specific scope of the Work to be performed for such Work Package, and establishes a price and Substantial Completion date for such Work Package.

1.2 CONTRACT DOCUMENTS

A. The Contract Documents are enumerated in the Agreement between Southwest and CMR. Unless specifically enumerated in the Agreement, the Contract Documents do not include bid documents.

B. The Agreement may be amended or modified only by a Change Order. The Contract Documents shall not be construed to create a contractual relationship of any kind (a) between the CMR and the Architect, (b) between Southwest and a Subcontractor of any tier (except as to third party beneficiary status as set forth in the Agreement), or (c) between any persons or entities other than Southwest and the CMR.

1.3 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS

A. Because the Contract Documents are complementary, the CMR shall, before starting any portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the Project Site affecting it. These obligations are for the purpose of facilitating coordination and construction by the CMR and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the CMR shall promptly report to PMT any errors, inconsistencies, or omissions discovered by or made known to the CMR as a request for information in such form as the Architect may require. It is recognized that the CMR's review is made in the CMR's capacity as a construction manager and contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

B. The CMR is not required to ascertain that the Contract Documents are in accordance with Applicable Laws, but the CMR shall promptly report to the Architect any nonconformity discovered by or made known to the CMR as a Request for Information ("RFI") in such form as the Architect may require.

C. If the CMR believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the CMR's notices or requests for information, the CMR shall make Claims as provided in Article 14 herein. If the CMR fails to perform the obligations of this Section 1.3, the CMR shall pay such costs and damages to Southwest as would have been avoided if the CMR had performed such obligations. If the CMR performs those obligations, the CMR shall not be liable to Southwest for damages resulting from errors, inconsistencies, or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to Applicable Laws.

D. If the CMR believes that implementation of any instruction received from Southwest would cause a violation of any Applicable Laws, the CMR shall notify Southwest in writing. Neither the CMR nor any Subcontractor shall be obligated to perform any act which they believe will violate any Applicable Laws.

1.4 CAPITALIZATION. Terms capitalized in these General Conditions include those which are (a) specifically defined in the Contract Documents, (b) the titles of numbered articles and identified references to sections in the Contract Documents, or (c) the titles of other documents referenced in the Contract Documents.

1.5 INTERPRETATION

A. In the interest of brevity, the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

B. Unless otherwise stated in the Contract Documents, words which have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

1.6 OWNERSHIP AND USE OF DOCUMENTS AND ELECTRONIC DATA

A. The "Instruments of Service" are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work prepared by the Architect and/or the CMR under their respective agreements with Southwest. Instruments of Service may include, without limitation, studies, surveys, models, CAD files, building information models ("BIMs"), sketches, Drawings, specifications, and other similar materials. The Instruments of Service are furnished for use solely with respect to this Project.

B. Southwest shall own and retain all common law, statutory, copyright, and other reserved rights in the Instruments of Service as described in their respective professional services agreements. Any unauthorized publication, reproduction, or use of the Instruments of Service by the CMR or others under the control of the CMR shall be at the CMR's sole risk and expense. CMR shall defend and indemnify Southwest and the Indemnified Parties from and against any and all claims and causes of action relating to or arising out of the unauthorized use, publication, or reproduction of Instruments of Service by the CMR or any of its Subcontractors. Submission or distribution of the Instruments of Service to meet official regulatory requirements or for similar purposes in connection with the Project is not to be

construed as publication in derogation of the rights reserved by Southwest. Instruments of Service may be assigned to Southwest.

C. Prior to any electronic exchange by the parties of the Instruments of Service, or of any other documents or materials to be provided by one party to the other, Southwest and the CMR shall agree in writing on the specific conditions governing the format thereof, including any special limitations or licenses not otherwise provided in the Contract Documents.

ARTICLE 2. SOUTHWEST OBLIGATIONS

2.1 GENERAL

The term "Southwest" means Southwest or Southwest's Authorized Representative(s). Southwest shall designate in writing, pursuant to Subsection 13.1.1 of the Agreement, a representative(s) who shall have express authority to bind Southwest with respect to all Project matters requiring Southwest's approval or authorization as provided in Subsection 13.1.1 Southwest shall render decisions in a timely manner and in accordance with the Project Schedule.

2.2 AUTHORITY OF SOUTHWEST

A. Southwest will decide all questions regarding the quality and acceptability of materials furnished, work performed, Preconstruction and Construction Services provided, and rate of progress of the Work. Southwest will decide all questions regarding the interpretation and fulfillment of the Agreement on the part of the CMR, and all questions as to the rights of Separate Contractors involved with the Work. Southwest will determine the amount and quality of the Work performed and materials furnished for which payment is to be made under the Agreement.

B. The CMR shall comply with any written or verbal instruction delivered by Southwest to the CMR or the CMR's authorized representative. The CMR's and Southwest's representatives shall make good faith attempts to resolve disputes that arise during the performance of the Work.

C. Any order given by Southwest not otherwise required by the Agreement to be in writing will be given or confirmed by Southwest in writing at the CMR's request. Such request shall state the specific subject of the decision, order, instruction, or notice and, if it has been given orally, its date, time, place, author, and recipient.

2.3 INFORMATION AND SERVICES REQUIRED OF SOUTHWEST

A. Information or services required of Southwest by the Contract Documents shall be furnished by Southwest, if available, with reasonable promptness. Any other information or services relevant to the CMR's performance of the Work under Southwest's control shall be furnished by Southwest after receipt from the CMR of a written request for such information or services so as not to delay the progress of the Work, assuming such information is reasonably available to Southwest.

B. Southwest will provide surveys for the CMR's utilization. The Project plans will provide a description of physical characteristics, legal limitations, and utility locations for the Project Site, and a written legal description of the Project Site. Information on the Project plans will be referenced to the Southwest-furnished

surveys. The surveys and legal information shall include, as applicable, grades and lines of streets, alleys, pavements, and adjoining property and structures; adjacent drainage; rights-of-way, restrictions, easements, encroachments, zoning, deed restriction, boundaries, and contours of the site; locations, dimensions, and necessary data pertaining to existing buildings, other improvements, and trees; and information concerning available utility services and lines, both public and private, above and below grade, including inverts and depths. All the information on the surveys shall be referenced to horizontal and vertical control networks. All available survey data, drawings, notes, and findings shall be provided to CMR. Any additional surveys to obtain additional information not shown on the Southwest-furnished surveys, and necessary for the execution of the Work, are to be provided by the CMR.

C. Southwest shall provide, to the extent available to Southwest and if not required by the Contract Documents to be provided by the CMR, the results and reports of prior tests, inspections, or investigations conducted for the Project involving structural or mechanical systems, chemical, air, and water pollution, hazardous materials, or environmental and subsurface conditions and information regarding the presence of pollutants at the Project Site.

D. Southwest may obtain independent review of the CMR's Construction Documents and other documents by a separate architect, engineer, contractor, or cost estimator under contract with or employed by Southwest. Such independent review shall be undertaken at Southwest's expense in a timely manner and shall not delay the orderly progress of the Work.

E. Southwest shall cooperate with the CMR in securing permits, licenses, and inspections. Southwest shall not be required to pay the fees for such permits, licenses, and inspections unless the cost of such fees is excluded from the responsibility of the CMR under the Contract Documents.

F. The services, information, surveys, and reports provided by Southwest shall be furnished at Southwest's expense. CMR shall not be relieved of any obligation to perform the Work in accordance with the Contract Documents by reviews, tests, inspections, or approvals performed by Southwest, the PMT, the Architect, the City or any Governmental Authority. The CMR shall have a duty to promptly report to Southwest any such inaccuracy or error upon discovering it.

G. Southwest shall provide lands, rights-of-way, and easements upon which the Work is to be done, and such other lands as may be designated in the Plans for the use of the CMR.

H. It is not Southwest's duty to investigate and discover defects in the Work or non-conformity with the Contract Documents; however, if Southwest or the Architect observes or otherwise becomes aware of a fault or defect in the Work or non-conformity with the Contract Documents, Southwest or the Architect shall give prompt written notice thereof to the CMR.

I. Neither Southwest nor the City shall have control over or charge of, nor be responsible for, the construction means, methods, techniques, sequences, or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the CMR's rights and responsibilities under the Contract Documents.

J. Neither Southwest nor the City shall be responsible for the CMR's failure to perform the Work in accordance with the requirements of the Contract Documents. Neither Southwest nor the City shall have control over nor charge of and will not be responsible for acts or omissions of the CMR, its Subcontractors of any tier, their respective agents or employees, or any other persons or entities performing portions of the Work for the CMR.

K. Southwest may reject Work that does not conform to the Contract Documents. Whenever Southwest considers it necessary or advisable, Southwest shall have authority to require inspection or testing of the Work in accordance with the Agreement, whether or not such Work is fabricated, installed, or completed. However, neither this authority of Southwest nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of Southwest to the CMR, its Subcontractors, material and equipment suppliers, their respective agents or employees, or other persons or entities performing portions of the Work for the CMR.

L. Southwest shall require the Architect to conduct inspections and make recommendations to Southwest to determine the Date or Dates of Substantial Completion and the date of Final Completion.

M. Southwest shall, at the written request of the CMR, furnish to the CMR reasonable evidence that financial arrangements have been made to fulfill Southwest's obligations under the Contract Documents.

N. Southwest shall communicate through the CMR with persons or entities employed or retained by the CMR, unless otherwise directed by the CMR.

O. Southwest shall promptly obtain any legal authorizations regarding site utilization where essential to the execution of Southwest's program.

2.4 SOUTHWEST'S RIGHT TO SUSPEND OR DELAY THE WORK

A. In accordance with Section 12.2 of the Agreement and Article 13 herein, Southwest has the authority to suspend or delay the Work, in whole or in part, for any reason and for any period Southwest deems necessary. Southwest will provide reasonable written notice of its intention to suspend or delay the work, and CMR shall immediately comply with Southwest's written order to suspend or delay the Work. The suspended or delayed work shall be resumed only when conditions are favorable or methods are corrected, as ordered or approved in writing by Southwest in accordance with Section 12.2 of the Agreement. Public safety and convenience must be maintained throughout the suspension or delay in accordance with Article 10 herein.

B. Delays due to suspension of work shall be classified as Avoidable or Unavoidable Delays in accordance with Article 8 herein.

C. Such suspension shall not relieve the CMR of its responsibilities as described in the Agreement.

2.5 SOUTHWEST'S RIGHT TO CARRY OUT THE WORK.

If the CMR defaults or neglects, refuses, or fails to carry out the Work in accordance with the Contract Documents and fails, within a seven (7) Calendar Day period after receipt of written notice from Southwest to commence and continue correction of such default or neglect with diligence and promptness, Southwest may, after such seven (7) Calendar Day period, without prejudice to other remedies Southwest may have under this Agreement, at law, or in equity, correct such deficiencies and/or begin to correct or replace the Work. In such case, an appropriate Change Order shall be issued deducting from payments then or thereafter due the CMR the reasonable cost of correcting such deficiencies. If payments due the CMR are not sufficient to cover such amounts, the CMR shall pay the difference to Southwest.

ARTICLE 3. CONSTRUCTION MANAGER AT RISK

3.1 GENERAL

A. The term "CMR" means the CMR or the CMR's authorized representative(s). The CMR shall designate in writing, pursuant to Subsection 13.1.2 of the Agreement, a representative(s) who shall have express authority to bind the CMR with respect to all matters under the Contract Documents.

B. The CMR shall perform the Work in accordance with the Contract Documents and all Applicable Laws. The Work includes Preconstruction and Construction Phase Services as provided in Article 1 of the Agreement.

C. **CMR'S RESPONSIBILITY FOR WORK**

1. Until Southwest's final written acceptance of the entire completed Work, excepting only those portions of the Work accepted in accordance with Section 9.6 herein, the CMR shall have the charge and care thereof and shall take every precaution against injury or damage to any portion of the Work due to the action of the elements or from any other cause, whether arising from the execution or from the non-execution of the work. The CMR shall rebuild, repair, restore, and make good all injuries or damages to any portion of the Work occasioned by any of the above causes before final acceptance and shall bear the expense thereof, except damage to the Work due to unforeseeable causes beyond the control of and without the fault or negligence of the CMR.

2. If the Work is suspended for any cause whatever, the CMR shall be responsible for the Work and shall take such precautions necessary to prevent damage to the Work. The CMR shall provide for normal drainage and shall erect necessary temporary structures, signs, or other facilities at its expense. During such period of suspension of the Work, the CMR shall properly and continuously maintain in an acceptable growing condition all living material in established planting, seedings, tree growth, and soddings furnished under the Agreement. If such suspension is directed pursuant to Section 13.2 of these General Conditions, all costs of such performance specified above and elsewhere in the Agreement shall be compensable to the extent they are eligible under Section 9.1 of the Agreement.

3.2 CONTROL, QUALITY, AND STORAGE OF MATERIALS

A. WARRANTY. The CMR warrants to Southwest and the City that the Project and the Work will conform to the requirements of the Contract Documents and to the highest professional and industry standards, and all Work will be performed in a good and workmanlike manner, will be free from all faults and defects, including those due to faulty materials or workmanship for a period of one (1) year following Substantial Completion of the Project. All parts, materials, components, equipment, systems and other items incorporated as part of the Project shall be new, unless otherwise specified in the Contract Documents or otherwise agreed to by Southwest and the City, and suitable for the purpose used, and will be of good quality and in conformance with the Contract Documents in all material respects. When requested by Southwest, CMR shall furnish satisfactory evidence that the kind and quality of materials and equipment incorporated into the Project satisfy the Contract Documents.

B. CMR warrants that Southwest has, or will have upon payment have, full title to all parts, materials, components, equipment, and other items incorporated into the Project, that its transfer of such title to Southwest is rightful, and that all such parts, materials, components, equipment, and other items shall be transferred free and clear of all security interests, liens, claims, or encumbrances whatsoever. CMR agrees to defend such title against all persons claiming the whole or any part thereof. Standard manufacturer's warranties for any Work will be assigned to Southwest and the City upon Substantial Completion.

C. All warranties shall have a term of not less than one (1) year from the date of Substantial Completion and shall be submitted to Southwest prior to Substantial Completion of the Project or the portion thereof covered by any such warranty. To the extent Southwest or the City or any Contract Document mandates longer warranty terms, CMR shall provide such terms. The City's rights under the warranties shall not be adversely affected by the termination, if any, of this Agreement.

D. In order to expedite the inspection and testing of materials, the CMR shall furnish complete statements to Southwest as to the origin, composition, and manufacture of all materials to be used in the Work. Such statements shall be furnished promptly after execution of the Agreement but, in all cases, prior to delivery of such materials.

E. **STORAGE**. Materials shall be so stored as to assure the preservation of their quality and fitness for the Work. All stored items shall either be stored on site or at a location designated by Southwest. Stored materials, even though approved before storage, may again be inspected prior to their incorporation into the Work. Stored materials shall be located so as to facilitate their prompt inspection. The CMR shall coordinate the storage of all materials with Southwest. Materials to be stored at the Project Site at the airport shall not create an obstruction to air navigation, shall not interfere with the free and unobstructed movement of aircraft and public vehicles, and shall not otherwise interfere with the safe and efficient operation of the airport in Southwest's and the City's reasonable judgment. Unless otherwise shown in the Contract Documents, the storage of materials and the location of the CMR's Project offices and parked equipment or vehicles shall be as directed the PMT. CMR shall fully insure all stored materials for the benefit of Southwest. Private property shall not be used for storage purposes without written permission of the owner or lessee of such property. The CMR shall make all arrangements and

bear all expenses for the storage of materials on private property. Upon request, the CMR shall furnish PMT a copy of the property owner's permission. All storage sites on the Project Site, Southwest's property, City property, or private property shall be restored to their original condition by the CMR at the CMR's sole expense, except as otherwise agreed in writing by Southwest or the property owner.

F. **UNACCEPTABLE MATERIALS**. Any material or assembly that does not conform to the requirements of the Contract Documents shall be considered unacceptable and shall be rejected. The CMR shall remove any rejected material or assembly from the site of the Work, unless otherwise instructed by Southwest. Rejected material or assembly, the defects of which have been corrected by the CMR, shall not be returned to the site of the Work until such time as Southwest has approved its use in the Work.

G. **SOUTHWEST-FURNISHED MATERIALS**. The CMR shall furnish all materials required to complete the Work, except those specified in the Contract Documents to be furnished by Southwest. Southwest-furnished materials, if any, shall be made available to the CMR at the location specified in the Contract Documents or otherwise in writing by Southwest. All costs of handling, transportation from the specified location to the site of Work, storage, and installing Southwest-furnished materials shall be included in the Agreement price. After any Southwest-furnished material has been delivered to the location specified, the CMR shall be responsible for any damage, loss, or other deficiencies which may occur during the CMR's handling, storage, or use of such Southwest-furnished material. Southwest will deduct from any monies due or to become due the CMR under this Agreement any cost incurred by Southwest in making good such loss due to the CMR's handling, storage, or use of Southwest-furnished materials.

H. **MATERIALS FOUND IN THE WORK**. Should the CMR encounter any material such as, but not restricted to, sand, stone, gravel, slag, or concrete slabs within the established lines, grades, or grading sections, the use of which is intended by the Contract Documents to be either embankment or waste, the CMR may, upon written approval by the Architect:

1. Use such material in another portion of the Work, providing such use is in conformance with the specifications applicable to such use;

2. Remove such material from the site; or

3. Use such material for temporary construction on site.

Should the Architect approve the CMR's request to exercise the above options, the CMR shall be paid the applicable amount for the excavation, removal, and/or installation of such material in accordance with requirements of the Work item in which the material is used. The CMR shall replace, at its sole expense, such removed or excavated material with an agreed equal volume of material that is acceptable for use in constructing embankment, backfills, or otherwise to the extent that such replacement material is needed to complete the Work. The CMR shall not be charged for its use of such material so used in the Work or removed from the site. It is understood and agreed that the CMR shall make no claim for delays by reason of its exercise of the above options. The CMR shall not excavate, remove, or otherwise disturb any material, structure, or part of a structure which

is located outside the lines, grades, or grading sections established for the Work, except where such excavation or removal is provided for in the Contract Documents.

3.3 TAXES.

A. All sales and use taxes incurred on labor, materials, and equipment incorporated into or used or consumed in the performace of the Work by the CMR are included in the FGMP as a Cost of the Work and remittance to the proper authorities is the exclusive responsibility of CMR. All invoices or requests for payment shall reflect on their face the amount billed includes such sales or use taxes.

B. CMR shall pay and shall be liable for taxes based on CMR's net income or capital or any franchise taxes, margin taxes, gross receipts taxes, excess profit taxes, or other taxes levied on CMR business imposed by any federal, state or local government in connection with this Agreement.

C. If a claim is made against CMR for a Southwest tax liability, CMR will promptly notify Southwest. If requested by Southwest in writing, CMR will, at Southwest's expense, take such action as Southwest may reasonably direct with respect to such asserted liability and will not pay such taxes except under protest. If payment is made, CMR will, at Southwest's expense, take such action as Southwest may reasonably direct to recover payment and will, if requested, permit Southwest in CMR's name to file a claim or commence an action to recover such payment. If all or any part of any such taxes is refunded, CMR will repay Southwest such part thereof as Southwest will have paid.

D. THE PROVISIONS OF THIS SECTION 3.3 SHALL SURVIVE THE TERMINATION, ABANDONMENT, COMPLETION AND/OR EXPIRATION OF THIS AGREEMENT.

3.4 PERMITS, FEES, AND NOTICES

A. Unless otherwise provided in the Contract Documents, the CMR shall secure and pay for the building permit(s) as well as for other permits, fees, licenses, and inspections by Governmental Authorities necessary for proper execution and completion of the Work that are customarily secured after execution of the Agreement and legally required prior to execution of the Work.

B. The CMR shall comply with and give notices required by laws, ordinances, rules, regulations, and lawful orders of public authorities relating to the Project.

C. It is the CMR's responsibility to ascertain that the Work it performs and that is performed by CMR and its Subcontractors of any tier is in accordance with Applicable Laws. If the CMR performs Work contrary to Applicable Laws, the CMR shall assume responsibility for such Work and shall bear the costs attributable to correction.

3.5 USE OF PROJECT SITE

A. The CMR shall confine operations at the Project Site to areas permitted by Applicable Laws and the Contract Documents, and shall not unreasonably encumber the site with materials or equipment. CMR shall utilize the site for construction

operations and shall coordinate operations as provided in the Contract Documents and Airport Authority rules and regulations.

B. The CMR shall confine its operations within the limits of the lands, rights-of-way, and easements provided by Southwest for performance of the Work. The CMR shall provide, at its own expense, any additional lands and access required for temporary construction facilities or storage of materials. The CMR shall obtain all required permissions for use of private property prior to taking possession or use thereof. Permissions shall be in writing with a copy provided to Southwest.

C. ACCESS. The CMR shall provide Southwest, the Architect, and others designated by Southwest with access to the site and the Work in preparation and progress at all reasonable times.

D. **CLEAN-UP**. The CMR shall keep the Project Site and surrounding area free from accumulation of waste materials, foreign objects, or rubbish caused by operations under the Agreement. At reasonable intervals and as appropriate with the phase of work, the CMR shall remove waste materials, rubbish, tools, construction equipment, machinery, and surplus materials from and about the Project Site. If the CMR fails to clean up as provided in the Contract Documents, Southwest may do so and shall be entitled to reimbursement from the CMR.

E. **MAINTENANCE**. The CMR shall maintain the Work during construction and until final acceptance of the Work by Southwest. Performance of maintenance shall be continuous and effective, prosecuted day by day, with adequate equipment and forces so that the Work is maintained in satisfactory condition at all times. Areas involving the public tenants and City staff shall be clean and reasonably dust free with limited noise impacts. All costs of maintenance during construction and before final acceptance of the Work shall be included in the bid price on or otherwise the Cost of Work of the various Work items, and the CMR will not be paid an additional amount for such maintenance.

F. **CONSTRUCTION LAYOUT AND STAKES**. The CMR must establish all layout required for the construction of the Work. Such stakes and markings as Southwest or Architect may set for either their own or the CMR's guidance shall be preserved by the CMR. In case of negligence on the part of the CMR or its Subcontractors resulting in the destruction of such stakes or markings, an amount equal to the cost of replacing the same may be deducted from subsequent payments due the CMR at Southwest's discretion.

3.6 DOCUMENTS, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES AT THE SITE

A. The CMR shall in all instances during the Construction Phase of the Work comply fully with the Contract Document provisions concerning Shop Drawings, Product Data, and Samples.

B. All submittals will be made to the Architect in compliance with the requirements and procedures promulgated by the Architect and the CMR, and approved by the PMT.

C. The CMR shall maintain at the Project Site one record copy of the Drawings, specifications, addenda, Change Orders and other Modifications in good order and

marked currently to record field changes and selections made during construction, and one record copy of approved Shop Drawings, Product Data, Samples, and similar required submittals. These documents will be reviewed monthly for compliance by the Architect, as required by Southwest. A final set of these documents shall be delivered to Southwest upon Final Completion as a record of the as-built conditions.

3.7 CONCEALED OR UNKNOWN CONDITIONS.

A. If the CMR encounters conditions at the site that are (a) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents, or (b) unknown physical conditions of an unusual nature, that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the CMR shall promptly provide notice to Southwest and the Architect before conditions are disturbed, and in no event later than ten (10) Calendar Days after first observance of the conditions. Southwest shall cause the Architect to promptly investigate such conditions and, if the Architect reports to Southwest that they differ materially and cause an increase or decrease in the CMR's cost of, or time required for, performance of any part of the Work, the Architect may recommend an equitable adjustment in the FGMP and/or Contract Time, or both, by Change Order. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Agreement is justified, Southwest shall cause the Architect to promptly notify the CMR in writing, stating the reasons. If the CMR disputes such determination or recommendation, it may proceed with a Claim as provided in Article 14 herein.

3.8 ROYALTIES, PATENTS, AND COPYRIGHTS.

A. The CMR shall assume all costs arising from the use of patented materials, equipment, devices, and processes on or incorporated in the Work and shall indemnify, defend, and hold harmless Southwest, the City, and all Indemnified Parties from all actions for or on account of the use of any patented materials, equipment, devices, or processes in the construction of or subsequent operation of the Work. Before final payment, if requested by Southwest, the CMR shall furnish acceptable proof of a proper release from all costs or claims arising from the use of patented materials, equipment, devices, or processes used on or incorporated in the Work.

3.9 SUPERVISION OF THE WORK

A. The CMR shall supervise and direct the Work, using the CMR's best skill and attention. The CMR shall be solely responsible for, and have control over, all Work and all construction means, methods, techniques, sequences, and procedures and for coordinating all portions of the Work under the Agreement, unless the Contract Documents give other specific instructions concerning these matters. If the Contract Documents give specific instructions concerning means, methods, techniques, sequences, or procedures, the CMR shall evaluate the job site safety thereof and, except as stated below, shall be fully and solely responsible for the job site safety of such means, methods, techniques, sequences, or procedures. If the CMR determines that such means, methods, techniques, sequences, or procedures may not be safe, the CMR shall give timely written notice to Southwest and shall not

proceed with that portion of the Work until the CMR determines it is safe. If the CMR is then instructed to proceed with the required means, methods, techniques, sequences, or procedures without acceptance of changes proposed by the CMR, Southwest shall be solely responsible for any loss or damage arising solely from those Southwest-required means, methods, techniques, sequences, or procedures.

B. **INDEMNITY**. The CMR shall be responsible to and shall indemnify Southwest, the City, and the Indemnified Parties for all acts and omissions of CMR's employees, Subcontractors, and their respective agents and employees, and other persons or entities performing portions of the Work for or on behalf of the CMR as provided in the Agreement and Article 10.4(C) herein.

C. **SUPERVISION**. The CMR shall employ competent and sufficient numbers of Project Manager(s), superintendent(s), engineer(s), and necessary assistants who shall be in attendance at the Project Site during performance of the Work, keeping in mind that the Project is being constructed in an airport environment that is a 24 hour/day, 7 days/week operation and that multiple shifts and/or weekend work may be necessary. The Project Manager shall represent the CMR, and communications given to the Project Manager shall be as binding as if given to the CMR. The CMR, as soon as practicable after award of the Agreement, as part of the IGMP Proposal, shall furnish in writing to Southwest the name and qualifications of a proposed Project Manager(s) and superintendent(s). The CMR shall not employ a proposed Project Manager or superintendent to whom Southwest has made reasonable and timely objection. The CMR shall not change a Project Manager or superintendent without Southwest's consent, which shall not be unreasonably withheld or delayed.

D. **MEETINGS**. The CMR shall attend and ensure that appropriate CMR personnel, employees, and Subcontractors attend all meetings with respect to Preconstruction and Construction Phase services throughout the progress of the Work. The CMR shall comply in all respects with the requirements of the Contract Documents.

3.10 LABOR

A. The CMR shall, at all times, employ sufficient labor for prosecuting the Work to full completion in the manner and time required by the Agreement. All employees and Subcontractors shall have sufficient skill and experience to properly perform the work assigned to them. Workers engaged in special work or skilled work shall have sufficient experience in such work and in the operation of the equipment required to perform the work.

B. **LABOR STANDARDS**

1. **LABOR STANDARDS AND WAGE RATES**

a. The CMR shall comply with the Fair Labor Standards Act of 1938 as amended (29 U.S.C. 3201 *et seq*.), as applicable and any other Applicable Law relating to the payment of wages or compensation.

b. CMR shall comply with Prevailing Wage requirements as set forth in Denver Revised Municipal Code Section 20-76 *et seq*. To that end, CMR agrees to pay, and shall require each Subcontractor of every tier pay, its laborers, mechanics, employees, and workers of any tier,

wages and fringe benefit payments at a rate not less than the prevailing rate of wages and fringe benefit payments for similar skills or classifications of work as set forth in Section 20-76. CMR shall comply, and shall require all Subcontractors to comply with Section 3.6 of the Agreement concerning all other aspects of DRMC Section 20-76.

c. The CMR and Subcontractors are required to maintain accurate records of the actual wages paid to laborers and mechanics doing work on the Project and to report same as required under Section 3.6 of the Agreement. The reported wages will be verified by review of the weekly certified payroll reports and by periodic on-site interviews conducted by the CMR and its Subcontractors.

d. The CMR shall be responsible for maintaining harmonious labor relations between its employees, Subcontractors, and any labor unions involved with the Project. If the CMR has knowledge that any actual or potential labor dispute is delaying or threatens to delay the timely performance of the Work, the CMR immediately shall give notice to Southwest that includes all relevant information. The CMR agrees to insert the substance of this Subsection in any subcontract under which a labor dispute may delay the timely performance of the Work; provided, however, that each subcontract shall provide that in the event its timely performance is delayed or threatened by delay by any actual or potential labor dispute, the Subcontractor shall immediately notify the next higher tier Subcontractor or the CMR, as the case may be, of all relevant information concerning the dispute.

2. **PAYROLL RECORDS**. The CMR and the CMR's Subcontractors shall keep accurate payroll records, [redacted] Such records shall be certified and available for inspection at all reasonable hours at the principal offices of the CMR and the CMR's Subcontractors. The CMR and the CMR's Subcontractors shall file a certified copy of the records enumerated above with Southwest. The CMR shall be held responsible for all Subcontractors' compliance with this requirement.

3. **NON-DISCRIMINATION.**

a. CMR shall not, on the grounds of race, color, religion, sex, national origin or ancestry, or age, discriminate or permit discrimination against any person or group of persons in any manner prohibited by Part 21 of the Federal Aviation Regulations, the Civil Rights Act of 1964, as amended, the Equal Pay Act of 1963, the Rehabilitation Act of 1973, and any applicable City Ordinance. Without limiting the generality of the foregoing, CMR shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin or ancestry, or age. CMR agrees to take affirmative action to ensure that applicants are employed, and

that employees are treated during employment without regard to their race, color, religion, sex, national origin or ancestry, age, or physical or mental handicap. Such action shall include, but not be limited to: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; selection for training; and disciplinary actions and grievances. CMR 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.

b. **Federal Non-Discrimination Provision**. Pursuant to 49 CFR Part 21, CMR does hereby covenant and agree that: (1) no person on the grounds of race, color or national origin shall be excluded from participation in the services to be provided by CMR; (2) that in the providing of services by CMR, no person on the grounds of race, color, or national origin shall be excluded from participation in, denied the benefits of, or be subjected to discrimination; (3) that CMR will utilize the Project in compliance with all other requirements imposed by or pursuant to 49 CFR Part 21, Nondiscrimination in Federally Assisted Programs of the Department of Transportation, and as said Regulations may be amended.

(a) CMR will comply with pertinent statutes, Executive Orders, and such rules as are promulgated to assure that no person shall, on the grounds or race, creed, color, national origin, sex, age, or handicap be excluded from participating in any activity conducted with or benefitting from Federal assistance. This provision obligates CMR for the period during which Federal assistance is extended to the airport program, except where Federal assistance is to provide, or is in the form of personal property or real property or interest therein or structures or improvements thereon. In these cases, the provision obligates the party or any transferee for the longer of the following periods: (a) the period during which the property is used by the sponsor, or any transferee for a purpose for which Federal assistance is extended, or for another purpose involving the provision of similar services or benefits; or (b) the period during which the airport sponsor or any transferee retains ownership or possession of the property.

(b) CMR will furnish all Construction and Preconstruction Services on a reasonable and not unjustly discriminatory basis to all users, and charge reasonable and not unjustly discriminatory prices for each unit or service, provided that CMR may be allowed to make reasonable and nondiscriminatory discounts, rebates, or other similar types of price reductions to volume purchasers.

CMR shall incorporate this provision into all Subcontracts and Purchase Orders issued by it in connection with the Project and

shall require its Subcontractors and Suppliers incorporate this provision into all downstream contracts and purchase orders.

c. **Southwest Non-Discrimination Policy. It is the policy of Southwest to administer all company actions and procedures without regard to race, color, religion, sex or national origin. Contractor agrees that, as applicable, it will abide by the requirements of 41 CFR 60-1.4(a), 41 CFR 60-300.5(a) and 41 CFR 60-741.5(a) and that these laws are incorporated herein by reference. These regulations prohibit discrimination against qualified individuals based on their status as protected veterans or individuals with disabilities, and prohibit discrimination against all individuals based on their race, color, religion, sex, sexual orientation, gender identity or national origin. These regulations require that covered prime contractors and subcontractors take affirmative action to employ and advance in employment individuals without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, protected veteran status or disability.**

4. **OCCUPATIONAL SAFETY AND HEALTH**

a. Southwest is committed to providing a safe and healthy workplace for employees and the public, and eliminating any conditions or hazards that could result in personal injury or ill health. The CMR and all Subcontractors must comply with all directives given by Southwest to abate a hazard and/or stop a work activity. Failure to comply with such a directive may result in the dismissal of the related employee(s). Repeated safety violations of a similar nature and/or a single serious, willful safety violation by CMR or any Subcontractor may warrant termination of the Agreement or the applicable subcontract.

b. The CMR must comply with all Applicable Laws, including, but not limited to the applicable provisions of the Occupational Safety and Health Act (OSHA) and any State codes respecting the safety and welfare of workers at the Project Site. Failure of Southwest to suspend the work or notify the CMR of the inadequacy of the CMR's safety precautions or non-compliance with existing laws and regulations shall not relieve the CMR or any Subcontractor of this responsibility.

ARTICLE 4. ARCHITECT

4.1 GENERAL

A. Southwest shall retain an architect(s) and other design consultants lawfully licensed to practice their respective professions in the State of Colorado. Duties, responsibilities, and limitations of authority of the Architect (or individual members thereof) as set forth in the Contract Documents shall not be restricted, modified, or extended without written consent of Southwest and the authorized representatives of the Architect, with notice to the CMR.

4.2 ADMINISTRATION OF THE AGREEMENT

A. Southwest will provide administration of the Agreement as described in the Contract Documents (a) during construction, (b) until final payment is due, and (c) from time to time during the one-year period for correction of Work described in Article 12.

B. The Architect shall perform its duties solely at the direction of Southwest, and will have authority to act only as provided in the Contract Documents.

4.3 ARCHITECT REVIEW AND INSPECTION

A. The Architect shall timely review and approve or take other appropriate action upon the CMR's submittals required by the Contract Documents, but only for the limited purpose of checking for conformance with information given in the Contract Documents. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details, such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the CMR as required by the Contract Documents.

B. The CMR shall submit to the Architect, any proposed change or deviation to previously approved documents or submittals. Southwest shall cause each proposed change or deviation to previously approved documents or submittals which the CMR submits to the Architect to be reviewed. The Architect shall perform its review with reasonable promptness in accordance with Section 4.3(A).

C. Notwithstanding the Architect's responsibility under Section 4.3(B), the Architect's review and approval of the CMR's documents or submittals shall not relieve the CMR of responsibility for compliance with the Contract Documents unless (a) the CMR has notified the Architect in writing of the deviation prior to approval by the Architect and PMT, or (b) Southwest has approved a Change in the Work reflecting any deviations from the requirements of the Contract Documents.

D. Designated members of the PMT will visit the site regularly to keep informed about the progress and quality of the portion of the Work completed. Neither Southwest, the PMT, nor the Architect shall be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. Visits by any such entity shall not be construed to create an obligation to make on-site inspections to check the quantity or quality of the Work. Neither Southwest, the PMT, nor the Architect shall have control over or charge of, or be responsible for, the construction means, methods, techniques, sequences, or procedures, for the safety precautions and programs in connection with the Work, since these are solely the CMR's responsibilities under the Contract Documents.

E. Neither Southwest, the PMT, nor the Architect shall be responsible for the CMR's failure to perform the Work in accordance with the requirements of the Contract Documents. Neither Southwest, the PMT, nor the Architect shall have control over or charge of, nor be responsible for, any acts or omissions of the CMR, its Subcontractors of any tier, their respective agents or employees, or any other persons or entities performing portions of the Work for the CMR.

F. Southwest may reject Work that does not conform to the Contract Documents. Whenever Southwest considers it necessary or advisable, it may require inspection or testing of the Work in accordance with the Agreement, whether or not such Work is fabricated, installed, or completed. However, neither this authority of Southwest nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of Southwest to the CMR, its Subcontractors, material and equipment suppliers, their respective agents or employees, or other persons or entities performing portions of the Work for the CMR.

G. Southwest, the PMT, and Architect shall conduct inspections to determine the Date or Dates of Substantial Completion and the date of Final Completion.

ARTICLE 5. SUBCONTRACTS

5.1 GENERAL

A. Execution of the Agreement will be based on a fast-track basis. At Southwest's sole discretion, the Work Packages may be issued for performance of the Work by CMR, its Subcontractors, Southwest's own forces, and/or Southwest's Separate Contractors under Work Package Authorizations. Southwest will fund the Work Package Authorizations and authorize payment up to the agreed to value of the work performed under any Work Package Authorization, but Southwest's obligation for payment will not exceed the total amount of the particular Work Package issued, or the FGMP Change Order, whichever is less. Contractual provisions governing the issuance of Work Packages are set forth in the Agreement, with more specific information provided in Articles 4 and 5 of the Agreement.

B. All Work provided by Subcontractors must be coordinated by Contractor so that all such Work is complete, properly coordinated, and in compliance with the Contract Documents. All Work which is incomplete or fails to comply with the Contract Documents shall be removed and/or corrected by Contractor at no additional cost to Southwest. If Contractor fails to commence correction of the Work within five (5) days after written notice from Southwest, or fails to complete the correction of the Work with due diligence, Southwest reserves the right to correct the Work with its own forces or Separate Contractors and to deduct the cost of such correction from the Contract Price.

5.2 SUBCONTRACTS. WORK PROCURED BY THE CMR UNDER THE AGREEMENT WILL BE PROCURED THROUGH THE FOLLOWING PROCESS:

A. Steps for Notice and Award of Subcontracts

1. Southwest shall review with CMR the list of potential suppliers, Subcontractors, or tradesmen (collectively, "bidders") proposed by the CMR prior to solicitation and may remove or exclude any bidder from consideration. From that list, CMR shall be required to solicit a minimum of three (3) competitive bids. Southwest will then review with the CMR all bids and will, with the advice of the CMR, decide the lowest responsive, responsible bidder for the particular portion of the Work. Selection of Subcontractors shall be coordinated with and approved by Southwest.

2. The CMR may self-perform Work but must disclose such intention to and obtain approval from Southwest to perform any Work, other than supervision of the Work, by the CMR's own forces. CMR must comply with Section 6.1.1.2 of the CMR Agreement with respect to any self-performed work.

3. The subcontracted work shall be awarded to the lowest responsive, responsible bidder who is approved by Southwest.

4. Prior to award of any subcontracts, the CMR shall meet with designated representatives of Southwest for review of the selection process and the proposed award(s). Southwest may direct that no award be made and that a new selection process be undertaken if the selection process does not meet the requirements and/or Southwest's satisfaction.

5. When the CMR is procuring items of work or supplies from Subcontractors and suppliers where the cost of the item is equal to or less than [redacted] percent [redacted] of the total Work Package Authorization for any single Work Package, the CMR shall use sound business practices in making those procurement decisions and document the decisions made to Southwest on a weekly basis.

6. If the FGMP has been established and a specific bidder among those whose bids are delivered by the CMR (including any bid by the CMR) to Southwest (a) is recommended to Southwest by the CMR; (b) is qualified to perform that portion of the Work; and (c) has submitted a bid which reasonably conforms to the requirements of the Contract Documents, but Southwest requires that another bid be accepted, then the CMR may request that a Change Order be issued to adjust the FGMP or the Work Package Authorization amount by the difference between the bid of the person or entity recommended to Southwest by the CMR and the amount of the subcontract or other agreement actually signed with the person or entity designated by Southwest.

7. Subcontracts shall conform to the payment provisions of Article 10 of the Agreement and shall not be awarded on the basis of Cost of the Work plus a Fee.

8. Subcontracts shall contain all prevailing wage provisions required by Denver Revised Municipal Code 20-76.

B. **MINORITY and WOMEN OWNED BUSINESS ENTERPRISES (M/WBE)**

1. It is the policy of Southwest that M/WBEs shall have the maximum practicable opportunity to participate in the awarding of Subcontracts. To this end, notice is hereby given that Southwest has established specific M/WBE goals which are contained in Section 13.6 of the Agreement.

2. The CMR agrees to employ good-faith efforts to award Subcontracts to M/WBEs to the fullest extent consistent with the efficient performance of this Agreement. Non-M/WBE Subcontractors are expected to solicit bids for Sub-subcontractors and suppliers from available M/WBEs.

3. The CMR shall maintain records showing:

   a. Subcontracts, supply contracts, and other contract awards, specifically to M/WBEs;

   b. Specific efforts to identify and award such Subcontracts and supply contracts to M/WBEs; and

   c. CMR shall submit, when requested, copies of executed Subcontracts and supply contracts with M/WBEs to establish actual M/WBE Project participation.

4. The CMR agrees to submit monthly reports of Subcontract and/or supplier awards to M/WBEs to Southwest in such form and manner as required by Southwest for the purpose of verifying M/WBE participation.

5. The CMR shall appoint a Project staff member to administer and coordinate the CMR's efforts to carry out the duties stated herein.

6. CMR shall use good faith efforts to require bidders and/or Subcontractors to comply with M/WBEparticipation. Subcontractors' failure to comply with M/WBE participation or to demonstrate good faith efforts to comply may cause bid(s) to be considered non-responsive or may result in suspension or termination of the subcontract.

7. Southwest shall require the CMR to submit documentation describing all M/WBE companies utilized or proposed to be utilized as Subcontractors, vendors, or suppliers in the performance of work on the Project or specific Work Package within ten (10) Business Days from identification of their Project participation.

8. CMR and its Subcontractors shall make a good-faith effort to replace M/WBE Subcontractors, Sub-subcontractors, and/or suppliers unable to perform on the Project with other M/WBES when and to the extent such replacement may help in reaching the applicable M/WBE goal.

9. The overall Project schedule may include issuance of Work Packages. Consequently, CMR shall report on attainment of M/WBE goals at a point in the process when Work Packages totaling [redacted] of the total budgeted value for the Project are authorized via Work Package Authorizations and as reasonably required by Southwest thereafter.

10. **Southwest Diversity**. Southwest supports diversity throughout its business and requires CMR to support diversity through the use of qualified Small Business Concerns in providing products or services to or on behalf of Southwest under this Agreement. CMR hereby agrees to carry out this policy in the awarding of subcontracts, if any, to the fullest extent consistent with efficient contract performance. CMR further agrees to reasonably cooperate in any studies or surveys as may be conducted by the United States Small Business Administration or other United States agency as may be necessary to determine the extent of CMR's compliance with this clause. Southwest expects CMR to carry out this policy in the awarding of

subcontracts, if any, in connection with this Agreement and to establish procedures to ensure the timely payment of amounts due pursuant to the terms of such subcontracts with Small Business Concerns. CMR shall comply with the applicable requirements of Federal Acquisition Regulation ("FAR"), including but not limited to FAR Clauses 52.219-8 and 52.219.9. CMR agrees to report to Southwest on a quarterly basis, information sufficient to demonstrate CMR's compliance with this section.

C. By appropriate written agreement in a form approved by Southwest, the CMR shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the CMR by terms of the Contract Documents, and to assume toward the CMR all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's work, which the CMR assumes toward Southwest under the Agreement. Each subcontract agreement shall preserve and protect the rights of Southwest under the Contract Documents with respect to the work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the CMR that the CMR has against Southwest under the Agreement. Where appropriate, the CMR shall require each Subcontractor to enter into similar agreements with Subcontractors of any tier. The CMR shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Subcontractors of any tier.

D. Any subcontract related to any part of the Work performed for CMR by a Subcontractor shall contain provisions, in addition to those set forth above, that:

1. require that such Work be performed in accordance with the requirements of the Contract Documents and Applicable Laws;

2. make a contingent assignment of CMR's interest in the subcontract to Southwest, which assignment shall become effective upon termination for cause of this Agreement and Subcontractor's receipt of written notification from Southwest that the assignment is effective;

3. require submission to the CMR of Formal Applications for Payment under each subcontract to which CMR is a party, in reasonable time to enable the CMR to apply for payment in accordance with Article 10 of the Agreement and the other applicable provisions of the Contract Documents;

4. require that all claims for additional costs, extensions of time, damages for delays or otherwise with respect to subcontracted portions of the Work shall be submitted to the CMR (via any Subcontractor or sub-subcontractor where appropriate) in sufficient time so that the CMR may comply in the manner provided in the Contract Documents for like claims by the CMR upon Southwest;

5. recognize the rights of Southwest pursuant to the Contingent Assignment of Subcontracts under Section 5.2(D)(2) and require the Subcontractor (upon notice by Southwest that Southwest has terminated this Agreement pursuant to the terms of Article 13 herein, and that Southwest has elected, pursuant to Section 5.2(D)(2), to retain the Subcontractor pursuant to the terms of its Subcontract with the CMR) to complete the unperformed obligations under such Subcontract and, if required by Southwest, to enter into an appropriate agreement evidencing the fact that the Subcontractor is bound to Southwest under its Subcontract in the same manner in which it has been bound to the CMR;

6. require the Subcontractor to carry and maintain insurance in accordance with the requirements of the Contract Documents;

7. require the Subcontractor to indemnify and hold harmless Southwest, the City, and Indemnified Parties with the indemnity provisions as provided in Article 11 of the CMR Agreement; and

8. obligate each Subcontractor specifically consent to the provisions of this Section 5.2(D).

5.3 SUBSTITUTION AND ASSIGNMENT OF SUBCONTRACTS

A. SUBSTITUTION OF SUBCONTRACTORS

1. The CMR shall not, without the written consent of Southwest, (a) substitute any party as Subcontractor in place of a Subcontractor approved by Southwest, or (b) allow the subcontracted work to be performed by anyone other than the original Subcontractor. Consent for substitution shall only be given if:

    a. The approved Subcontractor, after having reasonable opportunity to do so, fails or refuses to execute a written subcontract that is based upon the Contract Documents, and upon the terms of such Subcontractor's written bid or proposal, if applicable;

    b. The Subcontractor becomes bankrupt or insolvent;

    c. The Subcontractor fails or refuses to perform the subcontract;

    d. The Subcontractor fails or refuses to meet the bond requirements of the CMR as set forth in the Agreement;

    e. The Subcontractor is not licensed pursuant to Colorado law;

    f. Work performed by the Subcontractor is unsatisfactory and not in substantial accordance with the Contract Documents;

    g. The Subcontractor is substantially delaying or disrupting the progress of the work; or

    h. The Subcontractor is not a responsible contractor.

2. In the event the CMR requests a substitution, the CMR will notify the PMT of its desire and reasoning to substitute a Subcontractor and will provide the PMT at least five (5) Business Days to respond.

B. **ASSIGNMENT OF SUBCONTRACTS**

1. **ASSIGNMENT BY CMR**. The CMR shall not assign any Subcontracts without advance written approval of Southwest.

2. **ASSIGNMENT BY SOUTHWEST**

a. Southwest reserves the right to assign Subcontractors and suppliers, and their relevant contracts, to the CMR.

b. Relations and responsibilities between CMR and assigned Subcontractor or supplier shall be identical to that between CMR and Subcontractors or suppliers it has selected.

c. Assigned Subcontractors shall furnish to CMR bonds covering faithful performance of subcontract work and payment of obligations thereunder, when CMR is required to furnish such bonds to Southwest.

d. Assigned Subcontractors shall purchase and maintain all insurance as required of Subcontractors selected by CMR, and as otherwise required under the Contract Documents.

ARTICLE 6. CONSTRUCTION BY SOUTHWEST OR SEPARATE CONTRACTORS

6.1 SOUTHWEST'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS

A. Southwest reserves the right to perform construction or operations related to the Project with Southwest's own forces and to award separate contracts in connection with other portions of the Project or other construction or operations on the site. The CMR shall cooperate with Southwest and Southwest's Separate Contractors whose work might interfere with the CMR's Work. It is also understood that the City may perform construction or operations on or near the Project Site, and that the CMR and Southwest shall cooperate with the City.

B. Southwest shall provide for coordination of the activities of Southwest's own forces and of each Separate Contractor with the work of the CMR, who shall cooperate with them. CMR acknowledges that, as part of the Construction Phase of the Work, it will be required to coordinate its activities with the activities of Southwest's Separate Contractors who will be working on other projects. The CMR shall participate with other Separate Contractors and PMT in reviewing their construction schedules when directed to do so. The CMR shall recommend revisions to the Project Schedule deemed necessary. The agreed upon revised Project Schedule and other coordinated construction schedules shall then constitute the schedules to be used by the CMR, Separate Contractors, and Southwest for the Project until subsequently revised following the same process and approved by Southwest.

C. CMR acknowledges that, pursuant to Section 6.7 of the Agreement, Southwest may assign to CMR contracts entered into with Separate Contractors. CMR shall cooperate fully with the assignment process and shall not unreasonably withhold approvals of said assignment(s). In the event an assignment is not approved or made, CMR shall still continue to cooperate and coordinate its efforts and Work at the site as provided herein and in the Agreement with the Separate Contractors.

6.2 RESPONSIBILITIES

A. The CMR shall afford Southwest and Separate Contractors reasonable opportunity for introduction and storage of their materials and equipment, and performance of their activities, and shall connect and coordinate the CMR's construction and operations with theirs as required by the Contract Documents.

B. If part of the CMR's Work depends on proper execution or results upon design, construction, or operations by Southwest or a Separate Contractor, the CMR shall, prior to proceeding with that portion of the Work, promptly report to Southwest apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results within three (3) Calendar Days. Failure of the CMR to so report shall constitute an acknowledgment that Southwest's or Separate Contractor's completed or partially completed construction is fit and proper to receive the CMR's Work, except as to defects not then reasonably discoverable.

C. Southwest shall be reimbursed by the CMR for costs incurred by Southwest which are payable to a Separate Contractor for CMR's failure to comply with the Project Schedule and damage to the work of a Separate Contractor, or defective construction of the CMR. Southwest shall reimburse CMR for reasonable costs incurred by the CMR because of proven delays, improperly timed activities, damage to the CMR's Work, or defective construction of a Separate Contractor. Such additional CMR costs or time required for performance of the Work will entitle CMR to an equitable adjustment in the FGMP and/or Contract Time, by Change Order, to the extent allowed under Article 7 and/or Section 8.4 herein.

D. The CMR shall promptly remedy damage negligently or intentionally caused by the CMR to completed or partially completed construction or to property of Southwest or Separate Contractors within five (5) Calendar Days of discovery and request by Southwest and Southwest or such Separate Contractor shall similarly remedy damage to CMR's Work within five (5) Calendar Days of discovery and request by CMR.

E. Southwest and each Separate Contractor shall have the same responsibilities for cutting and patching as described in the Contract Documents.

6.3 SOUTHWEST'S RIGHT TO CLEAN UP

If a dispute arises among the CMR, Separate Contractors, and Southwest as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, Southwest may clean up and Southwest shall reasonably allocate the cost among those responsible.

ARTICLE 7. CHANGES IN THE WORK

7.1 AUTHORITY FOR CHANGES

A. Southwest reserves the right to order corrections, alterations, additions, modifications, deletions, or other changes as required for the proper completion of the Work. Such orders may be made prior to the final acceptance of the Work or within any Work Package without voiding the Agreement and without notice to the CMR's sureties.

B. The CMR shall not perform any corrections, alterations, additions, modifications, deletions, or other changes to the Work without a written order from Southwest, in accordance with Sections 7.2 and 7.3 of these General Conditions.

C. Payment for changed or extra Work will not be made without Southwest's advance written authorization for the changed or extra Work.

D. Clarification or development of the scope of work prior to issuance of the authorization of a Work Package does not constitute a change to the Work and shall not be governed by this Article 7.

7.2 ORDERS FOR CHANGES

A. Southwest may order a change, in writing, during the course of the Work, and the CMR shall comply with the order. Changes to the Work shall in no way affect, vitiate, or make void the Agreement or any part thereof, except that which is necessarily affected by such changes and is clearly the evident intention of the parties to the Agreement.

B. Changes to the Work may be initiated by Southwest or CMR as described in Sections 7.2 and 7.3 herein. Changes that require an adjustment to the Contract Sum or the Contract Time, as agreed upon by Southwest and CMR, will be formalized in a written Change Order in accordance with Section 7.3(A) and 7.3(C) herein. A change which is ordered by Southwest, but may not be agreed upon by the CMR, shall be formalized in a written Construction Change Directive in accordance with Section 7.3(B) herein.

C. The CMR shall comply with and prosecute all portions of the Change Order with the same diligence and manner as if the changes were originally included in the Agreement, except as otherwise specifically provided in the Change Order.

7.3 CHANGES TO THE WORK

A. CHANGE ORDERS

1. Southwest will issue a Change Order if a change to the FGMP and/or Contract Time as necessary, if a change to the Work Package Authorization is warranted, or to otherwise amend or supplement the Agreement. The CMR shall not be entitled to any adjustments in either Contract Time and/or the FGMP for changes performed without written direction from Southwest. A Change Order shall be in writing, signed by both Southwest and CMR. Each Change Order will contain a summary of each change in the

Work and the corresponding changes to the FGMP, the Contract Time, Work Package Authorization, or the Agreement.

2. If Southwest and CMR cannot agree on the terms of a Change Order, Southwest may instead issue a Construction Change Directive in accordance with Section 7.3(B).

3. To the extent CMR reasonably believes an adjustment in either Contract Time and/or particular FGMP is warranted for changes or other impacts under the terms of this Agreement CMR may request a Change Order by notice of a proposed change to Southwest.

4. **CHANGE PROPOSAL**. Within twenty-one (21) Calendar Days of issuance of an order from Southwest for a change or of notice by CMR for a proposed change, the CMR shall provide a cost and time proposal prepared in accordance with the requirements of Sections 7.4 and 7.5 below. The CMR's Change Proposal shall indicate the amount to be added or deducted from the FGMP and/or Contract Time, supported by complete details of all CMR, Subcontractor, vendor, or supplier costs and schedules. The CMR shall request extension of Contract Time due to changes in the Work only at the time of submitting the Change Proposal. CMR's failure to do so or to otherwise reserve that right shall represent a waiver of any right to request a time extension.

B. **CONSTRUCTION CHANGE DIRECTIVES AND OTHER ORDERS**

1. **CONSTRUCTION CHANGE DIRECTIVES**

a. A Construction Change Directive is a written order prepared by Southwest directing a change in the Work prior to agreement on adjustment, if any, in the FGMP, Contract Time, items in a Work Package Authorization, or the terms of the Agreement. Southwest may, by Construction Change Directive, and without invalidating the Agreement, order changes within the general scope of the Agreement consisting of: additions, deletions, or modifications of Work; rejections or notifications of deficiencies in the Work; clarifications of the Agreement; or other orders, instructions, and revisions, the FGMP and/or Contract Time, or Work Package Authorization, being adjusted accordingly.

b. Work required by a Construction Change Directive shall be in accordance with the Contract Documents and any previously executed Change Orders, except as delineated otherwise in the directive. Drawings included with Construction Change Directives are part of the Agreement and shall be incorporated into the Record Drawings.

c. Upon receipt of a Construction Change Directive, the CMR shall promptly proceed with the change in the Work involved and advise Southwest of the CMR's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum,

Contract Time, Work Package Authorization, and/or the Agreement terms.

d. If the CMR agrees with the Construction Change Directive, in whole or in part, then the Construction Change Directive shall be signed by the CMR and recorded as a Change Order, in whole or in part as applicable, within ten (10) days of the agreement on the Change Directive.

2. If the CMR neglects to comply with or make progress in the execution of any Change Order or written directive pursuant to this Section 7.3(B) within three (3) days of issuance, Southwest may employ another person or entity to perform such work and the CMR shall not interfere with such person or entity so employed. The CMR's neglect to comply with any order or written directive may be construed by Southwest as a breach of the Agreement.

C. **FINAL AGREEMENT OF CHANGES**

1. The CMR's written agreement with a Change Order will constitute its final and binding agreement to the provisions of the Change Order and a waiver of all claims in connection therewith, whether direct or consequential in nature, including those of any Subcontractors or suppliers. Agreement on any Change Order shall constitute a FINAL settlement of all matters relating to the Change Order, including but not limited to Contract Time, all direct and indirect costs associated with such change, and any and all adjustments to the Contract Sum, CMR Fee, and the Project Schedule. In the event the Change Order relates to a Work Package Authorization, it shall constitute a FINAL settlement of all matters relating to the Change Order for that Work Package, including but not limited to the time for performing the Work in that Work Package, all direct and indirect costs associated with such change, and any and all adjustments to the Work Package Amount and/or the Work Package Schedule.

2. If the CMR disagrees with any Construction Change Directive or other written directive or response from Southwest, the CMR may submit a notice of potential claim to Southwest in accordance with Article 14. Disagreement with the provisions of a Change Order, Construction Change Directive, or other written directive will not relieve the CMR of its obligations under the Agreement.

7.4 PAYMENT FOR CHANGES. The method of payment for any Change Order agreed upon by the CMR and Southwest, or selected by Southwest in the absence of agreement, shall be set forth in the Change Order. The four possible methods of payment are set forth in Section 7.4(A) below.

A. **Change Order Methods of Payment**

1. **Lump Sum**. The CMR submits a lump sum proposal amount in a sum certain. [redacted]

[redacted]

2. **Not to Exceed**. The CMR submits a proposal amount based on a cost of the work plus a fee, not to exceed a sum certain. [redacted]

3. **Unit Price**

a. If payment for Work under the Agreement is based on unit prices, payment for changed work will be made based on actual quantities of work done at the unit prices contained in the Agreement or Work Package Authorization, as applicable. [redacted]

b. If an ordered change materially changes the character of the work of an item from that on which the CMR based its original estimated unit prices under the Agreement or Work Package, and such original unit prices are not applicable to or reasonable for such materially changed work, an adjustment in compensation therefor will be made as follows:

(a) CMR shall promptly submit a written proposal to Southwest itemizing the quantities of each item of changed work in relation to each specific changed Drawing or Specification. Such adjusted unit prices shall include the full cost of furnishing and installing the changed item of work, including profit and overhead, and no additional payment or adjustment will be allowed. The adjustment will apply only to the portion of the work of the item actually changed in character.

c. At the option of Southwest, the work of the item which is materially changed in character may be paid for by Force Account as provided in Section 7.4(A)(4) below.

4. **Force Account**

a. In the absence of either an agreed lump sum, not to exceed, or unit price proposal [redacted] Southwest may direct the CMR to proceed with the changed [redacted] n a Force Account basis. Force Account shall mean that the CMR will be paid the Cost of the Work for the performance of the changed work as provided in Section 9.1 of the Agreement plus applicable markups as stipulated in Section 7.5 below. The CMR shall submit, in a form acceptable to Southwest, a complete and

correct accounting of all costs associated with the change, including all pay records, vouchers, invoices, etc., along with the applicable markups as stipulated in Section 7.5 below.

b. To facilitate agreement on direct craft labor hours, construction equipment hours, and material quantities, the CMR shall notify Southwest not less than four (4) hours prior to starting Force Account work. The CMR shall submit Daily Work Reports ("DWRs") for signature not later than 9:00 a.m. the day following performance of any force account work. DWRs shall list names of all CMR's staff, the staff person's craft or trade, all craft or trade labor hours, and all material and construction equipment used. The CMR shall use the DWRs in preparing billings for Force Account work.

c. All documentation supporting the Force Account work must be priced out and submitted to Southwest with the next scheduled application for payment, but in no case later than thirty (30) Calendar Days after the work is completed. Failure by the CMR to notify Southwest of the beginning of the Force Account work, to submit the DWRs as required, or to submit the supporting documentation may result in the denial of the costs of the Force Account work.

7.5 MARK-UPS FOR CHANGED WORK

A. Except as provided in this Section, only the direct costs attributable to the performance of the changed work shall be allowed in any Change Order as provided in Section 7.4 herein. All other costs shall be included in the allowed mark-ups, including but not limited to profit, home office overhead, job site indirect costs, job site office personnel, general field superintendence, general engineering, supervision of labor, and general conditions, and shall constitute full compensation for all costs not included as actual labor, materials, equipment, or Subcontractor costs. CMR GCs shall not be duplicated and paid as both markup and in the Cost of the Work itself.

B. In the event CMR self-performs the Work, it shall be entitled to charge its Fee on the Costs of the Work associated with the change but no additional mark-up will be allowed.

C. To the extent a Subcontractor performs the Work, Subcontract costs shall be the actual cost to the CMR for Work performed by a Subcontractor. On such changed work, CMR shall be entitled to charge its Fee and CMR GCs actually incurred in the performance of the changed work; however, CMR GCs shall not be duplicated and paid both as markup and in the Cost of the Work itself.

D. Mark-ups for changed work performed by Subcontractors shall not exceed the following schedule:

1. For the Subcontractor, regardless of tier, that actually performs the changed work with its own forces, the maximum mark-up allowed shall be [redacted] percent [redacted] of the direct cost of the work.

2. For any Subcontractor supervising the performance of the changed work performed by the Subcontractor's sub-Subcontractors or Subcontractors of a lower tier, the maximum mark-up allowed shall be [redacted] percent [redacted] of the direct cost of the work.

E. To facilitate verification pricing for changed work, all proposals shall be accompanied by a complete itemization of costs including labor, materials, rental equipment and related sales and use taxes, overhead or Fee (but not both) paid or due by CMR or its Subcontractors for such Costs, all in a form acceptable to Southwest.

F. **Credit for Deleted Work.** If Work is deleted by Change Order or Construction Change Directive, Southwest shall be provided a deduction for the deleted overhead of CMR and the Subcontractors equal to the markups as provided in Sections 7.5(B), (C), and (D) above as applicable.

7.6 LIMITATIONS ON PAYMENTS FOR CHANGED WORK

A. Southwest will not pay the CMR for costs in excess of prevailing market values unless the CMR can reasonably establish that the CMR has investigated all practicable means of providing the work and that the excess costs could not be avoided. Southwest will, in the exercise of reasonable discretion, determine the necessity of incurring costs in excess of market value and whether the excess costs are required for performance of changed work.

B. Unless expressly reserved, no claims for further compensation or extensions of time, whether for delay, overhead (including any home office overhead), extended general conditions, profit, fees, acceleration, Force Majeure, disruption, impact, or any other reason whatsoever, shall be made by the CMR except as allowed under the Agreement or these General Conditions and then, only in the original change order, as payments, costs, and extensions of time specified in the Change Order shall constitute full satisfaction (in payment and time) for the Work as altered therein. Southwest shall never be obligated in any event to pay or reimburse CMR in excess of the FGMP Change Order or Work Package Authorization Amount as revised by such approved Change Order.

C. To the extent a dispute exists with respect to the amount or entitlement to compensation for changed Work, Southwest may require the CMR to perform the change Work and Southwest shall pay CMR all amounts that are not in dispute associated with the performance. In such event, both Parties reserve their rights as to the matter in dispute under Article 14 and CMR's receipt of payment for such work does not prejudice its right to receive full payment for the matters in dispute under Article 14.

7.7 TIME EXTENSIONS FOR CHANGES. The CMR is entitled to adjustment in Contract Time only if completion of Work (as set forth in the Project Schedule, and as documented by and confirmed in the FGMP Change Order) is extended due to the change impacting the controlling item of work and only if provided in the CMR's Change Proposal. If the Change Order does not address a change in Contract Time, then each proposal submitted by, or order agreed upon by, the CMR in accordance with Section 7.3 herein shall state the amount of extra time the CMR believes the change added to the Project Schedule. Failure to promptly request a time extension before agreeing to a Change Order or

performing changed work under an order constitutes a waiver of the CMR's right to subsequently claim an adjustment in Contract Time.

7.8 EFFECT ON SURETIES OF CHANGES TO THE WORK. No alterations, time extensions, extra or additional work, or other changes authorized by these conditions or any part of the Agreement shall affect the sureties' obligations under the Agreement.

ARTICLE 8. TIME AND DELAYS

8.1 DEFINITIONS

A. The Date of Commencement of the Work shall be the dates stated by Southwest in the Notice to Proceed with Preconstruction Phase and Notice to Proceed with Construction Phase of the Work as provided in the Agreement. The Date of Commencement for any Work Package Authorization shall be the date set forth in a notice to proceed with the Work in the particular Work Package. The Contract Time will commence on such Date of Commencement of the Construction Phase in accordance with Section 7.1 of the Agreement.

B. The Project Substantial Completion Date is the date(s) determined by Southwest in accordance with Section 7.1 of the Agreement and Section 9.5 of these General Conditions.

8.2 PROGRESS AND COMPLETION

A. Time limits stated in the Contract Documents and the Project Schedule, as documented by and confirmed in each Work Package Authorization and/or the FGMP Change Order, are of the essence of the Agreement. By executing the Agreement and/or the FGMP Change Order, the CMR confirms that the Contract Time is a reasonable period for performing the Work. The CMR shall proceed expeditiously with adequate forces and shall achieve Substantial Completion of the Project as a whole and each individual Work Package within the Contract Time as provided in the Project Schedule, as documented by and confirmed in each Work Package Authorization and/or the FGMP Change Order.

B. The CMR shall not knowingly, except by agreement or instruction of Southwest in writing, prematurely commence construction operations on the site or elsewhere prior to the effective date of insurance required by the Agreement. The Date of Commencement of the Construction Phase of the Work shall correspond with the effective date of such insurance.

C. **SCHEDULE DEVELOPMENT**. CMR shall develop a Project Schedule to govern the Work activities in the Project. A detailed, critical path method schedule format shall be used for the Project Schedule, with thorough updates to the schedule prepared at least monthly. All schedule updates shall be provided in CPM format and address the subject of how the CMR intends to address any critical path delays previously encountered. CMR shall achieve Substantial Completion of the Project and all Work Package milestones not later than the dates set forth in the Project Schedule as documented by and confirmed in each Work Package Authorization and/or the FGMP Change Order, and shall otherwise perform all scheduling and reporting functions concerning the scheduling component of the Project pursuant to the requirements of Section 6.2 of the Agreement.

8.3 TIME IMPACT ANALYSIS FOR CHANGES AND DELAYS

A. When proposed Changes (pursuant to Article 7 herein) are initiated or delays are experienced, the CMR shall submit to the PMT a written Time Impact Analysis illustrating the influence of each change or delay on any specified intermediate milestone date and the current projected completion date with reference to the Project Schedule, as documented by and confirmed in each Work Package Authorization and/or the FGMP Change Order.

1. Each Time Impact Analysis shall include a description of all necessary logic and duration of the time impact, how the CMR proposes to incorporate the change or delay into the Project Schedule, and any additional supporting evidence that Southwest and/or the PMT deems necessary.

2. The event times used in the analysis shall be those included in the latest update of the detailed progress schedule or as adjusted by mutual agreement to reflect Project status at the time the delay occurred or notification of the change was issued. CMR shall submit each Time Impact Analysis within ten (10) Calendar Days after a delay occurs, or is discovered or reasonably should have been discovered, or notice of a change is given to the CMR. Upon agreement by both parties, the influence of changes and delays shall be incorporated into the Project Schedule at the next monthly update.

B. Where the PMT has not yet made a final determination as to the amount of time extension, or the parties are unable to agree as to the amount of time extension, the CMR shall reflect that amount of time extension in the Project Schedule as the PMT may determine to be appropriate for such interim purpose. It is understood and agreed that any such interim determination for the purpose of this Section shall not be binding upon either party for any other purpose and that, after a final determination as to any time extension has been made, the CMR shall revise the Project Schedule prepared thereafter in accordance with the final decision. If CMR disagrees with this decision, CMR may file a notice of claim in accordance with Article 14 herein.

C. Southwest owns the float. Extensions of time for performance under any and all provisions of this Agreement will be granted only to the extent that equitable time adjustments for the activity or activities affected exceed the total float along the channels involved at the time a delay occurred or notification of a change was issued. It is expressly agreed and understood that the CMR shall **NOT** be entitled to any compensation or damages on account of potential delays which can be avoided by resequencing activity times or logic used to sequester float.

D. Any delays asserted by the CMR in any Change Proposal shall be governed and awarded only pursuant to Section 8.4 below.

E. Time Impact Analyses related to Contract Time extensions and/or Change Order work shall be incorporated into and attached to the applicable Change Order, Construction Change Directive, notice of Change or other written directive.

8.4 DELAYS

A. The CMR shall provide notification to Southwest and the PMT of any delays in accordance with Section 8.5 herein.

B. **AVOIDABLE DELAYS**

1. The CMR shall **NOT** receive any time extensions or compensation for Avoidable Delays. Avoidable Delays include, but are not limited to, the following:

   a. Delays that affect a portion of the Work on the Project, including those in a Work Package, but do not prevent or delay the prosecution of items of Work along the critical path or the completion of the Work (within either a Work Package or the Project as a whole) within the Contract Time for the applicable milestones.

   b. Delays associated with the involvement of Southwest's Separate Contractors that do not prevent or delay the prosecution of the Work along the critical path or the completion of the Work (within a Work Package or the Project as a whole) within the Contract Time for the applicable milestones.

   c. Delays associated with loss of time resulting from CMR's untimely submission or resubmission of Submittals required by the Contract Documents for Southwest, the PMT, and/or Architect approval.

   d. Delays resulting from tariffs or taxes enacted prior to approval of the FGMP or which could have been reasonably anticipated by CMR in the exercise of due diligence.

   e. Delays that could have been avoided by the exercise of care, prudence, foresight, and diligence on the part of the CMR or its Subcontractors of any tier.

   f. Delays that are the fault or responsibility of the CMR.

C. **UNAVOIDABLE DELAYS**

1. **Extension of Time**. The CMR may be granted an extension of time for Unavoidable Delays **but only to the extent** that said delays are determined to be beyond the reasonable control of the CMR, impact the critical path of the Project, are not the fault of the CMR or its Subcontractors, and could not be prevented by the exercise of reasonable care, prudence, foresight, and diligence by CMR or its Subcontractors. Unavoidable delays may include, but are not limited to, delays caused by Southwest, the City, and their respective employees, contractors, consultants, agents or other entities under their control or Force Majeure events (as limited by Extensions of Contract Time for Weather below). Material shortages and delays in utility company relocations may only be classified as "Unavoidable" if the CMR produces satisfactory evidence of reasonable advance notice to Southwest and information indicating that CMR acted in a timely manner in securing the materials or notifying the utility.

2. **Extensions of Contract Time for Weather**. Contractor has included within the Project Schedule [redacted] Calendar Days to account for normal and anticipatory days for each month during which construction activity shall be expected to be prevented and suspended by cause of adverse weather. Suspension of construction activity for the number of days each month is included in the Work and is not eligible for an extension of Contract Time. Given these days in the Project Schedule to account for weather, an extension of time on the basis of weather may be granted only for weather encountered in excess of the number of days listed in this Section and then only upon written approval of Southwest.

3. **Compensation for Unavoidable Delay**. CMR shall **NOT** receive any additional compensation if the Unavoidable Delay is due to a Force Majeure event (including any delay caused by weather that is provided in the Project Schedule as discussed in Section 8.4(C)(2) above), material or labor shortage or CMR's delay in utility relocations. CMR may request compensation for any other Unavoidable Delay. Any delay related to the enactment of a tariff or tax may be compensated but only if such tariff or tax was enacted after approval of the FGMP and could not have been reasonably anticipated by CMR in the exercise of due diligence. Delays occuring due to the enactment of a tariff before the approval of the FGMP and those which could have been reasonably anticipated are Avoidable Delays. Further, in calculating the amount due to CMR for any compensable Unavoidable Delay, the following standards will apply:

   a. No consequential damages will be allowed;

   b. No recovery shall be based on a comparison of planned expenditures to total actual expenditures, or on estimated losses of labor efficiency, or on a comparison of planned manloading to actual manloading, or any other analysis that is used to show damages indirectly.

   c. Damages are limited to extra costs specifically shown to have been caused by the Unavoidable Delay.

   d. The maximum daily limit on any recovery of CMR GC cost for an Unavoidable Delay shall be the amount estimated in the FGMP Change Order by the CMR for CMR GC divided by the total number of Calendar Days of Contract Time called for in the FGMP Change Order.

   e. No damages will be allowed for home office overhead or other home office charges or any Eichleay formula calculation.

   f. CMR shall be entitled to Fee on any compensation for Unavoidable Delays and Subcontractors shall be entitled to mark ups on any compensation in accordance with Section 7.5 herein.

Adjustments to the Contract Time and/or particular FGMP due to Unavoidable Delays shall be accomplished by issuance of a Change Order. If the parties cannot agree

on a Change Order for such delay, CMR may submit a notice of potential claim to Southwest in accordance with Article 14.

8.5 NOTICE OF DELAYS

A. The CMR shall immediately notify Southwest in writing if the CMR foresees any delay in the prosecution of the Work or immediately upon the occurrence of any Unavoidable Delay, but in no case shall the written notice be provided to Southwest later than five (5) Business Days after Unavoidable Delay is discovered or reasonably should have been discovered. The CMR shall state the probability of any delay occurring and its cause so that Southwest may take steps to prevent or mitigate the occurrence or continuance of the delay, and to determine whether the delay is avoidable or unavoidable and its extent.

B. Southwest will assume that all delays are Avoidable Delays unless Southwest was notified as indicated above and found them Unavoidable Delays through its investigation. No consideration for additional time or compensation will be given for any delay not called to Southwest's attention within the time limits indicated above.

C. Southwest reserves the right to direct the CMR to work overtime on base contract work to mitigate the effect of an Unavoidable Delay or when it is determined to be in the best interest of Southwest or the Project. If the CMR is so directed by Southwest, Southwest will compensate the CMR for Unavoidable Delays, but only as allowed pursuant to Section 8.4(C) and only to the extent of the Change Order provisions set forth in Article 7 herein.

8.6 EXTENSION OF TIME

A. The CMR will be allowed a time extension to complete the Work equal to the sum of all Unavoidable Delays as determined in accordance with Section 8.4(C), plus any adjustments in Contract Time due to Change Orders, Construction Change Directives, or other written directives pursuant to Article 7. During such time extension, the CMR will not be charged for extra engineering and inspection or liquidated damages. Requests for a time extension must be submitted in writing to Southwest within the time periods required in Articles 7 and 8 herein or as otherwise specifically required in the Contract Documents, otherwise such extension of time will be waived by the CMR.

B. Time extensions granted by Southwest hereunder shall not operate as a waiver of Southwest's rights under the Agreement.

ARTICLE 9. PAYMENTS AND COMPLETION

9.1 PROGRESS PAYMENTS

A. Southwest shall make Progress Payments to CMR for performance of the Work as set forth in Section 10.1 of the Agreement.

B. Following receipt of Formal Applications for Payment as described in Section 10.1 of the Agreement, Southwest shall make monthly payments as the Work proceeds on an actual cost basis (including allowable indirect costs) on a Formal Application for

Payment form approved by Southwest. A proper Formal Application for Payment shall consist of:

1. CMR's name and address, and the pay period;

2. The Work Package Authorization number or other authorization for delivery of property or services;

3. Certification as set forth below in Section 9.1(B)(6)(g);

4. Updated Schedule of Values for the Work organized pursuant to Exhibit F-5, and which indicates:

    a. Work performed and materials and equipment procured to date and during the thirty (30)-Calendar Day period for which the Application for Payment is being submitted, including mutually agreed upon itemized completion percentages, organized by trade;

    b. Identification of the Work Package, if applicable, under which the work was performed;

    c. CMR's General Conditions for the particular thirty (30)-Calendar Day period;

    d. CMR's use of CMR's Contingency for that particular thirty (30)-Calendar Day period and the particular scope of work for which the Contingency was utilized; and

    e. CMR's Fee applicable to the Work for the time period of the Application for Payment.

5. Evidence as required by Southwest to demonstrate that cash disbursements already made by the CMR on account of the Cost of the Work equal or exceed (a) progress payments already received by the CMR; less (b) that portion of those payments attributable to the CMR's Fee; plus (c) payrolls for the period covered by the present Application for Payment; and

6. Evidence in form and content satisfactory to Southwest, including but not limited to certificates and affidavits of CMR or such other person as Southwest may require, including the following documentation, statements, and information, all in form and substance satisfactory to Southwest and in compliance with applicable state statutes:

    a. A duly executed statement from CMR detailing all moneys paid out or costs incurred by it on account of the Cost of the Work and for which payment is sought which may be included in the CMR's Formal Application for Payment.

    b. With regard to payments sought for work furnished by first-tier Subcontractors, vendors, or material suppliers, and in the first Formal Application for Payment only, an identification of all Subcontractors, vendors, and suppliers for whose work payment will

be requested, along with a brief description of the work performed for which payment is being sought, the Subcontract or purchase order amount, and the amount to be retained or withheld from the Subcontractors.

c. A statement, under oath, by CMR that, to the best of its information and belief, no person or entity has a claim for payment or has asserted a claim for payment arising from or in connection with the Work performed under the Agreement, other than any claim which has been fully paid and duly released or is included in the Formal Application for Payment and fully described therein; or, if CMR knows or believes such a claim exists or has been asserted or made, the statement shall fully disclose the claim by stating the name of the claimant or potential claimant, a description of the work for which payment is claimed, the amount of such claim, and the basis or reason why such claim has not been paid.

d. A duly executed Conditional Waiver and Release on Progress Payment from the CMR waiving all liens or claims for payment for the work by the Application for Payment being submitted, conditioned upon and to the extent of payment, on the form set forth in Exhibit C.

e. Duly executed Conditional Waiver and Release on Progress Payment from each Subcontractor waiving all liens or claims for payment for the work by the Application for Payment being submitted, conditioned upon and to the extent of payment, on the form set forth in Exhibit C.

f. If, in accordance with Subsections 10.1.9.2 of the Agreement, payments are to be made on account of items that are not incorporated in the Work but delivered to the Project Site or suitably stored at a location designated by Southwest, such payments shall be conditioned upon submission to Southwest of bills of sale or other procedures satisfactory to Southwest to establish Southwest's title to such materials or equipment upon payment or otherwise protect Southwest's interests.

g. With the submission of each request for a payment, the CMR shall certify the following:

"*I HEREBY CERTIFY that the information contained in this Formal Application for Payment accurately represents the actual amounts due for work performed and the materials supplied to date under the terms of the Agreement.*"

C. No Progress Payment will be made when, in the judgment of Southwest, the Work is not proceeding in accordance with the provisions of the Agreement.

D. The payment of a Progress Payment or the acceptance thereof by the CMR does not constitute acceptance of any portion of the Work, and does not reduce the CMR's liability to replace unsatisfactory or defective work, material, or equipment. An

inadvertence or error in an approved Formal Application for Payment will not release the CMR or the CMR's surety from damages arising from the Work covered by the approved Application for Payment or from enforcement of every provision of the Agreement. Southwest has the right to correct any error made in any Formal Application for Payment.

E. If Southwest receives a Formal Application for Payment from CMR for properly performed work and suitably stored materials in accordance with Subsection 10.1.9.2 of the Agreement, and Southwest approves the same, Southwest shall pay the requested amount to the CMR, less any statutory offsets and withholdings allowed under the Agreement, as provided in Section 10.1 of the Agreement. All stored items shall either be stored on site or at a location designated by Southwest. Such items shall be immediately transferred to Southwest upon delivery. Nothing contained herein shall be construed as a waiver or limitation of Southwest to pay for said items as required under the terms of this Agreement.

F. **PROMPT PAYMENT TO SUBCONTRACTORS**

1. If CMR receives a payment as described above or otherwise from Southwest in connection with the Agreement, the CMR shall pay each of its Subcontractors and suppliers the portion of Southwest's payment that is attributable to Work performed or materials suitably stored or delivered by that Subcontractor or supplier to the extent of that Subcontractor or supplier's interest in Southwest's payment. Such payment must be made not later than seven (7) Calendar Days after the date the CMR receives Southwest's payment.

2. A Subcontractor who receives a payment as described above or otherwise from CMR in connection with the Work shall pay each of its Sub-subcontractors the portion of the payment that is attributable to Work performed or materials suitably stored by that Sub-subcontractor to the extent of that Sub-subcontractor's interest in the payment. Such payment must be made not later than seven (7) Calendar Days after the date the Subcontractor receives the CMR's payment.

G. **RETAINAGE**. Retainage shall be withheld from payments to CMR in accordance with Subsection 10.1.6 of the Agreement. CMR shall withhold a similar amount of retainage from each Subcontractor, and release of each Subcontractor's retainage shall be in accordance with Subsection 10.1.6 of the Agreement.

H. **LIENS.** In the event a lien or bond claim is filed, CMR shall remove the lien or claim, otherwise ensure that it is removed, or shall furnish a bond for the full amount thereof within seven (7) days of notice by Southwest. Failure to comply with the foregoing requirements shall constitute a default under the terms of the Agreement. Southwest may take all steps necessary to clear the lien from the Property, including but not limited to payment of said lien or claim, and shall be entitled to deduct any and all damages, including costs and attorneys' fees incurred in resolving the claim or lien, from any amount then due or thereafter to become due CMR.

1. Notwithstanding the above, CMR shall not at any time suffer or permit any lien, bond claim, attachment, or other encumbrance, whether under any

laws of the State of Colorado or otherwise, by any person or persons whomsoever or by reason of any claim or demand against CMR, to be placed or remain on the Property of Southwest or the City, including but not limited to the Project Site or other premises upon which Work is being performed and materials are being furnished hereunder.

2. CMR shall save and keep Southwest, the City, and the Property free and clear from and against any actions, lawsuits, or proceedings brought against either Southwest or the City as a result of liens or payment bond claims filed against the Project or otherwise for the Work for which CMR has been paid. CMR shall indemnify, defend, and hold Southwest and the City harmless from and against any such liens or claims and agrees to indemnify and reimburse Southwest and the City, for any and all costs or expenses, including reasonable attorneys' fees resulting from any such actions, lawsuits or proceedings brought to enforce any such lien or claim.

9.2 WITHHOLDINGS AND DENIAL OF PROGRESS PAYMENT REQUEST

A. Southwest may deny a Formal Application for Payment and/or withhold money from any Payment for the following:

1. To cover any unpaid claims filed by any unpaid Subcontractor, supplier, laborer, materialman or lien claimant;

2. To protect Southwest's or the City's interests;

3. If a good faith dispute exists concerning the amount owed under an Application for Payment;

4. To pay any fines levied against the Project or Southwest due to the acts of CMR or its Subcontractors; or

B. Southwest may also deny a Formal Application for Payment and/or withhold funds, or modify any current or previous Formal Application for Payment, as necessary to protect the Project from loss due to or affecting enforcement of:

1. Defective work not remedied.

2. Lien or claim notices filed.

3. Failure of the CMR to make payments due and owing to Subcontractors or suppliers for labor, materials, or equipment.

4. Evidence that the Work cannot be completed for the unpaid balance of the FGMP Change Order and/or the Work Package Authorization Amount.

5. Evidence that the Work will not be completed within the Contract Time or by the Date of Substantial Completion for that particular Work Package.

6. Damage to Southwest, the City, or a Separate Contractor.

7. Failure to carry out the Work in accordance with the Agreement.

8. Failure to keep current As-Built Drawings at the Project Site as specified.

9. Unpaid amounts owed to Southwest for fees and charges for services or permits, assessments for damage to Southwest or City property, or use of Southwest or City facilities and services.

10. Failure to comply with the prevailing wage rate requirements as specified in DRMC 20-76 *et seq*.

11. Failure to comply with the requirements regarding the Project Schedule.

12. Errors due to any cause that may be discovered in any previous Application for Payment.

13. Written request from CMR's surety to withhold payment(s).

14. Failure to comply with Airport Authority or City requirements, FAA requirements or TSA security requirements or Applicable Laws.

15. Failure to utilize good faith efforts to comply with stated goals for M/WBE participation.

16. Any violation or non-compliance with CMR's legal responsibilities as specified in Article 10 herein or otherwise in the Contract Documents, including withholdings for wage adjustments and any fines incurred by Southwest and/or the City as a result of the CMR's actions.

C. When, under the provisions of the Agreement, any sum of money is charged against the CMR, the amount of such charge will be deducted and withheld from any Application for Payment. If, upon completion or termination of the Agreement, sums due the CMR are insufficient to pay charges against the CMR, Southwest shall have the right to recover the balance from the CMR or the CMR's surety.

9.3 PAYMENT FOR FORCE ACCOUNT WORK

A. When a Change Order authorizing changed or Extra Work requires that it be done by force account pursuant to Section 7.4(A)(4) herein, such force account work shall be measured and paid for based on expended labor, equipment, and materials plus overhead and profit.

B. The CMR and Southwest shall compare records of the cost of Force Account work based on the Daily Work Reports, invoices, and other related submittals by CMR. Agreement of the costs shall be indicated in a signed writing by the CMR and Southwest.

C. No payment will be made for Work performed on a Force Account basis until the CMR has furnished Southwest with duplicate itemized statements of the total cost accrued of such Force Account work [redacted]

[redacted]

D. Statements shall be accompanied and supported by a receipted invoice for all materials used and transportation charges. However, if materials used on the force account work are not specifically purchased for such work but are taken from the CMR's stock, then in lieu of the invoices the CMR shall furnish an affidavit certifying that such materials were taken from the CMR's stock, that the quantity claimed was actually used, and that the price and transportation claimed represent the actual cost to the CMR. Such statements are subject to audit.

E. The payments made to CMR for Work by Force Account, whether performed by the CMR or by a Subcontractor(s), shall include, as applicable, mark-ups according to provisions outlined in Section 7.5 herein. No additional overhead or profit shall be paid to the CMR.

9.4 PAYMENT FOR PURCHASED ITEMS OR MATERIALS ON HAND

A. As a condition of payment for materials, the CMR and each of its Subcontractors must certify to Southwest that payments have been made to all Subcontractors and suppliers who have provided materials from the Progress Payment received the previous month. Materials delivered to the CMR at a location other than the Project Site but at a designated location pursuant to Subsection 10.1.9.2 of the Agreement, may be approved by the PMT for Progress Payment if the CMR furnishes satisfactory evidence that the material will be used in the Work. Material must be verified by the PMT as physically being located at the stated location and of acceptable quality. Materials stored must be segregated by Work Package, as applicable. All stored items shall either be stored on site or at a location acceptable to Southwest. Nothing contained herein shall be construed as a waiver or limitation by Southwest to pay for said items as required under the terms of the Agreement.

B. As a condition of payment for items purchased and acceptably stored either on the Project Site or at an off-site location as approved by the PMT, the CMR shall submit paid invoices for the materials for which payment is requested with the Application for Payment. Documents other than paid invoices may be considered only on a case-by-case basis. Failure to provide the required paid invoices or other approved documentation shall result in disallowance of payment.

C. Payment for purchased items maintained at acceptable storage locations may be considered only in accordance with Subsection 10.1.9.2 of the Agreement on a special case-by-case basis as approved by the PMT at its sole discretion. CMR shall provide full insurance coverage for said purchased items at all times.

D. No Progress Payment will be made for stored or stockpiled living or perishable plant materials.

E. All items purchased for which Progress Payments are made shall become the property of Southwest. Delivery of said items shall not relieve the CMR from the responsibility for the security, damage, or loss for all material for which payments have been made. CMR shall not be relieved of the responsibility for replacement of materials found to be unacceptable or damaged.

9.5 SUBSTANTIAL COMPLETION

A. Notwithstanding any contrary provision in the Contract Documents, the term "Substantial Completion" shall mean the date when:

1. The Work is sufficiently complete in accordance with the Contract Documents (*e.g.*, complete in accordance with the Contract Documents, except for minor details of construction, landscaping, decoration, mechanical adjustment, or installation, and testing has been completed so that necessary utilities, operational systems, and equipment are operational), so that Southwest can occupy or use the Work or a portion thereof for its intended purpose;

2. Southwest has determined, with CMR's written assurance, that punch list work can be completed within sixty (60) Calendar Days except for those items of work that Southwest indicates are not critical to Substantial Completion or which require additional time; and

3. All required governmental inspections applicable to the Work have been conducted and all final approvals required have been (or can be within sixty (60)-Calendar Days) obtained from the City, the Airport Authority, the Governmental Authorities with jurisdiction over the Project, including a Certificate of Occupancy issued by appropriate authorities, unless failure to obtain such approvals is due to reasons other than the fault of the CMR, its Subcontractors, or suppliers.

4. All required turnover procedures, operational training, pre-opening simulations, testing, integrations, and end-user commissioning of all equipment, products and materials installed by CMR, including but not limited to those required under any manufacturer's warranty or guarantee, City, the Airport Authority, TSA and/or the FAA have been performed and completed to the satisfaction of the PMT. In general, the only remaining Work shall be minor in nature so that Southwest could occupy the Work, and the completion of the remaining Work by CMR would not materially interfere with or hamper Southwest's normal use of the Work.

B. The CMR shall achieve Substantial Completion of the Project and any Work Package Authorization in accordance with the Agreement.

C. When CMR considers the Work or a designated portion thereof to be substantially complete, the CMR shall submit to Southwest the following:

1. Written certification that the Work, or designated portion thereof, is substantially complete.

2. List of items to be completed or corrected ("punch list"), value of incomplete construction, and reasons the Work is not complete.

D. Within seven (7) Calendar Days after receipt of such certificate, representatives of the Architect and Southwest will make examination of the Work to determine the status of completion.

E. Should Southwest determine that the Work, or designated portion thereof, is not substantially complete:

1. Southwest will promptly notify CMR in writing, giving reasons for its determination.

2. CMR shall promptly remedy deficiencies in the Work identified by Southwest, and send a second written notice of Substantial Completion to Southwest.

3. Southwest and the Architect will promptly re-examine the Work.

F. Upon concurrence that the Work, or designated portion thereof, is substantially complete, Southwest will:

1. Cause the Architect to prepare a Certificate of Substantial Completion on AIA Form G704, or similar form utilized for such purpose, accompanied by the CMR's punch list, as verified and amended as necessary by Southwest.

2. Submit such Certificate to CMR for written acceptance of responsibilities assigned to CMR in the Certificate.

G. After the Work, or designated portion thereof, is substantially complete, CMR shall:

1. Allow Southwest occupancy of Project under the provisions stated in the Certificate of Substantial Completion.

2. Obtain and submit a Certificate of Occupancy, operating certificates, and similar releases enabling Southwest unrestricted use of the Work, and provide all other documents, warranties, operations manuals, and As-Built Drawings to Southwest.

3. Complete punch list work.

4. Advise Southwest of pending insurance changeover requirements.

5. Perform final cleaning in accordance with the Contract Documents.

6. Make final changeover of permanent locks and transmit keys to Southwest.

9.6 PARTIAL OCCUPANCY OR USE

A. Southwest may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the CMR, provided such occupancy or use is consented to by the insurer, if so required,

and authorized by public authorities having jurisdiction over the Work, if so required. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided Southwest and CMR have agreed and accepted in writing the following:

1. the stage of progress of that portion of the Work;

2. the responsibilities assigned to each of them for payments, retainage, insurance, security, maintenance, utilities, cleaning, storage of materials, and damage to the Work; and

3. the period for completion or correction of the portion of the Work and commencement of warranties required by the Contract Documents.

B. Immediately prior to such partial occupancy or use, Southwest and CMR shall jointly inspect the portion of the Work to be occupied or used to determine and record the condition of the Work.

C. Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute Southwest's acceptance of Work not complying with the requirements of the Contract Documents.

D. If Southwest accepts a completed or partially completed portion of the Work, the warranty period for that portion commences and the CMR will be relieved of any further maintenance and protection of that portion except to resolve warranty claims. The CMR will not be relieved of the requirements for repairing or replacing defective work and materials under the Contract Documents.

9.7 FINAL INSPECTION

A. When CMR considers the Work to be fully complete, it shall submit written certification that:

1. The Work has been examined by CMR for compliance and completion in accordance with the Contract Documents.

2. Equipment and systems have been tested in the presence of Southwest and the Architect and are operational.

3. The Work is completed and ready for final examination by Southwest and any required governmental authorities.

B. Southwest will make examination to verify status of completion within seven (7) Calendar Days after receipt of such certification from CMR.

C. Should Southwest or the Architect consider that the Work is incomplete or defective:

1. Southwest will or Southwest will cause the Architect to promptly notify CMR in writing, listing incomplete or defective work.

2. CMR shall issue a Statement of Exceptions and otherwise take immediate steps to remedy stated deficiencies, and send a second written certification to Southwest that the Work is complete.

3. Southwest and the Architect will promptly re-examine the Work and, to the extent it finds that CMR failed to complete or correct any deficiencies within the allotted time, Southwest may complete or correct the items and deduct the cost thereof in the Formal Application for Final Payment.

D. When Southwest finds that the Work is acceptable under the Contract Documents, Southwest shall request that the CMR make all required close-out submittals as provided in the Contract Documents.

9.8 FINAL COMPLETION AND FINAL PAYMENT

A. Upon (a) receipt of written notice that the Work is ready for final inspection, (b) acceptance of a Formal Application for Final Payment and approval of same by Southwest, and (c) certification from Southwest's accountants that final accounting is acceptable, Southwest shall promptly make such final inspection and, if all conditions precedent have been met, issue a Statement of Final Acceptance as provided in Section 10.2 of the Agreement. When Southwest finds the Work fully performed and acceptable under the Contract Documents, Southwest shall, subject to Section 10.2 of the Agreement and Section 9.8(B) herein, make final payment to the CMR.

B. Neither Final Payment nor any remaining retained percentage will become due until all conditions to Final Payment provided in the Agreement have been met, Southwest issues a Statement of Final Acceptance pursuant to Subsection 10.2.1.4 of the Agreement, and the CMR submits the following to Southwest:

1. An affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which Southwest and or the City, or the Property might be responsible or encumbered (less amounts properly withheld by Southwest) have been paid or otherwise satisfied;

2. A certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be cancelled or allowed to expire until at least thirty (30) Calendar Days' prior written notice has been given to Southwest;

3. A written statement that the CMR knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents;

4. Consent of surety to final payment on such form as approved by Southwest;

5. Executed Conditional Waiver and Release on Final Payment from CMR, on the form attached as Exhibit D;

6. Executed Conditional Waiver and Release on Final Payment from Subcontractors, Suppliers, and others with lien rights against Property of

Southwest or the City, on the form attached as Exhibit D, together with a list of those parties; and

7. CAD As-Built Drawing files reflecting the location of all Work on the site in substantial accordance with the Plans and Specifications as modified through Change Orders and as verified and accepted by Southwest; and

8. Such other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of claims, security interests, or encumbrances arising out of the Agreement or the Project, to the extent and in such form as may be designated by Southwest. If a Subcontractor refuses to furnish a release or waiver of lien required by Southwest, the CMR may furnish a bond satisfactory to Southwest to indemnify Southwest, the City, and the Indemnified Parties against such lien. If such lien remains unsatisfied after payments are made, the CMR shall refund to Southwest all money that Southwest may be liable to pay in connection with the discharge of such lien, including all costs and reasonable attorneys' fees.

C. Within fifteen (15) Calendar Days of CMR's receipt of final payment, it shall execute an Unconditional Waiver and Release on Final Payment on the form set forth in Exhibit E. CMR's failure to execute the Unconditional Final Release shall be deemed a material breach of the Agreement.

9.9 DISPUTED PAYMENTS. Disputes regarding payments under the Agreement shall be decided according to the Claim procedures set forth in Article 14 herein.

9.10 INSPECTIONS AND PAYMENTS NOT A WAIVER OF AGREEMENT PROVISIONS. No inspection, order, measurement, approval, modification, payment, acceptance of Work or material (including, but not limited to, acceptance of the entire Work), time extension, or possession of the Work or any part thereof shall be a waiver of any of the terms and conditions of the Agreement, the powers reserved by Southwest, or any right of Southwest to damages or to reject the Work in whole or part. No breach of this Agreement shall be construed a waiver of any other or subsequent breach. All remedies provided in the Agreement shall be cumulative and shall be in addition to all other rights and remedies that may exist at law or in equity.

9.11 FINAL ADJUSTMENT OF ACCOUNTS

A. The CMR shall submit a final statement of accounting to Southwest with its Formal Application for Final Payment. [redacted]

[redacted]

B. Southwest will prepare a final Change Order reflecting approved adjustments to the Contract Sum which were not made by previous Change Orders.

9.12 POST-CONSTRUCTION EXAMINATION

A. Prior to expiration of one (1) year from the Date of Substantial Completion of Project, Southwest will make a visual examination of the Project in the presence of the CMR to determine whether further correction of the Work is required in accordance with provisions of the Contract Documents.

B. Southwest will promptly notify CMR in writing of any observed deficiencies.

C. CMR will contact Southwest to arrange a time and establish a schedule for correction of such deficiencies.

9.13 ACCESS TO RECORDS

A. Upon reasonable notice and during normal business hours, Southwest shall have access to all pertinent CMR and Subcontractor Project records for the purpose of verifying and evaluating the accuracy of cost and pricing data submitted by the CMR. "Records" as used in this Section shall include, but not be limited to: original estimates, subcontract and vendor agreements, purchase orders, books, documents, accounting records, papers, project correspondence, project files, and scheduling information necessary to determine the direct and indirect costs, job site and home office overhead, and delay and impact costs. Records shall include the original bid proposal and all documents related to the bid and its preparation, the original proposed construction schedule, and all related documents, including computer-based Records. Such access shall include the right to examine and audit such Records and make excerpts, transcriptions, downloads, electronic retrievals, and photocopies at Southwest's cost. Confidential, proprietary or trade secret information pertaining to the Agreement may not be withheld from Southwest. To the extent such information is disclosed, however, Southwest agrees strictly maintain the confidentiality of any proprietary material, unless compelled to disclose such information by court order or other Applicable Laws.

B. The CMR shall insert terms similar to this Section 9.13 in all subcontracts, altered as necessary for the proper identification of the contracting parties and Southwest under the Agreement. The CMR shall submit copies to Southwest of all subcontracts and changes to subcontracts pertaining to the Agreement. Failure to submit such written contracts, or to insert this Section in all subcontracts hereunder, shall be reason to exclude some or all of the related payee's costs from amounts payable to the CMR pursuant to the Agreement or pertinent Work Package Authorization.

C. If CMR fails to maintain or allow Southwest to inspect the Records described herein, the CMR waives its right to claim any additional monies, equitable adjustments, time extension, or the like from Southwest if the Records not so maintained are necessary to audit the CMR's entitlement to the requested monies, adjustment, time extension, or the like.

ARTICLE 10. LEGAL REGULATIONS AND SAFETY

10.1 COMPLIANCE WITH LAWS AND REGULATIONS

A. The CMR shall be familiar and comply with all Applicable Laws, including Federal, State, and local laws, ordinances, codes, and regulations which in any manner affect the Work, those engaged or employed in the Work, or the material or equipment used in or upon the Work; or which in any way affect the conduct of the Work (collectively, "Applicable Laws," which is further defined in Section 1.1(B) herein). No pleas of misunderstanding or ignorance of such Applicable Laws on the part of the CMR shall modify the provisions of the Agreement or limit CMR's responsibility to comply with the Agreement.

B. The listing of certain laws in the Contract Documents is not to be construed as a listing of all Applicable Laws. The CMR is solely responsible for familiarity and compliance with all Applicable Laws related to the Work, the Project, and the Agreement.

C. To the extent changes in Applicable Laws that occur after any Work Package Authorization or issuance of the FGMP Change Order increase the cost or time of performance of the Work, CMR may request an equitable adjustment in the FGMP and/or Contract Time, or both, by Change Order.

10.2 SAFETY PRECAUTIONS AND PROGRAMS

A. CMR shall be solely responsible for and shall take proper precautions and institute appropriate programs to safeguard the public and of workers performing the Work on the Project, and to prevent accidents or injury to any persons on, about, or adjacent to the Project Site. CMR shall give notices and comply with all Applicable Laws, including the Occupational Safety and Health Act of 1970, and any insurance manual as it concerns safety programs, bearing on the safety of persons or property, their protection from damage, injury or loss, and the prevention of accidents. CMR shall erect and properly maintain at all times, as required by Applicable Laws and the conditions and progress of the Work, proper safeguards for the protection of workers and public and shall post signs warning against the dangers created by openings, stairways, falling materials, open excavations, and all other hazardous conditions.

B. CMR shall designate responsible representatives of CMR's and Subcontractors' staffs at the Project Site who shall be responsible for the promotion of safety and prevention of accidents, and shall enforce all Applicable Laws pertaining to safety and prevention of accidents. The safety representatives shall hold meetings at least every two (2) weeks with representatives of the various trades employed at the Site in order to ensure that all workers understand and comply with the Applicable Laws and the Contract Documents related to safety. CMR shall implement and lead a training program with all employees and Subcontractor

employees that provides training on the proper conduct and safety at an airport site. CMR shall, at all times, comply with applicable Construction Safety Program(s), insurance manuals, and any other construction safety requirements as outlined in the respective manuals setting forth such administrative procedures.

C. In addition to the requirements set forth herein, the CMR shall initiate and maintain all safety programs as required in the Contract Documents and shall specifically comply with all Airport safety and security requirements required by Applicable Laws, including those promulgated by the City, the FAA, and the TSA.

10.3 SAFETY OF PERSONS AND PROPERTY

A. CMR acknowledges that construction activities under the Agreement shall be conducted at an operational Airport under secure conditions. The CMR shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to:

1. Employees on the Project, Airport and airline employees, the traveling public, and other persons who may be affected by the Work;

2. The Work and the materials and equipment to be incorporated therein, whether in storage on or off the site, or under the care, custody, or control of the CMR or its Subcontractors; and

3. Other property at the Project site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, runways, structures, and utilities not designated for removal, relocation, or replacement in the course of the Work.

B. At all times, CMR shall comply with all Applicable Laws concerning safety and security of the Airport, Airport facilities, and all persons accessing said facilities, all as more particularly described in the Agreement and the Contract Documents. CMR shall specifically cooperate with the City, Airport, airlines, FAA, and TSA in arranging for security and sterility within areas under construction, and comply with the security rules of such entities.

C. Southwest may, at any time, require certain rescheduling of work to accomplish air safety. If, in the opinion of Southwest, a question of safety is involved, the Contractor shall immediately comply with oral instructions from Southwest which will afterwards be confirmed in writing. THERE SHALL BE NO EXCEPTIONS TO THESE REQUIREMENTS. Full compensation for all costs involved in rescheduling and moving from one work area to another, including work stoppage caused by airport operations, shall be considered as included in the Unit Prices paid for the items of work involved, and no additional compensation will be allowed therefor.

D. The CMR shall give notices and comply with Applicable Laws bearing on the safety of persons or property or their protection from damage, injury, or loss.

E. The CMR shall erect and maintain, as required by existing conditions and performance of the Work, reasonable safeguards for safety and protection, including barricades, markings, danger signs, and other warnings against hazards, promulgating safety regulations, and notifying owners and users of adjacent sites

and utilities. When used during periods of darkness, such barricades, markings, and signs shall be suitably illuminated.

F. When use or storage of Hazardous Materials or dangerous equipment are necessary for execution of the Work, the CMR shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

G. The CMR shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) referred to above in this Section 10.3, to all public and private property caused in whole or in part by the CMR, a Subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts they may be liable and for which the CMR is responsible hereunder, except damage or loss attributable to acts or omissions of Southwest, anyone directly or indirectly employed by Southwest, or anyone for whose acts Southwest may be liable and not attributable to the fault or negligence of the CMR. CMR shall restore such property to a condition similar or equal to that existing before such damage or injury was done. The foregoing obligations of the CMR are in addition to the CMR's other obligations under the Agreement.

H. CMR shall cooperate with the owners of any public or private utility service that may be authorized by Southwest to construct, reconstruct, or maintain utility services or facilities during the progress of the Work. CMR shall protect existing utilities from damage and unscheduled interruption of service, and shall provide appropriate advance notices to such utility owners of Work to be conducted in the general vicinity of such services and facilities.

I. The CMR shall not load or permit any part of the Work, Project Site, or public roads to be loaded so as to endanger its safety. A special permit will not relieve CMR of liability for damage which may result from the storage or moving of material or equipment. The operation of equipment of such weight or so loaded as to cause damage to structures or to any other type of construction will not be permitted. Hauling of materials over the base course or surface course under construction shall be limited as directed by the Contract Documents. No loads will be permitted on a concrete pavement, base, or structure before the expiration of the curing period as set forth in the Contract Documents. The CMR shall be responsible for all damage done by its, or its Subcontractors', hauling equipment or storage of materials on the Project Site and shall correct such damage at its sole expense.

J. Where required by law or for the safety of the Work or of adjacent property and required by the Contract Documents or for the ongoing operations on property adjacent to the Project, the CMR shall shore up, brace, underpin and protect foundations and other portions of existing structures which are in any way affected by the Work. All parts of the Work shall be braced to resist wind or other loads. CMR shall perform the Work with the explicit understanding that the design of the Project is based on all parts of the Work having been completed. Temporary items such as, but not limited to, scaffolding, staging, lifting and hoisting devices, shoring, excavation, barricades, and safety and construction procedures necessary in completion of the Project shall be the responsibility of the CMR and its Subcontractors and shall comply with all Applicable Laws. It shall not be the responsibility of Southwest,the PMT, Architect or their representatives to determine if CMR, Subcontractors or their representatives are in compliance with Applicable Law.

K. CMR shall be responsible for the structural integrity of the Project during and related to its construction operations. All structural modifications and concentrated loading of materials must be reviewed and approved by Architect and the PMT. CMR shall also be responsible for the security of the Work, the site and all Materials stored at the site or at any other location. CMR shall be responsible for all losses and expenses incurred by reason of failure to maintain reasonable security at the site or at the location where Materials are stored, and such expenses incurred shall not increase the FGMP.

L. **Fire Protection**. CMR shall take adequate precautions against fire throughout all of CMR's and Subcontractors' operations. Flammable material shall be kept to an absolute minimum, and, if any, shall be properly handled and stored. Except as otherwise provided herein, CMR shall not permit fires to be built at any location on or adjacent to the Project Site.

M. Subject to the terms and conditions of Section 10.4 herein and Section 6.4 of the Agreement, the CMR shall be responsible for the disposition of excavated and demolished materials.

N. **First Aid and Accidents**. CMR shall provide at the Project site, and make available to all workers, medical supplies and equipment necessary to supply first aid service to all persons injured in connection with the Work being performed at the Project site, whether by CMR, a Subcontractor, a Separate Contractor, or any other person at the Project site. CMR shall, within twenty-four (24) hours after the occurrence, report in writing to Southwest all accidents whatsoever arising out of or in connection with the performance of the Work, whether on or off the Site, which cause death, personal injury, or property damage, giving full details and statements of any witnesses. In addition, if death or serious injuries or serious property damages occur, the accident shall be reported immediately by telephone or messenger to Southwest. If any claim is made by anyone against CMR, any Subcontractor, or any party for whom either is responsible on account of any accident, CMR shall promptly report the facts in writing to Southwest, giving full details of the claim.

O. In the event a Force Majeure event occurs at the Project Site (or impacting the Project from another location) which creates a health or safety concern, as determined by Southwest or the City, Southwest or the City shall have the right to immediately suspend all or a portion of the work on the Project with no consequences to Southwest or the City. At such time as the Force Majeure event is resolved, as determined by Southwest, CMR may resume work on the Project.

10.4 HAZARDOUS MATERIALS

A. The term "Hazardous Materials" shall mean any flammables, explosives, radioactive materials, petroleum-based materials exceeding applicable federal, state, or local regulatory limits, asbestos, polychlorinated biphenyl (PCB), and other toxic substances or related materials, including, without limitation, substances defined as "hazardous wastes," "hazardous substances," "hazardous materials," "toxic substances," or "solid wastes" in the Comprehensive Response, Compensation and Liability Act of 1980, as amended, 42 U.S.C. Section 9601 *et. seq.*; the Resource Conservation and Recovery Act, 42 U.S.C. Section 2601, *et. seq.*; and any other Applicable Laws, including Environmental Laws, and all amendments and revisions

thereto. The term Hazardous Materials shall be interpreted in the broadest sense to include any and all substances, materials, wastes, pollutants, oils, or governmental regulated substances or contaminants as defined or designated as hazardous, toxic, radioactive, dangerous, or any other similar term in or under any of the Environmental Laws, including but not limited to, asbestos and asbestos containing materials, petroleum products including crude oil or any fraction thereof, gasoline, aviation fuel, jet fuel, diesel fuel, lubricating oils and solvents, urea formaldehyde, flammable materials, explosives, PCBs, radioactive materials or waste, or any other substance that, because of its quantity, concentration, physical, chemical, or infectious characteristics may cause or threaten a present or potential hazard to human health or the environment or which may impair the beneficial use of property for Airport purposes. Hazardous Materials shall also mean any and all hazardous materials, hazardous wastes, toxic or hazardous substances, or substances regulated under any Environmental Laws. CMR shall obtain from manufacturers, and furnish to Southwest, Material Safety Data Sheets (OSHA Form 20) for all materials incorporated into the Work by the CMR. Southwest hereby agrees that, as between Southwest and CMR, Southwest will be responsible for any Hazardous Materials on the site which existed prior to CMR performing work on the site, except as specifically provided in this Article 10. This Section 10.4 complies with existing Federal Regulations: S-981, The Toxic Substances Control Act Amendments of 1987, The National Emission Standards for Hazardous Air Pollutants, administered by the Environmental Protection Agency since 1973, and the EPA's Guidance for Controlling Asbestos-Containing Material in Buildings most recently modified in March 1986.

B. CMR and all Subcontractors shall be bound by the mandate of Southwest and the City to promote the health, safety, and welfare of the general public and to establish a standard for response to Hazardous Materials under Applicable Laws. Such mandate applies to all materials, products, and Work provided or installed under the Contract Documents. CMR agrees that it shall not transport to, use, handle, install, generate, store, or dispose of at the Project Site any Hazardous Materials, except in accordance with applicable Environmental Laws and with written approval by Southwest. In performing the Work, CMR shall not cause any release of Hazardous Materials into or contamination of the environment, including the soil, the atmosphere, or any water course or ground water.

C. **CMR SHALL PROTECT, DEFEND, INDEMNIFY, AND HOLD HARMLESS SOUTHWEST, THE CITY, AND ALL INDEMNIFIED PARTIES FROM AND AGAINST ANY LOSS, COST, CLAIM (INCLUDING CLAIMS FOR REMEDIATION COSTS OR IN KIND REMEDIATION), DEMAND, PENALTY, FINE, LIABILITY AND EXPENSE (INCLUDING BUT NOT LIMITED TO ATTORNEYS' AND CONSULTANTS' FEES, COURT COSTS AND LITIGATION EXPENSES) FROM WHOMEVER RECEIVED, WHETHER A PRIVATE PERSON OR GOVERNMENTAL ENTITY RELATED TO:**

1. **THE USE, PRESENCE, OR PLACEMENT BY CMR, ITS SUBCONTRACTORS OF ANY TIER OR ANYONE FOR WHOM CMR IS RESPONSIBLE ("CMR AGENTS"), OF HAZARDOUS MATERIALS OF WHATEVER KIND OR NATURE, KNOWN OR UNKNOWN, CONTINGENT OR OTHERWISE ON THE PROJECT SITE OR OTHER AREAS IMPACTED BY THIS AGREEMENT**

2. **ANY INVESTIGATION, MONITORING, CLEANUP, CONTAINMENT, REMOVAL, STORAGE OR RESTORATION WORK REQUIRED OR INCURRED HEREUNDER**

BY SOUTHWEST OR THE CITY THIRD PARTY DUE TO PLACEMENT BY CMR OR CMR AGENTS OF HAZARDOUS MATERIALS OF WHATEVER KIND OR NATURE KNOWN OR UNKNOWN CONTINGENT OR OTHERWISE ON THE PROJECT SITE OR OTHER AREAS IMPACTED BY THIS AGREEMENT;

3. **ANY ACTUAL, THREATENED, OR ALLEGED CONTAMINATION BY HAZARDOUS MATERIALS ON THE AIRPORT BY CMR OR CMR AGENTS;**

4. **THE DISPOSAL, RELEASE OR THREATENED RELEASE OF HAZARDOUS MATERIALS BY CMR OR CMR AGENTS AT THE AIRPORT THAT IS ON, FROM, OR AFFECTS SOIL, AIR, WATER, VEGETATION, BUILDINGS, PERSONAL PROPERTY, OR PERSONS;**

5. **ANY PERSONAL INJURY, DEATH OR PROPERTY DAMAGE (REAL OR PERSONAL) ARISING OUT OF OR RELATED TO HAZARDOUS MATERIALS USED (INCLUDING STORAGE OR DISPOSAL) BY CMR OR CMR AGENTS AT THE AIRPORT; OR**

6. **ANY VIOLATION BY CMR OR CMR AGENTS OF ENVIRONMENTAL LAWS; PROVIDED, HOWEVER, THAT THE FOREGOING INDEMNITY SHALL NOT BE APPLICABLE TO LOSSES, COSTS, EXPENSES, CLAIMS, DEMANDS, PENALTIES, FINES, SETTLEMENTS, LIABILITIES AND EXPENSES RESULTING FROM CONDITIONS EXISTING AS OF THE EFFECTIVE DATE OF THIS AGREEMENT AND WHICH SUCH CONDITIONS ARE NOT THE RESULT OF ANY OPERATIONS, ACTIVITIES, ACTIONS OR INACTIONS OF CMR OR CMR AGENTS, OR WHICH ARE CAUSED SOLELY BY SOUTHWEST OR CITY OR THEIR AGENTS.**

D. CMR shall not be responsible for the handling, removal, and/or disposal of any Hazardous Materials occurring or existing on the Project Site as of the date of this Agreement except as mutually agreed to in writing by the Parties. If after the commencement of the Work, Hazardous Materials are discovered at the Project Site, the CMR shall immediately stop Work in the affected area and report the condition to Southwest.

E. CMR shall not proceed with the Work in the affected area until authorized by Southwest; however such condition shall not stop the Work in any unaffected area. When the material or substance has been assessed and removed or remediated, if required by the applicable Environmental Laws, Work in the affected area shall resume upon written agreement of Southwest and CMR. The Contract Time shall be extended appropriately, and the Contract Sum shall be increased in the amount of the CMR's reasonable additional costs of shutdown, delay, and start-up, which adjustments shall be accomplished by Change Order pursuant to Article 7 herein.

Upon report of a Hazardous Material encountered by CMR, Southwest shall obtain the services of a qualified environmental consultant to verify the presence or absence of the material or substance reported by the CMR and, in the event such material or substance is found to be present, to verify that it has been assessed and removed or remediated, if required by the applicable Environmental Laws.

F. Southwest shall not be responsible under this Section 10.4 for Hazardous Materials brought to the site by the CMR, its Subcontractors of any tier, or for injuries

resulting from Hazardous Materials brought to the site by CMR, its Subcontractors or their subcontractors of any tier. The CMR certifies responsibility and liability for all expenses related to the removal, replacement, and/or reparation of Hazardous Materials put in place under terms of the Agreement and agrees to indemnify Southwest, the City, and all Indemnified Parties for such actions as set forth in Section 10.4(C) above. The CMR shall review all Drawings for compliance with this Section 10.4. Should discrepancies be discovered, the CMR shall notify Southwest in writing of the suspect notation or specification.

G. CMR shall prevent the presence, use, generation, release, omission, discharge, storage, disposal or transportation of any Hazardous Materials by CMR on, under, in, above, to or from the Airport or any other areas or facilities subject to this Agreement, other than in strict compliance with all Environmental Laws. The CMR shall comply with all Hazardous Materials provisions contained in the Contract Documents and Applicable Laws. CMR shall cooperate with Southwest in providing any and all required submissions and information for reporting Hazardous Materials issues to the U.S. Environmental Protection Agency or any other State or local Governmental Authority having jurisdiction over the Project.

10.5 ENVIRONMENTAL PROTECTION.

A. The CMR shall comply with all Applicable Laws, including permits, registrations and approvals as required under the Environmental Laws, controlling pollution of the environment. The CMR shall take necessary precautions to:

1. Prevent pollution of streams, lakes, ponds, and reservoirs with fuels, oils, bitumens, chemicals, or other harmful materials; and

2. Prevent pollution of the atmosphere from particulate and gaseous matter.

10.6 EMERGENCIES

A. In an emergency affecting safety of persons or property or Airport Operations, the CMR shall act, at the CMR's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the CMR on account of an emergency shall be determined by Change Order in accordance with Article 7.

B. If Southwest or the City, as applicable, is forced to make necessary emergency repairs to any work due to damage resulting from the fault, negligence or intentional acts of CMR, its employees, agents, Subcontractors, Suppliers, or any other party for whose acts any of them may be liable, the CMR shall promptly reimburse Southwest and/or the City for such actual costs of repairs.

ARTICLE 11. INSURANCE AND BONDS

11.1 INSURANCE. The CMR shall procure and maintain insurance coverage and comply with the terms and conditions of the Insurance Requirements as set in Section 11.2 of the Agreement.

11.2 PERFORMANCE AND PAYMENT BONDS

A. The CMR shall furnish Performance Bond(s) and Payment Bond(s) for the Project as on such forms as set forth herein or as otherwise required by Southwest.

B. Bonds shall be issued by a surety company that is authorized and admitted to write surety bonds in the State of Colorado and also holds a certificate of authority from the United States Treasury to qualify as surety on obligations permitted or required under federal law. Sureties on the bonds shall designate an agent resident in Denver County to whom any requisite notices may be delivered and on whom service of process may be had in matters arising out of the suretyship. The Payment Bond shall satisfy all statutory requirements applicable to the City and Southwest shall furnish information to a payment bond beneficiary.

C. Payment and Performance Bonds shall be in the penal sum of the full amount of the FGMP.

1. **PERFORMANCE BOND**. The Performance Bond, to guarantee the performance of all covenants and stipulations of the Agreement, shall be on a form approved by Southwest and shall be in a sum not less than one hundred percent (100%) value of the FGMP. Without limiting any other requirements or obligations of the surety, the Performance Bond shall cover CMR's warranty obligations during any express corrective period and any Liquidated Damages for which CMR may be liable under the Agreement for delay in the timely completion of the Work.

2. **PAYMENT BOND**

a. The Payment Bond, to guarantee the payment of wages and of bills contracted for materials, supplies, or equipment used in the performance of the Work, shall be on a form approved by Southwest and shall be in a sum not less than one hundred percent (100%) value of the FGMP. The CMR shall maintain all Payment Bonds in full force and effect until occurrence of both of the following conditions:

(a) i. CMR furnishes to Southwest evidence satisfactory to Southwest that all entities eligible to file a claim against the bond have been fully paid; and

(b) ii. CMR furnishes to Southwest unconditional releases of liens, stop notices, and payment claims from all Subcontractors who filed preliminary notice against the Project or Payment Bond.

b. In the alternative of these two conditions, CMR shall maintain all Payment Bonds in full force and effect until expiration of the statutory period for Subcontractors to file a claim for payment against the Payment Bond. A determination of whether the applicable statutory period has expired shall be in the sole discretion of Southwest and its legal counsel.

D. Performance by a surety of any of the obligations of CMR set forth in the Agreement shall not relieve CMR of any of its obligations hereunder.

E. CMR and its surety shall furnish a Dual or Multiple Obligee Rider, on a form acceptable to Southwest, naming as joint obligee the City of Denver and any such other person or entity as Southwest may require.

F. **SUBCONTRACTOR BONDS**. Southwest may request CMR to require certain Subcontractors to furnish a performance bond and a payment bond (or reasonably acceptable industry substitute), with separate penal sums in the amount of the subcontract price (with such penal sum to be adjusted when the subcontract sum is adjusted). Should Southwest so require, it will notify CMR of such requirement prior to the acceptance of the FGMP. Each such surety bond shall be executed by a responsible corporate surety acceptable to Southwest, holding a current certificate of authority from the U.S. Department of Treasury to issue bonds to the federal government ("Treasury Listed"), and duly licensed and authorized by the State of Colorado to issue surety bonds in Colorado. Further, with regard to each such bonds, CMR shall obtain from its Subcontractor and the Subcontractor's surety a Dual or Multiple Obligee Rider, on a form acceptable to Southwest, naming as additional obligees Southwest and any other entity so designated by Southwest. The "Cost of Work" reimbursable to the CMR under Section 9.1 of the Agreement shall not include, and Southwest shall not otherwise be responsible or liable for, the cost of the premium of any Subcontractor bond unless such bond meets the requirements set forth herein and Southwest has requested such bonds be furnished.

ARTICLE 12. CORRECTION OF WORK AND WARRANTIES

12.1 INSPECTION OF WORK

A. The CMR shall maintain an adequate inspection system and perform such inspections as will ensure that the Work conforms to requirements of the Contract Documents. If the Work does not conform to the requirements of the Contract Documents CMR shall ensure that corrections are made in a timely manner so as to not affect the efficient progress of the Work. The CMR shall maintain complete inspection records and make them available to Southwest. Southwest and the PMT shall have the right to witness all tests performed by the CMR. Tests performed by the CMR are all tests to ensure compliance with the Contract Documents over and above the testing performed by Southwest. Southwest shall have the right to approve all tests including approval of test procedures and test conditions to assure compliance with the Contract Documents.

B. The Work shall be conducted under the general observation of Southwest, and the Work and all materials are subject to inspection and test by Southwest at all places and at all reasonable times before final acceptance to ensure strict compliance with the Contract Documents. Inspections and tests by Southwest are for the sole benefit of Southwest and do not:

1. relieve the CMR of responsibility for providing adequate quality control measures;

2. relieve the CMR of responsibility for damage to or loss of the material before acceptance;

3. constitute or imply acceptance; or

4. affect the continuing rights of Southwest after acceptance of the completed work.

C. The presence or absence of Southwest, the PMT, or any other authorized representative of Southwest during inspections or tests does not relieve the CMR from any requirement under the Contract Documents.

D. The CMR shall promptly furnish, without additional charge, all facilities, labor, and material reasonably needed for performing such safe and convenient inspections and tests as may be required by Southwest. Southwest's authorized Materials Testing Laboratory will charge to the CMR any additional cost of inspection or test when work is not ready at the time specified by the CMR for inspection or test, or when prior rejection makes re-inspection or re-test necessary. Southwest will perform or have performed all inspections and tests in a manner that will not unnecessarily delay the Work. Southwest will perform all tests described and identified in the Specifications except those specifically identified to be performed by the CMR.

E. **Quality Control Program**. CMR shall establish, provide, and maintain a comprehensive quality control program in accordance with this Agreement and the Contract Documents. Under the quality control program, CMR shall establish requirements for performance of inspection and testing of all items of Work required by the Contract Documents, including those performed by Subcontractors. This quality control program shall ensure conformance to applicable Drawings, Specifications and other Contract Documents with respect to materials, workmanship, construction, finish, and functional performance. The quality control program shall be effective for control of all Work performed under the Agreement and shall specifically include surveillance and tests required by the Contract and any other activities deemed necessary by the CMR to establish an effective level of quality control. The CMR shall maintain complete inspection records and other records confirming the appropriate exercise of the quality control program and make them available to Southwest and the Architect upon reasonable request.

12.2 UNCOVERING OF WORK

A. If a portion of the Work is covered contrary to requirements specifically expressed in the Contract Documents, it must be uncovered for Southwest's examination and be replaced at the CMR's expense without change in the Contract Time.

B. If a portion of the Work has been covered which Southwest has not specifically requested to examine prior to being covered, Southwest may request to see such Work and it shall be uncovered by the CMR. If such Work is in accordance with the Contract Documents, costs of uncovering and replacement shall, by appropriate Change Order, be at Southwest's expense and an adjustment in Contract Time will be included if necessary. If such Work is not in accordance with the Contract Documents, correction shall be at the CMR's expense unless the condition was caused by Southwest or a Separate Contractor, in which event Southwest shall be responsible for payment of such costs.

12.3 CORRECTION OF WORK BEFORE OR AFTER SUBSTANTIAL COMPLETION.

A. The CMR shall promptly correct Work rejected by Southwest that does not conform to the requirements of the Contract Documents, whether discovered before or after Substantial Completion of any Work Package and/or the Project as a whole, and whether or not fabricated, installed, or completed. The PMT or Southwest shall notify CMR in writing within a reasonable time after the discovery of any failure, defect, or damage. Costs of correcting such rejected Work, including additional testing, shall be at the CMR's expense.

B. With respect to all warranties, express or implied, from Subcontractors, manufacturers, or suppliers for Work performed and materials furnished under the Agreement, the CMR shall:

1. obtain all warranties that would be given in normal commercial practice;

2. require all warranties to be executed in writing for the benefit of Southwest, if directed by Southwest; and

3. enforce all warranties for the benefit of Southwest, if directed by Southwest.

C. In the event that CMR's warranties under Sections 3.2(A) and 12.4 have expired, Southwest may bring suit at its expense to enforce a Subcontractor's, manufacturer's, or supplier's warranty.

D. Unless a defect is caused by the negligence of the CMR or its Subcontractors or suppliers of any tier, the CMR shall not be liable for the repair of any defects of Southwest-furnished materials or for the repair of any damage that results from any defect in materials furnished by Southwest.

12.4 CORRECTION OF WORK AFTER SUBSTANTIAL COMPLETION

A. Except as otherwise provided herein or in the Agreement, in addition to the CMR's obligations under Section 3.2 herein, if, within one (1) year after the later of the date of Substantial Completion of each Work Package, or the overall Project, or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the CMR shall correct it promptly after receipt of written notice from Southwest to do so unless Southwest has previously given the CMR a written acceptance of such condition. If the CMR fails to commence correction of non-conforming Work within fourteen (14) Calendar Days after receipt of notice from Southwest and thereafter prosecute such correction with diligence to completion, Southwest may correct it in accordance with Section 2.5 herein. Warranties shall begin to run upon Substantial Completion.

B. The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual performance of the Work.

C. The one-year period for correction of Work shall not be extended by corrective Work performed by the CMR pursuant to this Section 12.4 unless otherwise authorized by Southwest.

D. The CMR shall remove from the site portions of the Work which are not in accordance with the requirements of the Contract Documents and are neither corrected by the CMR nor accepted by Southwest. The CMR shall promptly segregate and remove rejected material from the site.

E. The CMR shall bear the cost of correcting destroyed or damaged work, including without limitation the cost of additional services and related expenses incurred by Southwest resulting from the defective Work, whether completed or partially completed, of Southwest or Separate Contractors caused by the CMR's correction or removal of Work which is not in accordance with the requirements of the Contract Documents.

F. Nothing contained in this Section 12.4 shall be construed to establish a period of limitation with respect to other obligations the CMR might have under the Contract Documents. Establishment of the one-year period for correction of Work as described herein relates only to the specific obligation of the CMR to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the CMR's liability with respect to the CMR's obligations other than specifically to correct the Work.

12.5 ACCEPTANCE OF NONCONFORMING WORK. If Southwest prefers to accept Work not in accordance with the requirements of the Contract Documents, Southwest may do so instead of requiring its removal and correction, in which case the Contract Sum will be equitably adjusted by Change Order. Such adjustment shall be effected whether or not Final Payment has been made.

ARTICLE 13. TERMINATION AND SUSPENSION

13.1 TERMINATION BY SOUTHWEST FOR CAUSE

A. Southwest may terminate the CMR for cause if the CMR:

1. refuses or fails to supply enough properly skilled workers or proper materials and/or equipment;

2. fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the CMR and the Subcontractors;

3. disregards Applicable Laws, statutes, circulars, ordinances, codes, rules and regulations, or lawful orders of a public authority;

4. repeatedly disregards the instructions of Architect, the PMT, or Southwest;

5. fails to comply or its Subcontractors fail to comply with the prevailing wage rate requirements as specified in DRMC 20-76 *et seq.;*

6. becomes insolvent or makes a general assignment for the benefit of CMR’s creditors, or a trustee or receiver is appointed for CMR or for any of its property;

7. fails to commence the Work as directed;

8. fails to diligently prosecute the Work to completion thereof in an efficient, timely workmanlike, skillful and careful manner and in strict accordance with the provisions of the Contract Documents (including the Date of Substantial Completion);

9. actually or constructively abandons, or puts Southwest on actual or constructive notice that it intends to abandon the Project; or

10. otherwise does not fully comply with the Contract Documents or otherwise materially breaches the Agreement.

B. When any of the above reasons exist, Southwest may without prejudice to any other rights or remedies of Southwest and after giving the CMR and the CMR's surety ten (10) Calendar Days' written notice, terminate employment of the CMR and may, subject to any prior rights of the surety:

1. Exclude the CMR from the Project Site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned, rented or leased by the CMR; and

2. Accept assignment of Subcontracts as set forth in Section 5.2(D); and

3. Finish the Work by whatever reasonable method Southwest may deem expedient. Upon written request of CMR, Southwest shall furnish to CMR a detailed accounting of the costs incurred by Southwest in finishing the Work.

Notwithstanding the foregoing, if Southwest reasonably determines that CMR's acts or omissions pose an immediate and substantial threat or danger of injury to persons or damage to the Work or other property, Southwest may, without prejudice to any other rights or remedies granted by this Agreement or by law, immediately suspend CMR's performance of the Work, take immediate possession of the Project Site, take such further action reasonably necessary to prevent, mitigate against, remove, or repair such threat or damage, and deduct such costs and expenses it reasonably incurs from any sums due and owing to the CMR or, in the absence thereof, to recover such costs and expenses from the CMR.

C. When Southwest terminates the Agreement for one of the reasons stated in Section 13.1(A), the CMR shall not be entitled to receive further payment until the Work is finished.

D. If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by Southwest and not expressly waived, such excess shall be paid to CMR. If such costs and damages exceed the unpaid balance, CMR shall pay the difference to Southwest. This obligation for payment shall survive termination of the Agreement.

E. If, after termination of the Agreement under this Section it is determined that the CMR was not in default or that sufficient cause to terminate hereunder did not

exist, the rights and obligations of the parties shall be determined as if the termination had been issued for the convenience of Southwest as provided in Section 13.3.

13.2 SUSPENSION BY SOUTHWEST FOR CONVENIENCE

A. Southwest may, without cause, order the CMR in writing to suspend, delay, or interrupt the Work in whole or in part for such period of time as Southwest may determine.

B. Southwest may suspend the Work, in whole or in part, due to unsuitable weather or such other conditions as are considered unfavorable for the prosecution of the Work.

C. In the event Southwest suspends the Work, the FGMP and Contract Time applicable thereto shall be adjusted for increases in the cost and time caused by suspension, delay, or interruption as described in Section 8.4(C) herein. Any such adjustments shall include adjustment to CMR's fee. No adjustment shall be made to the extent that:

1. Performance is, was, or would have been so suspended, delayed, or interrupted by another cause for which the CMR is responsible or if due to an Avoidable Delay as defined in Section 8.4(B);

2. An equitable adjustment is made or denied under another provision of the Agreement; or

3. Southwest is required to suspend the Work or any portion thereof due to CMR's material breaches of contract, or other failures to comply with the Contract Documents.

D. In the event Southwest does not elect to re-deploy CMR to complete the Work within six (6) months of suspension of services, the suspension shall automatically convert to a termination for Southwest's convenience and Southwest shall no longer be obligated hereunder.

13.3 TERMINATION BY SOUTHWEST FOR CONVENIENCE

A. Southwest may, at any time, terminate the Agreement or any Work Package for Southwest's convenience and without cause for any of the following reasons:

1. Issuance of an order of a court or other public authority having jurisdiction.

2. An act of government, such as a declaration of national emergency, causing material to be unavailable.

3. Conditions encountered during the Work make it impossible or impractical to proceed.

4. Such termination is in the best interest of Southwest as determined in the sole discretion of Southwest.

B. Upon receipt of written notice from Southwest of such termination for Southwest's convenience, the CMR shall:

1. Cease operations as directed by Southwest in the notice;

2. Take actions necessary, or that Southwest may direct, for the protection and preservation of the Work;

3. Except for Work directed to be performed prior to the effective date of termination stated in the notice or as otherwise instructed by Southwest, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders; and

4. Transfer title to and deliver to Southwest, in the manner and to the extent directed by Southwest, (a) the fabricated or unfabricated parts, Work in progress, completed Work, supplies, and materials; and (b) the Drawings, as-built records, and other related information, whether partially or fully completed, that CMR would have been required to furnish to Southwest if the Project had been completed.

C. In the event of termination for Southwest's convenience prior to commencement of the Construction Phase, the CMR shall be entitled to receive payment for Preconstruction Phase services performed and reasonable costs incurred by reason of such termination as set forth in Section 4.6 of the Agreement. In case of termination for Southwest's convenience after commencement of the Construction Phase, the CMR shall be entitled to receive payment for Work executed up to the time of termination and reasonable costs incurred by reason of such termination, along with that portion of CMR's Fee based upon the percentage of the Work completed. In no event shall CMR be entitled to receive or receive payment, including any CMR Fee on Work or other services not performed at the time of termination.

13.4 TERMINATION OF UNSATISFACTORY SUBCONTRACTS. When any portion of the Work subcontracted by the CMR is not prosecuted in a satisfactory manner by a Subcontractor, the CMR shall immediately terminate the subcontract upon written notice from Southwest. Such Subcontractor shall not again be employed for any portion of the Work on which the Subcontractor's performance was unsatisfactory.

13.5 SOUTHWEST COMPLETION

A. In the event of termination of the Agreement, Southwest may take possession of the Work and complete it using whatever means it deems necessary and expedient.

B. No act by Southwest before the Work is finally accepted shall operate as a waiver or estop Southwest from acting upon any subsequent event, occurrence, or failure by the CMR to fulfill the terms and conditions of the Agreement. It is expressly agreed that pursuit by Southwest of any one or more of the remedies provided herein or otherwise available at law or in equity shall not constitute an election of remedies by Southwest, nor shall forbearance by Southwest to enforce one or more of the remedies provided herein upon an event of default by CMR be deemed or construed to constitute a waiver of such default. The rights of Southwest pursuant to this

Article 13 are in addition to all other rights of Southwest pursuant to the Agreement, at law, or in equity.

13.6 TERMINATION FOR NATIONAL EMERGENCIES

A. Southwest shall terminate the Agreement, a Work Package Authorization, or portion thereof by written notice when the CMR is prevented from proceeding with the construction contract as a direct result of an Executive Order of the President with respect to the prosecution of war or in the interest of national defense.

B. When the Agreement, a Work Package Authorization, or any portion thereof is terminated under this Section 13.6 (Termination for National Emergencies) before completion of all items of Work therein, payment will be made for the actual items or portion of Work completed or as mutually agreed for items of Work partially completed or not started. No claims or loss of anticipated profits shall be considered. Reimbursement for organization of the Work, other profit and overhead expenses (when not otherwise included in the Agreement or Work Package Authorization), and moving equipment and materials to and from the job will be considered, the intent being that an equitable settlement will be made with the CMR.

C. Acceptable materials obtained or ordered by the CMR for the Work and that are not incorporated in the Work shall, at the option of the CMR, be purchased from the CMR at actual cost as shown by receipted bills and actual cost records at such points of delivery as may be designated by Southwest.

D. Termination for National Emergencies under this Section 13.6 shall neither relieve the CMR of its responsibilities for the completed Work nor shall it relieve its surety of the surety's obligation for and concerning any just claim arising out of the Work performed.

ARTICLE 14. CLAIMS AND DISPUTE RESOLUTION

14.1 CLAIMS AND DISPUTES. A "Claim" is a demand or assertion by one of the parties seeking, as a matter of right, adjustment or interpretation of Agreement terms, payment of money, extension of time, or other relief with respect to the terms of the Agreement. The term "Claim" also includes other disputes and matters in question between Southwest and CMR arising out of or relating to the Agreement. Claims must be initiated by written notice. The responsibility to substantiate Claims shall rest with the party making the Claim.

14.2 DISPUTE REGARDING CONTRACT REQUIREMENTS

A. If the CMR and Southwest fail to agree whether or not any work or other matter is within the scope of the Agreement or within the scope of work for any Work Package, the CMR shall nevertheless immediately perform such work upon receipt of a Construction Change Directive or other written directive pursuant to Article 7 herein. Within fourteen (14) Calendar Days after receipt of the Construction Change Directive or other written directive or such longer time as Southwest may allow, the CMR may submit a written protest detailing the Agreement requirements exceeded by the work or other matter at issue and the approximate cost and/or

time change. Failure to submit a protest within the specified period constitutes a waiver of the CMR's rights to adjustments in the Contract Sum or Contract Time.

B. The CMR shall not stop performing the Work pending resolution of a dispute or Claim, unless ordered in writing by Southwest.

C. If Southwest agrees with the CMR's written protest, in whole or in part, the Contract Sum and/or Contract Time will be adjusted through a Change Order for the agreed amount. Protests and claims denied by Southwest will be so stated in writing.

14.3 NOTICE AND MITIGATION OF POTENTIAL CLAIM

A. **Notice of Potential Claim (NOPC)**

1. The CMR shall not be entitled to payment of any additional compensation for any cause, including any disagreement, protest, or change, any act or failure to act by Southwest, or the happening of any event, thing, or occurrence, unless the CMR has given Southwest advance written Notice of Potential Claim ("NOPC") as hereinafter specified. The NOPC shall set forth the reasons for which the CMR believes additional compensation and/or time will or may be due; the nature of the costs and/or time involved, insofar as possible; the amount of the potential claim; a request for equitable adjustment; and written and verifiable documentation and support for all of the above.

2. The CMR shall promptly provide written notification to Southwest upon discovery of concealed or unknown conditions or any disagreement, protest, situation, event, or occurrence that may result in a Claim. This NOPC shall be submitted no more than fourteen (14) Calendar Days after the occurrence of any event is discovered or reasonably should have been discovered that may be the basis for a Claim for additional compensation or time. Failure for CMR to submit an NOPC within the required time will result in CMR's waiver of such Claim.

3. If adjustments in cost or time cannot be reasonably determined at the time the NOPC is provided, the CMR shall amend its NOPC to include cost and/or time within seven (7) Calendar Days of identifying said cost and/or time, but not later than thirty (30) Calendar Days after work has ceased on the event that caused the potential Claim; failure to do so waives the Claim. For potential Claim events that extend more than thirty (30) Calendar Days, the CMR shall provide a monthly accounting of ongoing costs and/or time it believes it is due no later than the fifth (5th) day of the succeeding month; failure to do so waives the Claim.

B. **Duty to Mitigate Damages**

1. The CMR is required to take all reasonable and practical efforts to mitigate the damaging effects of any potential current or future claim it perceives as a result of any act or failure to act on the part of Southwest, or as a result of any event, thing, or occurrence. A written NOPC by the CMR shall not excuse the CMR from pursuing the mitigation of any claim in good faith and with due diligence. Where possible, or if directed by Southwest, the

CMR must be prepared to discuss various methods of mitigation with Southwest prior to actual mitigation.

2. The obligation to minimize foreseeable damages requires that the CMR use reasonable care and diligence to prevent an unwarranted incurrence of damages from a delay caused by the other party or an unforeseen event. In evaluating a delay, if the delay could have been avoided by due care of the CMR, the CMR is responsible for the additional costs attributed to the failure to mitigate.

14.4 SUBMISSION OF CLAIMS AND DISPUTES

A. All Claims shall first be submitted to Southwest for resolution.

B. Evaluation of the CMR's Claim will be based on Southwest's records and the Claim documentation submitted by CMR. CMR shall submit three (3) certified copies of all Claim documentation. All Claim documentation shall be complete when submitted, except as specifically described in Sections 14.3(A)(2)–(3) herein.

1. Claim documentation shall conform to generally accepted auditing standards and shall be in the following format:

a. Introduction and Background

b. Issues

i. Index of Issues.

ii. For each issue:

a. Background

b. Chronology

c. CMR's position (reason for Southwest's potential liability)

d. Supporting documentation of merit

e. Supporting documentation of damages

iii. Critical path method schedules, as-planned versus as-built, and delay analysis.

iv. Productivity and damages exhibits.

v. Summary of issues and damages.

2. Supporting documentation of merit for each issue shall be cited by reference, photocopied, or explained. [redacted]

3. Supporting documentation of damages for each issue shall be cited, photocopied, or explained. [redacted]

4. [redacted]

5. Each copy of Claim documentation shall include the following certification, signed in the same manner as the Agreement was signed:

"I, _____, being the (must be an officer) of (CMR), declare under penalty of perjury under the laws of the State of Colorado, and do personally certify and attest that: I have thoroughly reviewed the attached claim for additional compensation and/or extension of time, and know its contents, and said Claim is made in good faith; the supporting data is truthful and accurate; that the amount requested accurately reflects the Agreement adjustment for which the CMR believes Southwest is liable; and further know and understand that submission or certification of a false claim may lead to fines, imprisonment, and/or other severe legal consequences.

Signed: _____ *Dated:* _____

C. **Litigation of Disputes**. In the event that a Claim or Dispute is not resolved to the satisfaction of both Southwest and CMR, the dispute shall be resolved by litigation unless Southwest, in its sole and absolute discretion, elects to resolve the Claim or Dispute by binding arbitration. Such election shall be made to CMR by written notice within thirty (30) Calendar Days after the dispute has reached an impasse. CMR acknowledges that adequate consideration has given to allow Southwest to select arbitration in its sole and absolute discretion.

1. CMR agrees, consents, and submits to the personal jurisdiction of any Dispute or Claim in any competent court in Denver County, Colorado.

2. **FEES**. Except as otherwise provided in the Agreement, if any action at law or in equity, including an Arbitration, is necessary to enforce the Agreement or interpret the terms of the Contract Documents, the parties shall be allowed recovery of any and all reasonable attorneys' fees, expert witness fees, costs, and other reasonable expenses incurred in such proceeding as provided under Colorado law.

14.5 ASSIGNMENT OF CLAIMS. The CMR shall not assign this Agreement or any portion of its Claims or the moneys allegedly due the CMR thereunder without written approval by Southwest. No person other than the party signing the Agreement has any Claim under the Agreement, except as provided in the Agreement.

ARTICLE 15. MISCELLANEOUS PROVISIONS

15.1 GOVERNING LAW. The Agreement, all Exhibits, and these General Conditions shall be governed by the laws of the State of Colorado. CMR agrees, consents, and submits to the jurisdiction of any competent court in Denver County, Colorado for any action, Claim or Dispute arising out of the Agreement or the Project. CMR agrees that service of process at the address and in the manner specified in the Agreement will be sufficient to put CMR on notice of the matter.

15.2 COMMENCEMENT OF STATUTORY LIMITATION PERIOD. As between Southwest and CMR, any applicable statutory limitation periods shall be governed by the laws of the State of Colorado.

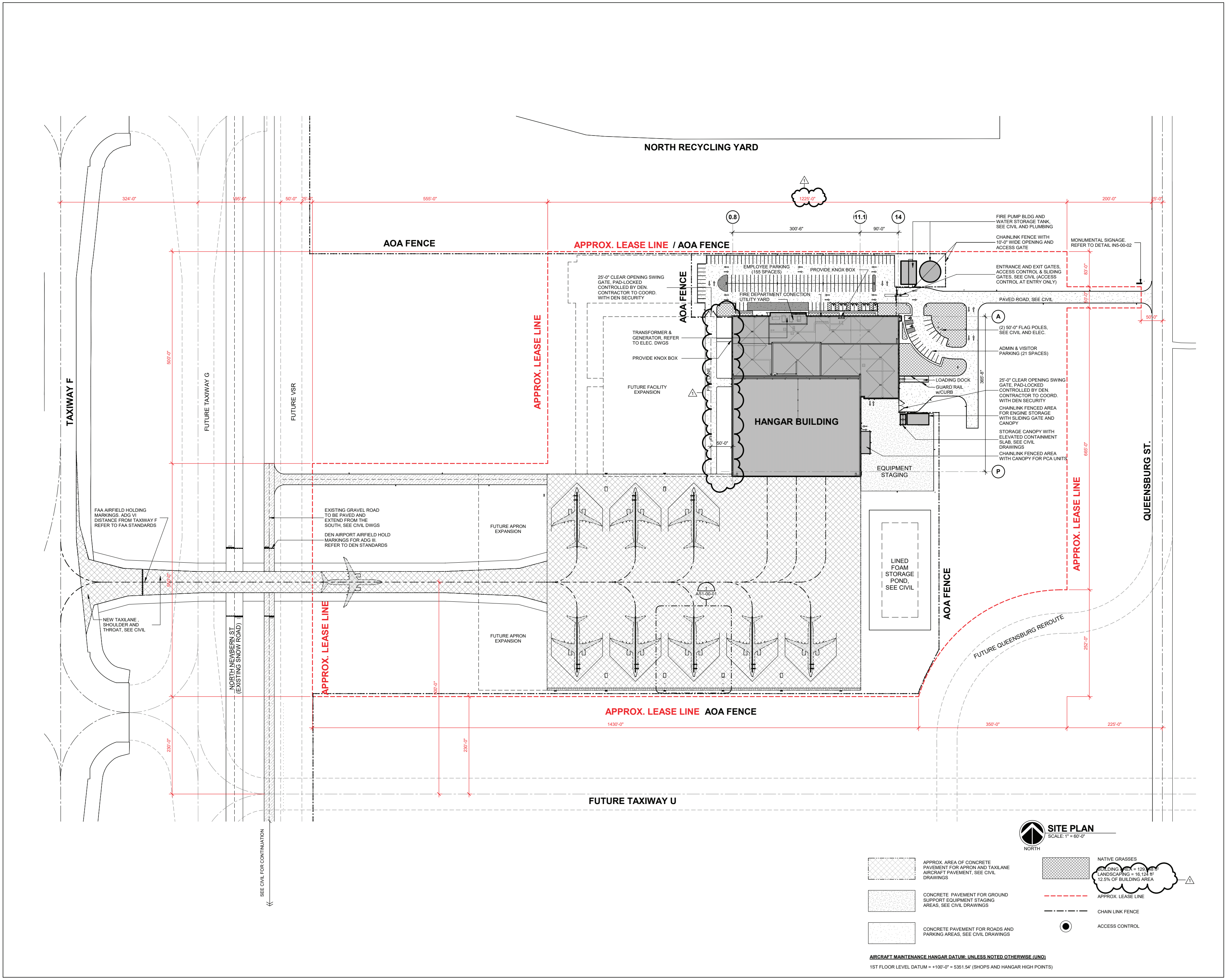
15.3 15.3 DISMISSAL OF UNSATISFACTORY EMPLOYEES. If any person employed by the CMR or any Subcontractor shall fail or refuse to carry out the directions of Southwest or the provisions of the Agreement, or is, in the opinion of Southwest, (a) incompetent, unfaithful, intemperate, or disorderly; (b) uses threatening or abusive language to any person on or associated with the Work; (c) acting or working in a manner that compromises the safety of the Work or persons or property involved with the Work; or (d) otherwise unsatisfactory, the CMR shall, when requested by Southwest, remove the worker from the Project immediately and shall not again employ the removed worker on the Project except with the written consent of Southwest.

15.4 15.4 CMR SHALL NOT MORTGAGE EQUIPMENT. The CMR shall not mortgage or otherwise convey the title of the plant, machinery, tools, appliances, supplies, or materials that may at any time be in use, or further required or useful, in the prosecution of the Work, without prior written consent of Southwest.

15.5 15.5 PROPERTY RIGHTS IN MATERIALS. Nothing in the Agreement shall be construed as vesting in the CMR any right of property in the materials used after they have been installed, attached, or affixed to the Work, and which have been paid for by Southwest. All such materials shall be the property of Southwest. To the extent that materials have only been partially paid for by Southwest, such materials shall be the property of the CMR and Southwest jointly as their interests may appear, and shall not be removed from the Work by the CMR without Southwest's consent.

[End of CMR General Conditions]

First Amendment to Ground Lease Agreement
Exhibit B – IFC Plans (In Reduced Size)



DENVER INTERNATIONAL AIRPORT
DEN

DEN Tenant Project No: swa_1901.SWA.RON.Hangar

Southwest

SOUTHWEST AIRLINES
26405 E 107th AVE
DENVER, CO

MAINTENANCE HANGAR

GHAFARI

GHAFARI ASSOCIATES
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www.ghafari.com

DESIGN CONSULTANTS:

FIRE PROTECTION — WJE Wiss, Janney, Elstner Associates, Inc.
CIVIL — HCL
IT/SECURITY — 4b technology
STRUCTURAL — HENDERSON ROGERS structural engineers

REGISTRATION SEAL

COLORADO LICENSED ARCHITECT JOHN PAUL NIMRY 405726
05/17/19

REVISION #	DATE	DOCUMENT RELEASE #
1	05/17/19	DOC REL 09 - IFC

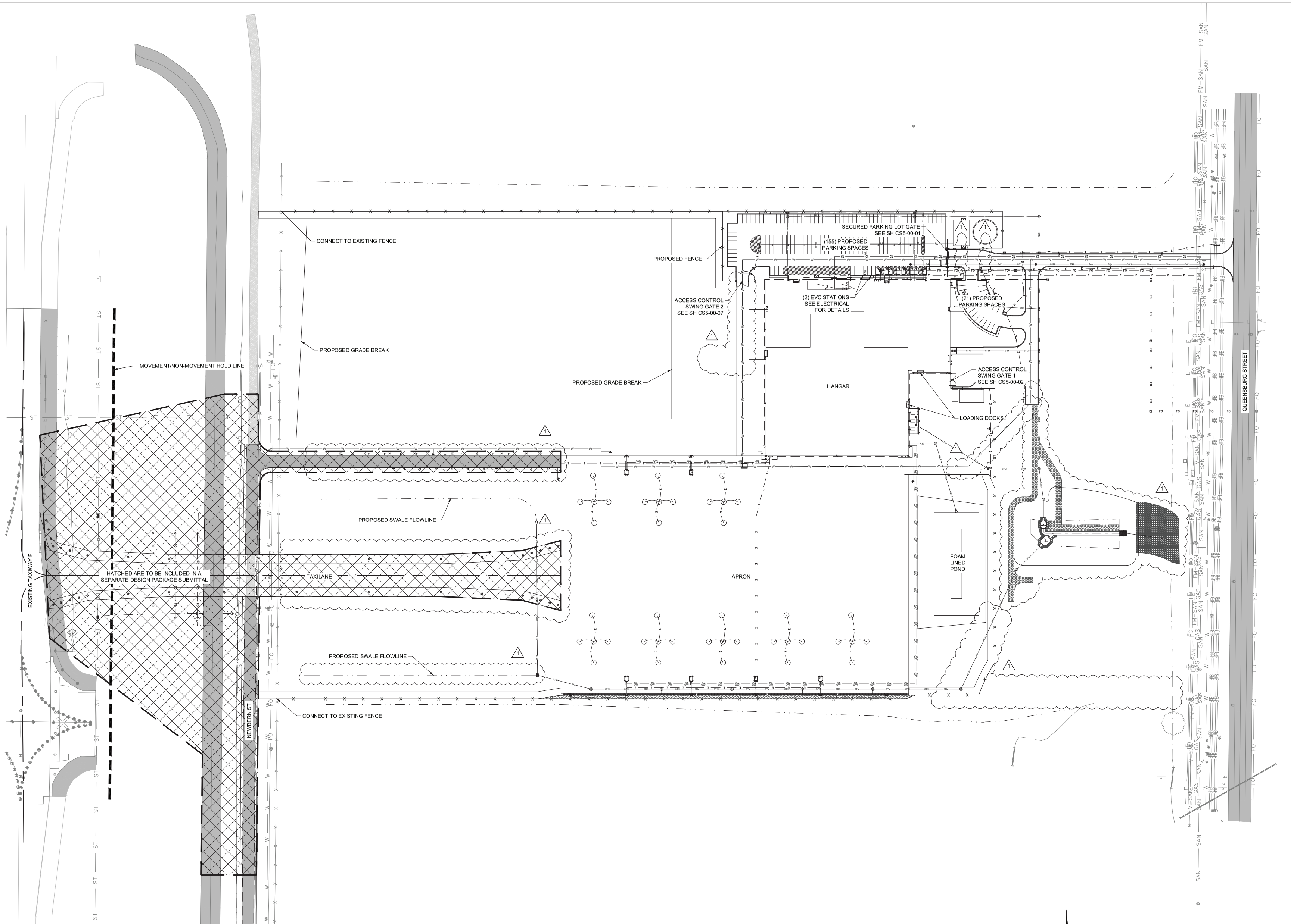
DATE	DOCUMENT RELEASE #
05/17/19	DOC REL 09 - IFC
03/13/19	DOC REL 06 - PERMIT REV.
01/11/19	DOC REL 04 - PERMIT
11/09/18	DOC REL 03 - DESIGN DEVELOPMENT
09/14/18	DOC REL 02 - SCHEMATIC DESIGN

PROJECT #	187172
PROJECT MANAGER	J. JOBES
DESIGNED BY	J. NIMRY
DRAWN BY	C. MARUBAYASHI
QUALCHECK	D. TICHY

SHEET TITLE

ARCHITECTURAL SITE PLAN

SHEET NUMBER AS1-00-00



DENVER INTERNATIONAL AIRPORT
DEN

DEN Tenant Project No: swa_1901.SWA.RON.Hangar

Southwest

SOUTHWEST AIRLINES
26405 E 107th AVE
DENVER, CO

MAINTENANCE HANGAR

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STRUCTURAL — HENDERSON ROGERS structural engineers

REGISTRATION SEAL

COLORADO LICENSED 31293 PROFESSIONAL ENGINEER

05/17/2019

REVISION #	DATE	DOCUMENT RELEASE #
1	05/17/19	DOC REL 09 - IFC

DATE	DOCUMENT RELEASE #
05/17/19	DOC REL 09 - IFC
03/22/19	DOC REL 07 - PERMIT REV
01/11/19	DOC REL 04 - PERMIT
11/09/18	DOC REL 03 - DESIGN DEVELOPMENT

PROJECT #	187172
PROJECT MANAGER	J. DANKENBRING
DESIGNED BY	A. RENNER
DRAWN BY	C. KELLER
QUALCHECK	J. DANKENBRING

SHEET TITLE

OVERALL SITE LAYOUT PLAN

SHEET NUMBER **CO1-00-01**

Southwest®

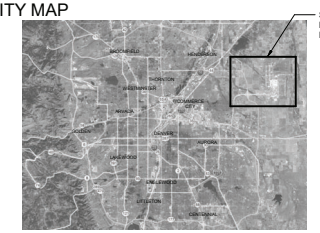
GHAFARI

DENVER INTERNATIONAL AIRPORT

PROJECT NAME AND ADDRESS

SOUTHWEST AIRLINES MAINTENANCE HANGAR
Denver International Airport (DEN), Denver, CO

VICINITY MAP



PROJECT IMAGE

ARCHITECT

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COLORADO LICENSED JOHN PAUL NIMRY 405726 ARCHITECT
05/17/19

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COLORADO LICENSED DON GOOSMAN 54663 PROFESSIONAL ENGINEER
05/17/2019

CONTACT:
DON GOOSMAN

EMAIL:
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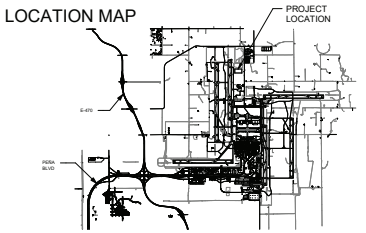
LOCATION MAP



DEN Tenant Project No: swa_1901.SWA.RON.Hangar

PROJECT TEAM

IT/SECURITY

FIRE PROTECTION

LANDSCAPE

STRUCTURAL

CIVIL

PROJECT INFORMATION

PROJECT NUMBER: 187172
DOCUMENT RELEASE: 09 IFC

APPROVED BY:

CODE INFORMATION:

APPLICABLE CODES: IBC 2015
ADAAG, ICC A117.1-2009
IMC, IPC, IFC, IECC 2015
NEC 2017
NFPA 409-2016, 410-2015
2016 DENVER AMENDMENTS

PRINCIPAL OCCUPANCY: S-1 MOD. HAZARD STORAGE
OCCUPANCY SEPARATION: 1 HOUR
CONSTRUCTION TYPE: IIB

FIRE RESISTIVE REQUIREMENTS AND ASSEMBLIES:
SEE DRAWING GI0-00-02

BUILDING AREA SUMMARY:
SEE DRAWING GI0-00-02

OCCUPANT LOAD:
SEE DRAWING GI0-00-02

PERMIT NUMBER	XXXXXX
DRAWING NAME	**COVER SHEET**
DRAWING NUMBER	**GI0-00-00**
ISSUE DATE	**05/17/2019**

First Amendment to Ground Lease Agreement
Exhibit C – Airline QA/QC Plan

Swinerton Builders
6890 West 52nd Avenue 100
Arvada CO 80002

SWINERTON

TRANSMITTAL

No. 00001

PROJECT: DEN Southwest RON Hangar

DATE: 04/03/2019

TO: GHAFARI ASSOCIATES
122 SOUTH MICHIGAN AVE. SUITE
1500
CHUCAGO IL

RE: 014520-Contractor Quality Control Program

ATTN: John Nimry

JOB: 19035010

WE ARE SENDING:	SUBMITTED FOR:	ACTION TAKEN:
☐ Shop Drawings	☐ Approval	☐ Approved as Submitted
☐ Letter	☐ Your Use	☐ Approved as Noted
☐ Prints	☐ As Requested	☐ Returned After Loan
☐ Change Order	☐ Review and Comment	☐ Resubmit
☐ Plans		☐ Submit
☐ Samples	**SENT VIA:**	☐ Returned
☐ Specifications	☐ Attached ☐ Separate Cover	☐ Returned for Corrections
☐ Other:		☐ Due Date:
☐ Submittal:		☐ Other:

Line	*Item*	*Package*	*Code*	*Rev.*	*Qty*	*Date*	*Description*	*Status*
1	Submittal	014520	014520-001	1		04/03/2019	Contractor Quality Control Program - Quality Control Plan	Submitted

REMARKS:

CC:

Submittal Stamp
Swinerton Builders
Submittal # 014520-001

Reviewed only as to the general design and requirements of the contract documents. Subcontractor to verify dimensions, quantities, and field conditions for proper and complete installation of this work. Approval shall not relieve subcontractor or supplier from responsibility for errors or deviations from the contract documents

Jessa Brinker
04/03/2019 9:54:31 AM

By | Date

Signed:

Jessa Brinker

STANDARD SUBMITTAL FORM
Attachment to Specification Section 013300

GHAFARI

1. To: John Nimry Ghafari Associates, L.L.C. 122 S Michigan Ave. Chicago, IL 60603 **Attn:** Submittals Processing **Phone:** 312-984-2300 **Fax:** 321-984-8248 jjobes@ghafari.com **Email:** jnimry@ghafari.com	**2. From:** **Attn:** **Phone:** **Fax:** **Email:**	**3. Date Submitted:** **4. Submittal No.** **6. Specification Section No.** **7. Ghafari Project No.**187172 **8. Project Title:** Southwest Airlines DEN Maintenance Hangar	**5.** ☐ **New** ☐ **Resubmittal**

9. Copies	10. Item Description	11. Mfr/Contractor	12. Contractor's Remarks:

The undersigned certifies that the above-submitted items have been reviewed in detail and are correct and in strict conformance with all requirements of the contract documents, except as otherwise noted. Note: Approval of items submitted does not relieve contractor from complying with all requirements of the contract documents.

13. Name of Contractor **Signature**

GHAFARI ASSOCIATES L.L.C - SUBMITTAL VERIFICATION SECTION

If a discipline necessary for proper review is not listed, add to the distribution list and forward the submittal for review.

Comments:

ACTION TAKEN	
☐	REVIEWED
☐	REVIEWED WITH COMMENTS
☐	REVISE & RESUBMIT
☐	FILE ONLY, NOT REVIEWED
☐	NOT REQUESTED, NOT REVIEWED

DISTRIBUTION			
☐	Architectural	☐	Interior
☐	Civil	☐	Landscape
☐	Structural	☐	Tel/Data
☐	Mechanical	☐	Industrial
☐	Electrical	☐	

Reviewed by & Date:

REVIEW IS FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND CONTRACT DOCUMENTS. THIS OFFICE ASSUMES NO RESPONSIBILITY FOR THE ACCURACY AND COMPLETENESS OF THE SUBMITTAL. THIS REVIEW DOES NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR ANY DEVIATION FROM THE CONTRACT DOCUMENTS. IF THIS SUBMITTAL DOES NOT CONFORM TO THE GHAFARI CONSTRUCTION DOCUMENTS, SUBMIT A WRITTEN EXPLANATION OF THE VARIANCE.

SWINERTON

SITE SPECIFIC

QUALITY MANAGEMENT PLAN

(SSQMP)

Job Name:	**Southwest Airlines Maintenance Hangar**
Swinerton Job No:	**19035010**
Location:	**26405 Queensburg St, Denver CO**
Date:	**3/29/2019**
Revision:	**Rev 1**

Site Specific Quality Management Program

1. Introduction

The quality of work performed on Southwest Airlines Maintenance Hangar will be ensured by Swinerton Builders comprehensive approach to quality control which begins in the Design Development Phase and continues throughout the construction and post-construction phases. This approach will guarantee that the end product provided is of the highest quality which Swinerton Builders is known for delivering to the clients throughout our illustrious 131-year history. In order for this to happen, we must successfully develop and execute of a Site Specific Quality Management Plan (SSQMP). The SSQMP relies on management tools such as:

- A Budget that anticipates the costs needed to develop and implement the SSQMP
- A Schedule that includes the necessary activities, durations and sequences to facilitate the construction of a quality project
- A Staffing Plan that provides personnel with the expertise that matches the tasks at hand. This approach allows the team of expert's time to review and correct complete submittal packages and shop drawings for errors, omissions, and constructability issues prior to submitting the packages to the Trustees.
- A Document Control process that insures Project Team Members are always working with the most recent and complete version of the Contract Documents and any approved modifications
    - An RFI Log, with access to all related documentation
    - A Submittal Log, with access to all related documentation
    - A Deficiency Log for immediate notification and corrective action
    - Up-to-date As-Built documentation

Proactively addressing potential quality issues will assure minimal or no punch list; in fact, it is Swinerton's aim to achieve a punch list with zero reported items when the completed work is reviewed.

2. Purpose

The purpose of the SSQMP is to provide a tool that assists the Project Management Team in its goal of delivering a project that meets or exceeds the quality standards required by the Contract Documents. It is important that this is done in an orderly and timely manner that ensures customer satisfaction, not only with the finished product, but also with the timeliness and efficiency with which it is delivered. This goal can be achieved by identifying the necessary quality management tasks, assigning responsibility for each Definable Feature of Work to the appropriate personnel and managing their successful execution. Swinerton Builders will implement and maintain a Quality Control process that starts from project inception and continues through the completed project. To ensure the customers' expectations are exceeded, the entire Swinerton team will be required to participate in Quality Control process to support the Quality Control Plan throughout the duration of the project.

3. Roles & Responsibilities

3.1 Quality Management Team

The Quality Management Team should include a designated representative from each stakeholder in the project including the Owner, Consultants, Swinerton and Subcontractors. The goal is to identify these key personnel early in the project to support professional working relationships and to establish quality expectations and commitments throughout the duration of the project**.**

3.2 Swinerton Personnel

Each project will assign quality management duties to suit the size and complexity of the project and assigned staff. The SSQMP provides a vehicle to identify staff responsibilities. The following is a suggested general assignment of quality management responsibilities for a typical project:

3.2.1 Operations Manager John Spight

- The Operations Manager (OM) is in charge of all Field/Office activities that take place on a specific project
- Fully responsible for the quality product that is being delivered to the client
- In regards to Quality Management, the Operations Manager will ensure that the Quality Management Program is successfully designed for this specific project and that all roles and responsibilities are clearly defined
- Will ensure that the Quality Control Process is being implemented and enforced from project inception through final construction

3.2.2 Division Quality Manager Eric Coffy

The QCM is responsible for oversight of Quality Assurance on all projects. QCM is not assigned to any one project, but rather has capacity to adapt to project requirements to provide consultation and review as needed. The QCM's Quality Management tasks include, but are not limited to:

- Review and comment on Preconstruction Phase QC effort including Existing Condition Survey
- Assist the Project Management Team with the development and execution of the SSQMP
- Ensure that all internal Swinerton Builders processes are being implemented and documented throughout the project.
- Review Subcontractor QC plan per Attachment Q and verify compliance with the SSQMP
- Review and comment on documentation of quality control procedures
- Review and comment on selection and coordination of Third-party Peer consultants
- Attend and mentor during Pre-Installation Meetings with Subcontractors
- Observe and comment on regular and special inspections
- Acts as a liaison with the Owner, Regulatory Agency, subcontractors, and internal staff, in regards to Quality matters

3.2.3 Project Executive Shawna Tucci

- The Project Executive (PX) is responsible to Lead and supervise the entire project staff and to ensure that project is staffed properly.
- Ensure that all project planning, inspections and tests are being provided as required
- Provides an additional layer of oversight to ensure compliance with the staff's job description and ensuring excellence and integrity are maintained through project completion

3.2.4 Project Manager Scott Hill

The Project Manager (PM) is charged with the overall responsibility for the successful completion of the project. The PM's responsibilities include, but are not limited to:

- Assisting in the preparation of the SSQMP with assistance of the other members of the Project Management Team
- Initiating Pre-Installation Meetings with Subcontractors
- Monitoring and reporting project progress, including monthly Quality Management metrics
- Interfacing with Owner and resolving Quality disputes and complaints
- Initiating actions to mitigate quality concerns

- Obtaining the assistance of the Corporate Quality Manager in the determination of risk mitigation measures for any building elements subject to potential water intrusion
- Contract and manage Swinerton's third-party consultants
- Establishing internal collaboration review processes for all SSQMP documents being sent externally
- Oversees Quality documentation procedures
- Assigning specific responsibilities to the staff and subcontractors. Ensuring that the quality commitments in the subcontract agreements are established and maintained
- Coordinating preconstruction/design development reviews
- Initiating envelope review with and direct Swinerton's third-party consultants and/ or in-house team

3.2.5 Superintendent Chris Osheroff

The Superintendent (Supt) coordinates Contractor and Subcontractor activities on the site. The Supt's responsibilities include, but are not limited to:

- Participating in the development of the SSQMP
- Participating in Pre-Installation Meetings with Subcontractors
- Providing or directing a side by side review of material deliveries with subcontractors at the time of delivery. Products that do not match the approved submittals will not be allowed on the project.
- Supervising field personnel for compliance with contract scope and quality
- Enforcing implementation of SSQMP and quality control measures
- Coordinate site inspection and testing activities for Swinerton's and the Owner's third-party consultants and special inspectors.

3.2.6 Project Engineer Jessa Brinker

The Project Engineer (PE) is responsible for documentation and information flow. The PE's responsibilities include, but are not limited to:

- Participating in the development of the SSQMP
- Obtaining, reviewing, and submitting product submittals for each of their specific trades to which assigned to
- Maintaining and distributing the most current contract documents and approved modifications
- Managing SSQMP related documents such as inspection reports, photographs, deficiency notices, etc.
- Document quality-related activities such as Pre-Installation Meetings, First Work Quality Control Inspections, Follow-up Quality Control, Material Delivery Verification, Testing and Inspections, Submittals, Pre-Punch and Punch List Management, Project Commissioning and Closeout, and Progress Photos
- Monitoring subcontractor verification that materials delivered to the site are in accordance with the contract documents and approved submittals

3.2.7 Project Quality Representative Jessa Brinker

The Project Quality Representative (PQR) will be a position from the project staff to ensure each step in the SSQMP are being implemented, adhered to, and documented. In all cases of deficient work, the PQM/PQR has the authority to stop work and to ensure corrective measures are performed prior to proceeding. The SQM's responsibilities include, but are not limited to:

- Assisting the Project Management Team with the development and execution of the SSQMP
- Establishing and documenting quality control procedures
- Initiating the Pre-Installation Meetings with Subcontractors and Project team members
- Coordinating Subcontractor communication
- Monitoring subcontractor and assisting the Site Superintendent in verifying that materials delivered to the site are in accordance with the contract documents and approved submittals.
- Performing and documenting daily inspections of the Project
- Monitoring Subcontractor compliance with the SSQMP

4. Preconstruction/ Design Phase

The steps taken in the preconstruction/ design phase of a project are critical in ensuring that the quality goals for the project are realized. It should be noted that Swinerton's preconstruction/design activities are executed in the role as a General Contractor, not as a licensed design professional, and are not intended to create a greater role than that of a General Contractor.

4.1 Constructability Review of Plans and Specifications

Before beginning construction, and during the development of plans and specifications, Swinerton and selected Subcontractors will perform constructability reviews. These reviews will seek out conflicts within the plans, and between the plans and specifications. Swinerton Builders will utilize Virtual Design & Construction (VD&C) modeling techniques along with a series of comprehensive trade specific checklists which will assist in the identifying potential design conflicts.

Examples of the types of issues to be reviewed prior to the start of work includes:

- Dimensional conflicts and clash detection between Civil, Architectural and Structural drawings
- Dimensional conflicts between plan and elevation details
- Comparison of planned vs. actual equipment dimensions
- Incomplete waterproofing or building envelope details
- Spatial conflicts between reflected ceilings and above-ceiling work, such as fire protection and light fixtures
- Spatial conflicts between concrete reinforcing steel and electrical conduit or other embedded items
- Missing or incomplete details
- Verify CAD files and VD&C information with contract documents
- Verification and coordination of plans with FF&E with focus on Owner furnished/contractor installed (OFCI) items

4.2 Third-Party Design Peer Review

When appropriate, design peer reviews will be conducted to address special concerns, particularly those related to the performance of building envelope elements such as:

- Roofing
- Window and curtain wall systems
- Exterior plaster, precast, metal panels or other skin systems
- Sealants
- Waterproofing (Subgrade and above)
- Flashing
- Unique or unusual features of work

The peer review firm will be selected from a list of pre-qualified Building Envelope Design Peer Review Firms and will address issues such as adequacy of design details and compatibility of materials and systems. The peer review consultant will collaborate with the design team and will have constant interface with the team throughout the construction process. Any peer review consultant should not be interpreted as an assumption of design responsibility by Swinerton. Design responsibility remains with the Architects and Engineers of record.

4.3 Preconstruction Documentation of Existing Conditions

The team will take photographs before mobilization to document the conditions prior to the start of construction. The following is a list of subjects to consider:

- Sidewalks, curbs and paving
- Trees and vegetation
- Drainage structures
- Existing site utilities, such as power, light, data, cable, telephone, water, and sewer
- Signage
- Adjacent buildings and structures

Baseline sampling as requited for air, water, soil, paints, etc. should also be performed to document existing conditions before the start of construction and provided to the team for review. If site information is inadequate or incomplete, preliminary investigation including exploratory excavation or other field investigation or testing may be desirable.

4.4 Identification of Third-Party Inspection and Testing Requirements

Certain inspection and testing requirements, requiring the services of an independent, certified, third-party, are typically required by the permitting authority having jurisdiction over the project, for items such as:

- Soils (Trench excavation and compaction)
- Concrete
- Reinforcing Steel
- Structural Steel
- Fireproofing

Additional inspection and testing requirements should be defined in the contract documents. These tests or inspections are typically performed by specialized consultants, who may have also been engaged to perform related design peer reviews, for items such as:

- Off-site performance mock-up testing for curtain wall or other specialized building envelope systems
- Installation inspection of the building envelope construction
- Substrate adhesion testing for waterproofing and sealants (often by sealant manufacturer at no additional cost)
- Water testing of the building envelope, including waterproofing membranes, air barriers, vapor barriers and roof membranes
- Installation inspection of roofing, waterproofing and vapor barriers
- Installation inspection and/or testing of sound and vibration attenuation work

During the preconstruction phase of the project, Swinerton will work with the design team to determine which building components and systems will be the subject of third-party inspection and testing, and will submit a recommended program to the Owner. If approved by the Owner, the appropriate inspection and testing firms will be incorporated into the project team.

4.5 Budget Development

It is important that the initial budget includes line items that identify, and estimated costs associated with, the various elements of the SSQMP. This includes the necessary Swinerton personnel, price of materials to be used on the project, consulting services, testing and inspection services, travel for off-site inspections, mock-ups, etc. By addressing this in preconstruction and having input from design professionals it allows Swinerton to lock in prices and processes with the subcontracting partners. This function is essential for Swinerton Builders as it allows us to include all conditions in the subcontracts and to minimize/eliminate unforeseen conditions and scope gaps. Allowances in the budget may be appropriate if the design information is too preliminary to be more definitive.

4.6 Schedule Development

As with the initial budget, it is important that the initial schedule demonstrates our consideration of the activities and sequences that are critical to the SSQMP, such as mock-ups, weatherization, inspections. As appropriate Pre-installation meetings and First Work inspections should be coordinated with the work activities on the CPM schedule. The Preconstruction Quality Management Checklist has a more complete list to consider.

4.7 Subcontractor Selection

It is important that the bidders list be comprised of subcontractors who have the appropriate experience and financial capacity to successfully perform the required work. The existing prequalification program employed by Swinerton Builders is an important part of this process. The Owner and Consultants should be invited to participate in this process, if a list of potential bidders is being developed.

5. Construction Phase

The development and execution of the SSQMP that began during the preconstruction phase continues through the construction process. The Construction Quality Management Checklist provides additional considerations for the continued development and execution of the SSQMP. Record keeping is extremely important throughout the construction process. Documentation generated by the SSQMP activities is readily accessible to the Quality Management Team using Autodesk's BIM 360 Field or on the virtual project drive.

5.1 Subcontracting

Swinerton's development and implementation of the SSQMP, including any inspections, reviews or other measures it takes in connection with it, does not in any way limit or absolve subcontractors of their responsibilities for performance under the terms of the Subcontract Agreement. Subcontract Attachment "Q", Quality Management Requirements, will be tailored to describe specific project requirements for each Subcontractor, such as:

- Provide a designated Quality Management representative who has authority to act on quality related matters

- Maintain a copy of the most recent set of approved submittals, on site, for use by Subcontractor's personnel
- Maintain updated, accurate as-built documentation on a weekly basis
- Participate in Pre-Installation Meetings to plan the work before commencing construction
- Provide verification that materials delivered to the jobsite conform to the approved submittals and the contract documents
- Provide additional mock-ups and/or performance testing as required to establish quality standards
- Participate in First Work Quality Control Inspections
- Provide digital photographic documentation of concealed work
- Participate in on-going quality control inspections during the course of construction, including correction of any noticed deficiencies within ten (10) working days, as well as updates to individual issues identified in Autodesk's BIM 360 Field
- Correct any noticed deficiency during the final inspection and correction (Punch List) phase within ten (10) working days, including updates of individual issues identified in Autodesks' BIM 360 Field

5.2 Submittals

At the start of the project, Swinerton will prepare an Anticipated Submittal Log that includes all submittals that will be required for the project, from its inception all the way through the closeout phase. The information in this Anticipated Submittal Log is an important component in the initial stages of the development of the SSQMP. Assignment of the appropriate Swinerton team members who will review each of the required submittals and identification of off-site fabrications that will require periodic Swinerton inspections are just two of the steps that will follow in the development of the SSQMP. The submittal process will be implemented as the following steps recommend:

a. The Project Engineer for each scope of work will review all submittals for their approval. After their approval it will go to the PQR for final approval.

b. The approved register will become part of the contract documents and the Contractor will be subject to requirements therein. The contractor shall initially input, revise and or update the register as required within the Swinerton database. Changes or modifications to the contract documents that require changes to the submittal register will be submitted for review and approval.

c. Submittals and current construction progress will be thoroughly coordinated. The scheduled submittal dates shall be realistic, and shall provide sufficient lead time for the respective construction activity (as indicated on the approved progress schedule). Failure to comply with these requirements will be cause for rejection of the Submittal Register.

d. The Contractor shall submit all items listed on the contract drawings and listed or specified in the specifications. The client or the Architect/Engineer of Record (AEOR) may request submittals in addition to those listed when deemed necessary to adequately describe the work covered in the respective sections. Units of weight and measurements used on all submittals shall be the same used in the contract drawings. Reproducible drawings if the contract documents shall not be used for submittal drawings.

e. Each submittal shall be complete and in sufficient detail for ready determination of compliance with the contract requirements. Prior to submittal, all items shall be checked and approved by the Contractors Project Quality Representative who shall certify by signature on the Cover Sheet that he has reviewed the submittal in detail and that it is correct and in strict conformance with the contract drawings and specifications except as may be otherwise explicitly stated.

f. The PQR will review the comments returned from AEOR and will take the following course of action:
    A. Return the submittal to the subcontractor for correction.
    B. Forward and RFI to the Owner if there are design/construction questions that require additional information to complete the review of the submittal

5.2.1 Resubmittals

If a submittal is returned for correction or is not satisfactory and is disapproved by the Owner, Owners Representative, or the AEOR, the following actions will be taken:

a. The disapproved submittal will be returned to the subcontractor for resubmission.
b. Once edited by the sub-contractor, the submittal will be sent to Swinerton Builders for review.
c. The material will be reviewed by the PE and PQM/PQR for thoroughness.
d. If acceptable it will be resubmitted to the AEOR or owner and input into the submittal log with the appropriate tracking ID number.

Swinerton shall resubmit the corrected material in the same quantity (including samples as required) specified for the original submittal after receipt of the disapproved material. These re-submittals will be returned within 3 days after receiving notice of the disapproval.

5.2.2 Mock Ups and Samples

Mock-ups are a very critical component in making sure conflicts are addressed very early on the project and before the installation in place starts. Some of Swinerton best practices are:

a. We will review that all the material, product date used meets the specs and the approved shop drawings to ensure we have a contractual document to start with.
b. Mock-ups will be reviewed and approved by the Owner, architect, contractor and the subcontractor in order to get full buy-in from all parties involved.
c. Repeat any required mock-ups until they are approved to avoid any later miscommunication and have an approved sample to use as a guideline.
d. In addition to those that are specifically required by the contract documents, Swinerton will include in the SSQMP, additional samples and mock-ups that may be required to help establish the quality standards for the project.
e. Mock-ups may be built off site, or on site, as dictated by logistical and schedule considerations. They may include in-place rooms, or assemblies, that are built earlier than the normal construction sequence. They may also be the First Work put in place under the normal construction sequence, if the work is not particularly complex.
f. All samples and mock-ups should accurately represent the quality level that will be achieved by the on-site construction process, as opposed to a benchmark that can only be achieved in a controlled environment that will not be found under normal circumstances.
g. To the extent possible, they should be prepared by the craft people who will be performing the work on the project in like conditions and tested to all applicable standards for performance. These mock ups must be approved by the AEOR's and Ownership prior to proceeding with that specific scope of work.
h. Swinerton's Superintendent and the PQR manages this process.

5.3 Pre-Installation Meetings

Pre-Installation Meetings will be conducted by Swinerton with appropriate subcontractors before they commence work on site. These meetings will review each definable feature of subcontractors' work. Most subcontractors will have more than one definable feature of work. These meetings are important and deserve appropriate preparation and attention to detail. In addition to the subcontractors' representatives, the following parties should also be invited, as appropriate:

- Owner's Representative
- Design Professional(s)
- Peer Review Professional(s)
- Manufacturer's Representative
- Third-Party or Special Inspectors
- Other Subcontractors who have affected work

The goal of these meetings is to focus QC efforts on preventing deficiencies rather than detecting deficiencies. Swinerton will schedule these meetings with appropriate attendees and will document and publish meeting minutes.

5.4 First Work Quality Control

First Work Quality Control inspections will be accomplished immediately prior to or at commencement of the construction of the very first portion of a definable feature of work to ensure compliance with project requirements.

The First Work QC may be based on a representative amount of actual work completed in place, or a mock-up may be used to represent work that will be put into place. This inspection will be conducted by Swinerton and will include the following attendees, as appropriate:

- Owner's representative
- Design professionals
- Project Superintendent
- In-house and Third-Party QC personnel
- The craft supervisor (both Swinerton's and the Subcontractor's) responsible for the definable feature of work.

Swinerton will notify all attendees of the inspection at least 24 hours in advance. Swinerton will document and publish minutes of the First Work QC Inspections to all attendees. The following activities should be considered as part of the First Work Approval process for each definable feature of work:

- Review the minutes from the Pre-Installation Meeting
- Review the Trade Checklists for appropriate items
- Examine work area to assure all preliminary work has been accomplished
- Check dimensions
- Verify that all materials are in compliance with contract documents and approved submittals
- Check for use of defective or damaged materials
- Verify that manufacturer's installation instructions are being followed
- Check new work for compliance with contract documents
- Review, and verify approval of, QC test results
- Establish the acceptable level of workmanship
- Check for omissions and resolve any differences of interpretation
- Check safety compliance
- Check compliance with applicable codes

5.5 Follow-Up Quality Control

Subcontractors are responsible for continuous, follow-up quality control inspections to insure that their work complies with established requirements. In addition, periodic, follow-up inspections will be conducted by Swinerton, with the appropriate members of the Quality Management Team, as necessary, until completion of all work. These inspections will identify unsatisfactory work that will be recorded by the use of Autodesk's BIM 360 Field and promptly distributed to appropriate subcontractors. Unless otherwise directed or agreed, subcontractors must correct their work within five working days of notification and then notify Swinerton that the items are ready for re-inspection. Final follow-up checks will be conducted by Swinerton with the appropriate members of the Quality Management Team. Inspection personnel will continually refer to the standards established in the First Work QC approvals when making these inspections. The Trade Checklists also provide tips on items to be inspected.

Follow-up QC inspections will:

- Ensure work continues to conform to the contract documents
- Ensure the quality of workmanship is maintained
- Ensure required tests and inspections are being performed
- Ensure that deficient work is being corrected
- Ensure work is taking place safely

Additional First Work QC inspections may be conducted on the same definable feature of work if:

- The quality of ongoing work is unacceptable
- There are relevant personnel changes
- Work on a definable feature of work is resumed after substantial period of inactivity or other problems develop

5.5.1 Verification of Material and Equipment at time of Delivery

Each trade regardless of their scope of work will be required to inspect materials side by side with a member of the Swinerton team to ensure compliance with the contract documents. Material traceability is critical throughout the construction process and is of the upmost importance in delivering the highest quality project possible. It is our requirement that a subcontractors approved copy of the plans, specs and submittals will be at the initial delivery to ensure compliance. The subcontractors will have an identified QC rep on the project full time that will be responsible for the materials being placed, as well as the level of craftsmanship provided by their company. When the material verification is finalized, a copy of all shippers, trip tickets, or bill of lading will be provided to Swinerton Builders and will be filed accordingly so that they can be reviewed at any time. Any and all non-conforming items will be brought to the immediate attention of the PQR for immediate correction and logged in the Deficiency Log as required. Other points of emphasis during this internal inspection include:

- Damage during loading/shipping process
- Reasonable completeness of manufactured assemblies
- Storage of Material (clean and on pallets or donnage)

5.5.2 Digital Photography Documentation

Although not practical to photograph every inspected item, Swinerton's policy is to provide representative photographic documentation of each definable feature of work or phase of a project. By taking photographs on a frequent and regular basis and organizing them logically and labeling them accurately, a complete pictorial record can be assembled to document that specific construction assemblies comply with project requirements.

Particular attention should be given to important, concealed items that may not be the subject of third party, eye-witnessed inspections, such as acoustical treatments; or concealed items that are important elements of the integrity of the building envelope, such as exterior skin components, below grade waterproofing, etc.

5.5.3 *Deficiency Log Management*

Intended as in internal inspection system whereby all discrepancies in quality, workmanship, materials, equipment, supplies, and other deviations from the contract documents can be called to the attention of stake holders. Below are the steps we intend to employ along with how the log will be published and circulated:

a. Deficiencies will be recorded on the log as soon as they are observed. This includes all material, equipment, supplies, or workmanship that does not conform to the contract documents. Any and all sub-contractors will review the deficient items in the field once they are observed with the PQR and the Project Superintendent.
b. A deficiency will be classified as completed work or any work being installed incorrectly that cannot be repaired within the course of the workday it was observed.
c. The Deficiency Log will be reviewed by the Project Manager, Project Superintendent, and the PQR daily.
d. Once reviewed for thoroughness and completeness this log will be shared with the project team.
e. The Deficiency Log will be reviewed at weekly Foreman's meetings, all Quality Control Meetings, as well as being sent to the owner/owners rep and all members of the project team on a weekly basis via e-mail.
f. Once an item has been repaired to the satisfaction of Swinerton Builders and/or the owner. The item will be digitally photographed and removed from the log by the PQR only.

5.5.4 Mechanical, Electrical and Plumbing (MEP) Commissioning

Refer to the MEP Commissioning Manual that provides a comprehensive program for the quality management of this phase of the project.

5.5.5 Third-Party Inspections

Certain work may require inspection and/or testing by an independent firm, as identified during the Preconstruction Phase and discussed in section 4.4. This is often required by the governing authority that issues the building permit and typically includes work such as concrete, reinforcing steel, structural steel, fireproofing, etc. Final sign-offs from these firms are often required before occupancy permits will be issued.

If appropriate, an independent firm will also inspect the construction of the building envelope components identified in section 4.2. Some firms who conduct design peer reviews are also capable of providing construction inspection services for the same scope of work.

Permitting authorities will have their own building inspectors and inspection processes. Exceptions identified during these inspections, if they are outside the scope of the Contract Documents, must be reviewed with the Owner and Design Professionals for proper action and may result in contract modifications.

Public or private utility companies that provide water, gas and electric services may also have inspection requirements that must be integrated with the SSQMP. All third-party inspections, including those described above, must be scheduled to insure that they are performed in a timely manner. All inspection reports must be maintained in a readily accessible location which will be with the Project Superintendent. Deficiencies must be documented in Autodesk's BIM 360 Field Deficiency Log and distributed to appropriate parties to insure timely follow-up, correction and acceptance before the subject deficiency becomes inaccessible due to subsequent work.

5.5.6 Punch List Management

The term "Punch List" is commonly used during the final inspection and acceptance process with the Owner and Architect. By the time the Punch List process begins, the remaining, open items on the Deficiency Log and Work to Complete List should be few, if any. If so, this Log can then serve as the initial Punch List. If not, a Pre-Punch List process should be implemented to identify and correct as many deficiencies as possible before beginning the formal Punch List inspection process. Identification and completion of punch list items will be tracked and maintained through the use of Autodesk's BIM 360 Field.

The Punch List process requires buy-in from all participants so that it provides timely and efficient:

- Inspections that are coordinated with all participants so that we have a single, consolidated list
- Corrective work that is properly sequenced and coordinated
- Back checks and sign-offs by authorized parties
- Communication of accurate status at all times (including prompt notification of any disagreements)

Achieving Substantial Completion with few, if any, unresolved deficiencies are one of the major objectives of the Quality Management Program. It puts us in a position to promptly finish any Punch List items and

create the favorable "last impression" that is a critical component of the Customer Satisfaction we strive to deliver.

5.5.7 Training and Closeout Documentation

Refer to the Job Closeout Checklist for a description of the activities required for training, documentation and building turnover. The initial Job Closeout Meeting should be held early in the project so that the closeout process can be properly planned and can start as soon as possible. Job Closeout requirements should be included in the Anticipated Submittal Log that is developed at the beginning of the project. A smooth, well planned transition from the construction phase to the Owner's occupancy is critical for customer satisfaction and can minimize future problems.

6. Post-Construction Phase

Quality Management continues after the construction process has been completed. It is important to have personnel and procedures in place to ensure a smooth transition from the Swinerton team that built the project to, possibly, a different Swinerton team that will respond to any issues that may arise during, and after, the warranty period(s). The successful completion of the documentation and training processes described on the Job Closeout Checklist are important predecessors to the start of this phase.

In addition to keeping the project closeout documentation available for referral during the warranty phase, it is important to thoroughly document items that occur during this phase, including their resolution.

Prior to the expiration of each warranty, Swinerton will schedule a warranty inspection with the Owner to ensure that any necessary items are identified in time to give notice of any discovered warranty items to the appropriate subcontractor(s). Typically, this includes an 11-month inspection for the 1-year general warranty that applies to most projects. Any extended warranties beyond the 1-year warranty should also be tracked and scheduled.

Whether it is in response to a warranty call-back, or as a result of the initiative in scheduling a general inspection, or a specific 11-month inspection, we should be aware of the level of maintenance and care that the building is receiving. If it appears inadequate, we should document the observations and provide notice to the Owner of the concerns and recommendations.

6.1 Document Retention

The SSQMP, and all the related documents, inspection reports, pictures, etc., that support it, will become part of the project's official records and will be archived in accordance with Swinerton's archiving policy. A link to the project folder should be shared with the warranty team.

The project team should ensure that the following documents are available electronically for the duration of any warranty periods related to the project:

- Project Directory of Owner, Consultants and Subcontractors with warranty contact information
- Final version of SSQMP
- Index of documents stored in archives
- Final RFI Log
- Final Reference Log
- Warranties
- Additional documents deemed appropriate due to special circumstances

6.2 Warranties

The warranty period shall be as stated in the Contract Documents. The start and end dates of the warranty period are typically triggered by the date of Substantial Completion. Some items of work will carry longer warranty periods. Some will have additional manufacturer's warranties or guarantees. Undated warranty and guarantee forms should be approved prior to Substantial Completion. Once that date is known, the fully executed warranty forms should be provided to the Owner.

6.3 Warranty Calls During the Warranty Period

Upon completion of the project, Swinerton will designate a warranty contact person who is accessible by telephone or email. This person will have access to the project documents listed above, in section 6.1. It is Swinerton's goal to acknowledge and correct any warranty issues as quickly as possible, but, as a minimum, to acknowledge receipt of any warranty notices within two (2) days of notification and to provide a more substantive response within seven (7) days, if a more immediate resolution is not possible. Swinerton will provide written confirmation to the Owner when the warranty issue has been resolved and will attempt to obtain Owner's written concurrence.

Owners may be provided Subcontractor contact lists and encouraged to contact Subcontractors directly, with any warranty notices, to expedite the response time. Swinerton should be copied on any such direct notices to insure we have a complete record of work that has been performed and to enable our follow-up to insure that the subcontractor is responding appropriately.

Risk Management should be notified, via Risk Alert, of any issues related to water intrusion or of any issues that appear to be potential insurance claims or long term exposures.

6.4 Calls for Service After the Warranty Period

After the contractual warranty period has expired, it may be difficult to get Subcontractors, suppliers or other potentially responsible parties to respond to a complaint, as they are under no contractual obligation to do so. Nevertheless, Swinerton's goal is to try to resolve all such complaints if it is commercially feasible. Swinerton's policy is to respond to all complaints that are received, even after the contractual warranty period has expired, as follows:

- Conduct a preliminary, courtesy investigation to determine validity and severity of situation
- Consult with Division Manager if situation appears to be a latent defect condition
- Make arrangements to correct issue, if deemed appropriate to do so
- Make recommendation to Owner, regarding possible courses of action to consider, if Swinerton is not responsible for corrective work
- Notify Risk Management, via Risk Alert, of any issues related to water intrusion or latent defects
- Do not proceed with any work without written authorization from the party who will be responsible for the cost of the work.

7. Closing Statement

Swinerton Builders' Site Specific Quality Management Plan is a detailed plan by which quality will be managed from Preconstruction through the Construction and Post-Construction Phases. Swinerton will proactively manage quality issues in a timely manner to minimize costly design & construction re-work,

with the aim of completing the project with zero known punch list items when the final work product is reviewed.

Our quality assurance mission statement is "Swinerton Builders' commitment is to Build Excellence through Quality Planning"

1. INTRODUCTION

This Construction Management Plan has been prepared in conjunction with the Contract Documents, Specifications and Plans for the construction of the WN-RON Hangar, DEN Tenant Project No. swa_1901.SWA.RON.Hangar.

Work for this project is covered under:

Schedule I
Construction Maintenance Hangar

As a portion of the Southwest Airlines Maintenance Hangar construction, a Taxilane WN will be constructed to provide access from the new facility to the airfield. This taxilane will tie-in to the airfield at Taxiway F north of Taxiway F9. The new pavement section will consist of 17-inches of P-501 concrete, 8-inches of cement treated base, 12-inches of cement treated soil, 6-inches of upper select embankment, and 54-inches of lower select embankment. This section is consistent with the standard DEN pavement section.

This proposed taxilane will disrupt the storm drainage in the area and will require the relocation of the airfield homerun line located east of Taxiway F. A new storm inlet will be installed in order to keep the existing storm drain line working as intended. A new electrical duct bank with eight (8) individual conduits will be constructed east of the existing line. Grading operations will be completed to ensure the Taxiway Safety Area (TSA) meets the requirements of ADG-III aircraft.

Additional re-grading and excavation will occur in the area adjacent to the gravel road. This road will be paved with an asphalt section, requiring the adjustment of the shoulder grades. The new road will also be striped in accordance with DEN standards.

2. PERSONNEL

A. SPONSOR'S REPRESENTATIVE

As the Project Manager for Southwest Airlines, Chris Edwards has the responsibility for Contract Administration and the authority to take necessary actions to comply with the contract.

B. OWNER'S REPRESENTATIVE – JVIATION, INC.

Jviation, Inc. is under contract with Southwest Airlines to provide construction observation services for the WN-RON Hangar and will be represented by Mr. Andy Remstad, A.I.A. (Program Manager), Mr. Seth Kurtz, P.E. (Field Engineer), and Mr. Joel Wiechmann P.E. (Field Engineer). Their resumes are included in Appendix E. The following is a partial list of the responsibilities and services to be performed by Jviation, Inc.;

I. Monitor and report all aspects of the work.

II. Review all test results.

III. Report when observed work is not within specification limits.

IV. Advise Construction Superintendent, Project Team, and the Owner of non-conformance of contract work.

V. Review acceptance tests in conjunction with the Design Team.

VI. Review monthly periodic cost estimates.

VII. Prepare monthly reimbursement forms and track project costs.

C. CONTRACTOR - SWINERTON BUILDERS

Swinerton Builders is the prime Contractor for the project. Mr. Scott Hill is the Project Manager and is responsible for overall contract administration. Chris Osheroff will be the Senior Superintendent and will be responsible for coordination of the Contractor's daily construction activities including scheduling of tasks, equipment, and subcontractors for the various items of work. A complete list of the construction project team can be found in Section 3, B, Sub-section I of this report.

The Contractor has the responsibility to furnish and place materials in accordance with the requirements of the contract, plans and specifications.

D. QUALITY CONTROL TESTING

Quality control testing for the contractor will be completed by each individual subcontractor or supplier as necessary. These services will include performing sampling and testing of project materials, as required for project conformance, as well as construction observations and the assembly of control charts. Further details are outlined in the Site Specific Quality Management Plan.

Copies of welding certifications for PKM Steel Service and Sure Steel Inc. have also been included in Appendix C.

E. ACCEPTANCE TESTING – KUMAR & ASSOCIATES, INC.

Jviation, Inc. has contracted with Kumar & Associates, Inc. to provide Quality Assurance Testing for the project. Their key personnel are as follows:

Quality Acceptance Manager:	James Noll, P.E.
Project Manager:	Carey Jones, PMP
Field Supervisor:	Eric Dunbar
Project Technician:	James Cannon
Project Technician:	Donald Sneed
Project Technician:	Kathleen Meyer
Project Technician:	Andrew Scott
Project Technician:	Bryan Mills
Project Technician:	Clarke McCleave
Project Technician:	Kamal Hasan

Copies of their accreditation and resumes can be found in Appendix A.

All test results shall be reported to Carey Jones, PMP for his immediate review. Failing tests will be documented by the project technician and presented to Carey Jones, PMP and Seth Kurtz, P.E., who will oversee the re-work of the affected areas/items. Re-tests of all failed tests will be made and reported in the same manner as the original tests. Project responsibilities for Kumar & Associates, Inc., include but are not limited to:

I. Testing of all materials, per project specifications, to ensure compliance with project requirements.

II. Verify, periodically, that the minimum quality assurance testing frequencies have been met or exceeded throughout the project.

III. Provide daily copies and a weekly typed report of all quality assurance results.

IV. Review mix designs submitted by suppliers and offer comments to the Resident Engineer.

V. Perform part-time observation of construction operations for conformance with project specifications.

3. INSPECTION PROCEDURES

A. SURVEYING AND GRADE CONTROL

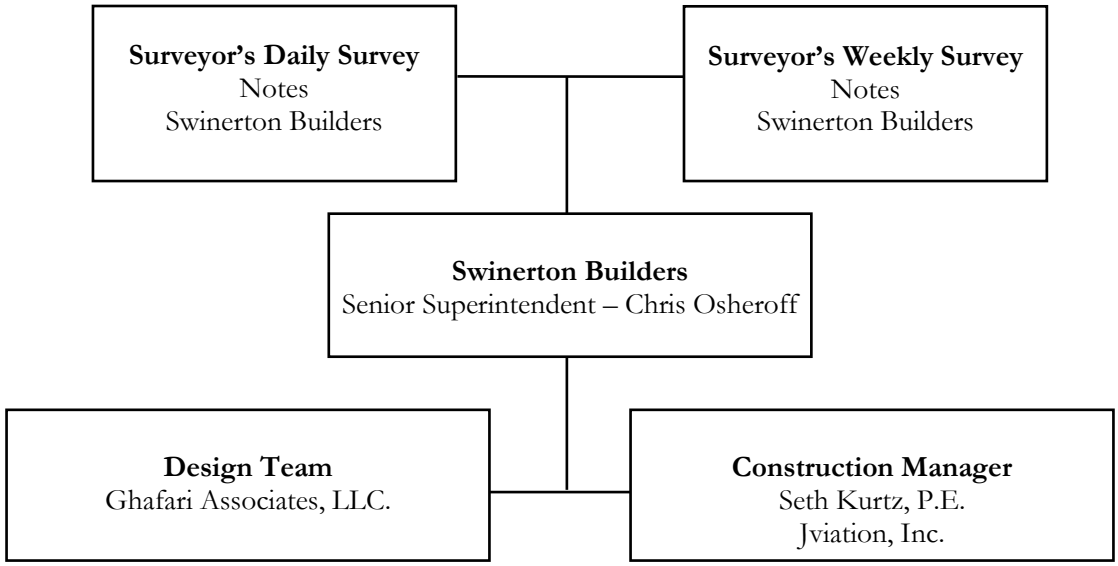
The Contractor will provide surveying, as required, to meet the project plans and specifications.

Survey Data Path

For

WN-RON Hangar

DEN TENANT Project No. swa_1901.SWA.RON.Hangar



B. CONTRACTOR – QUALITY CONTROL PLAN

The Contractor will provide onsite quality control testing for all materials which require testing. Daily inspections and/or testing will be completed by the Contractor or their representative to ensure compliance with contract requirements. They will have an on-site Quality Control Representative to ensure all specified requirements are met. The Quality Control representative will provide liaison between the Contractor and the Engineer to assure timely and coordinated action when deficient tests or processes are encountered.

Swinerton Builders has completed a Site Specific Quality Management Plan (SSQMP) which details the required material submittals and quality control testing requirements of the project and the associated testing frequencies. All sampling, testing and inspection procedures will be performed in accordance with the specified ASTM, AASHTO, ACI and Asphalt Institute procedures.

To ensure proper use and functionality, the Contractor will continually monitor and maintain all equipment used in completing the work. Diligence must be maintained to ensure that proper construction techniques are followed and that all material is well protected prior, during, and after placement. All measures taken to observe ongoing operations and completion of work is intended to guarantee that all elements of work conform to the specifications detailed in the Contract Documents. The Contractor will have superintendents on all phases of the work throughout the project.

Quality Control Testing will be performed on an as-needed basis. The Contractor will schedule and provide certified technicians to observe construction activities when required. The Contractor is required to adjust the number of testers to ensure that all tests are completed in a timely manner. Preliminary test results will be supplied to the Engineer on a daily basis. Final test results will be submitted to the Engineer on the appropriate FAA test forms after the reports have been reviewed by the Quality Control Manager. The final test reports will be typed and submitted to the Design Team on a weekly basis. Blank copies of all pertinent test report forms and summary sheets are enclosed in Appendix B.

I. CONSTRUCTION PROJECT TEAM

The construction project team members responsible for implementing the Quality Control Plan are experienced and well-qualified. The team consists of the following:

General Contractor: Swinerton Builders	
Project Manager	Scott Hill
Quality Control Manager	Eric Coffy
Senior Superintendent	Chris Osheroff
Project Quality Representative	Jessa Brinker

II. PROJECT PROGRESS AND SUBMITTAL SCHEDULE

A project schedule has been prepared by the Contractor for the project and is attached in Appendix D. The schedule is preliminary and may change or may need to be altered slightly during the project. Updated project schedules will be provided on a weekly basis.

In addition to the progress schedule, Swinerton Builders has provided a submittal schedule for all materials used in the project. This schedule lists all items that require material submittals for Design Team approval. The schedule includes the referenced specification and the anticipated submittal date.

III. INSPECTION & TESTING

Swinerton Builders will oversee Quality Control observation and testing during construction.

All sampling, testing and inspection procedures will be performed in accordance with the specified ASTM, AASHTO, ACI and Asphalt Institute procedures. Reference manuals kept on site at the field laboratory will include, but not be limited to, the following:

(1.) ASTM

(2.) AASHTO

(3.) ACI

(4.) Asphalt Institute's "Mix Design Methods for Asphaltic Concrete" (MS-II)

Quality Control laboratory testing will be performed as stated in the Site Specific Quality Management Plan. Quality Assurance laboratory testing will be performed at Kumar & Associates, Inc.'s Denver, Colorado laboratory. Testing plans which lists the required tests, frequency of testing, and sampling locations, are shown in Appendix A for acceptance material testing.

IV. RECORDS & REPORTING

The Contractor will maintain daily reports, which summarize the daily construction operations and details inspections and tests performed by the Contractor and/or their representative(s). These reports will document all equipment on-site, workers on-site, all ongoing construction activities, material deliveries, proper storage of materials, review of quality control tests, results of inspections, describe any problems that arise, describe any corrective action taken and document any other items of significance. These reports will be supplied to the Design Team and Owner's Representative on a weekly basis.

Quality Control testing will be performed on an as-needed basis, as required by the

project plans and specification and as deemed necessary by the Contractor to ensure quality. The Contractor will provide certified technicians to observe construction activities when required. Initial test results and control charts shall be submitted to the Engineer on a daily basis. Final, typed, test results will be submitted to the Engineer, on a weekly basis, on the appropriate FAA test forms after the reports have been reviewed by the Quality Control Manager. Blank copies of pertinent test report forms and summary sheets are enclosed in Appendix B. Copies of all test results will remain on file at the project trailer. Upon completion of the project, the Contractor will submit a bound report of all quality control test reports and mix designs. The report will include all test results taken including statistical analysis and narratives explaining how failing tests were corrected. Certificates of Compliance for installed materials will also be incorporated in this report. All test data will also be submitted in an electronic format acceptable to the Engineer.

V. IMPLEMENTATION OF CONTROL AND CORRECTIVE MEASURES

Within the SSQMP prepared by the Contractor, the Contractor has identified the quality control personnel responsible for the implementation and monitoring of control measures. Additionally, the SSQMP contains guidelines associated with the action to be taken when a process is deemed or believed to be out of control. The general actions are included in Section V, Subsection C of this report.

VI. WEEKLY QUALITY CONTROL MEETINGS

Quality Control meetings will be held at least once a week by the Contractor and their Quality Control Team. These meetings will discuss any issues that may arise during construction. The Design Team and Owner's Representative are encouraged to attend.

C. Owner's Representative\Design Team

I. Inspection Procedures

The Owner's Representative will observe all work by the Contractor as it is being performed. The work will be checked for compliance with the project plans and specifications. Work performed that is found not in compliance will be identified and relayed to the Design Team for review and the Contractor will be notified. The Design Team will make a quality assessment of the material or workmanship furnished or completed, for all material that does not comply with the project specifications. If in the Design Team's decision, the material has a high degree of quality and will not adversely affect the integrity of the design, the material may be left in place. If left in place, the non-compliant work will be paid for as outlined in the item specification or as determined by the Owner with input from the Design Team and the Owner's Representative. If the Design Team decides the work completed does not have a high degree of quality, then the Contractor will be required to take corrective action. Once the non-compliant work is corrected, it will be re-inspected by the Owner's Representative. Such surveillance by the Owner's Representative does not relieve the Contractor from performing quality control inspection of the Contractor's or their Subcontractor's work.

II. Daily Reporting/Diary

The Owner's Representative will maintain daily observations of the progress of work and submit weekly reports to the Owner and FAA summarizing the amount of work completed, contract days used, site conditions, problem areas and failing tests. The Owner's Representative will maintain daily records of the quantities used in constructing the project. In addition, the Engineer will keep daily records of the areas and items of work under construction, the hours and number of workers on site for the Contractor and any subcontractors, weather conditions and any problems that arise.

III. Acceptance Testing

The Owner's Representative will provide onsite quality acceptance testing for materials which require testing per the Contract Documents. Kumar & Associates, Inc. has been hired to complete the Quality Assurance as a sub consultant to the Owner's Representative. All sampling, testing and inspection procedures will be performed by the specified ASTM, AASHTO, ACI and Asphalt Institute procedures.

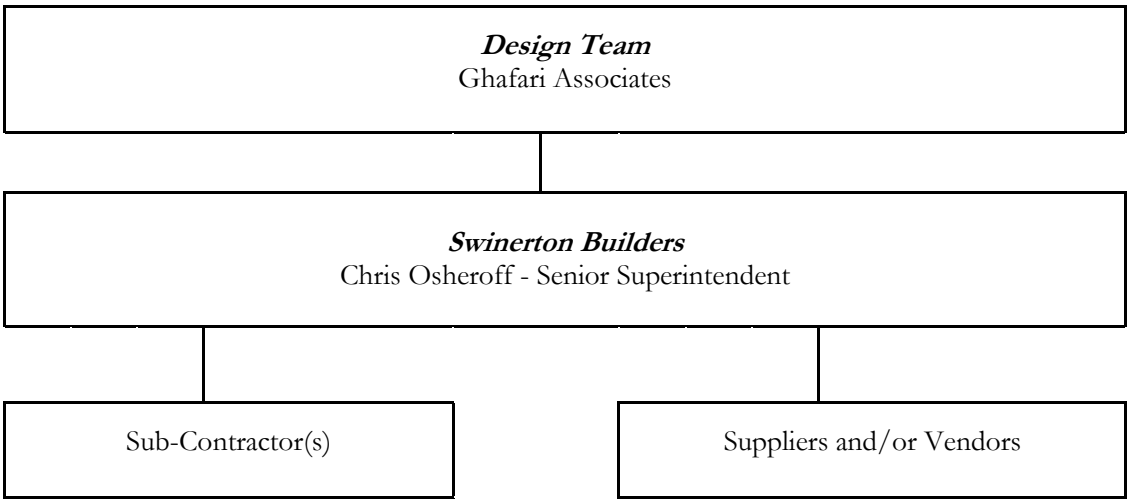
A testing plan which lists the quality assurance tests required, frequency of testing and sampling locations is shown in Appendix A.

Preliminary test reports will be supplied to the Owner's Representative and Design Team daily. After the reports have been reviewed by the Quality Assurance Manager, final test reports will be provided to the Contractor, the Design Team, and the Owner's Representative. Typed test reports will be submitted on a weekly basis. Copies of all test reports will also remain on file at the project trailer.

4. SUBMITTAL PROCESS

The submittal process under this contract includes many elements, some of which have already progressed to completion and some which will be on-going through construction and subsequently through completion of the final construction report. Project submittals will be uploaded to the appropriate share software designated by Swinerton, where they can be viewed and/or assigned for review/action by specific project team members. A submittal schedule developed by Swinerton provides material items to be verified, a description of the required submittal format, the appropriate project specification reference, party responsible for performing the material verification, and the timing required for the submittal. The construction material consultant is only responsible for verification of specific items detailed in the list of submittals within their scope of services. The accuracy of manufacturer or vendor supplied material certifications is the responsibility of the provider. Submittal of the listed materials compliance verification is the responsibility of the prime Contractor, and is required for review and approval by the Design Team prior to use on the project.

B. FLOW DIAGRAM FOR REVIEW AND APPROVAL



5. QUALITY CONTROL TESTING PLAN

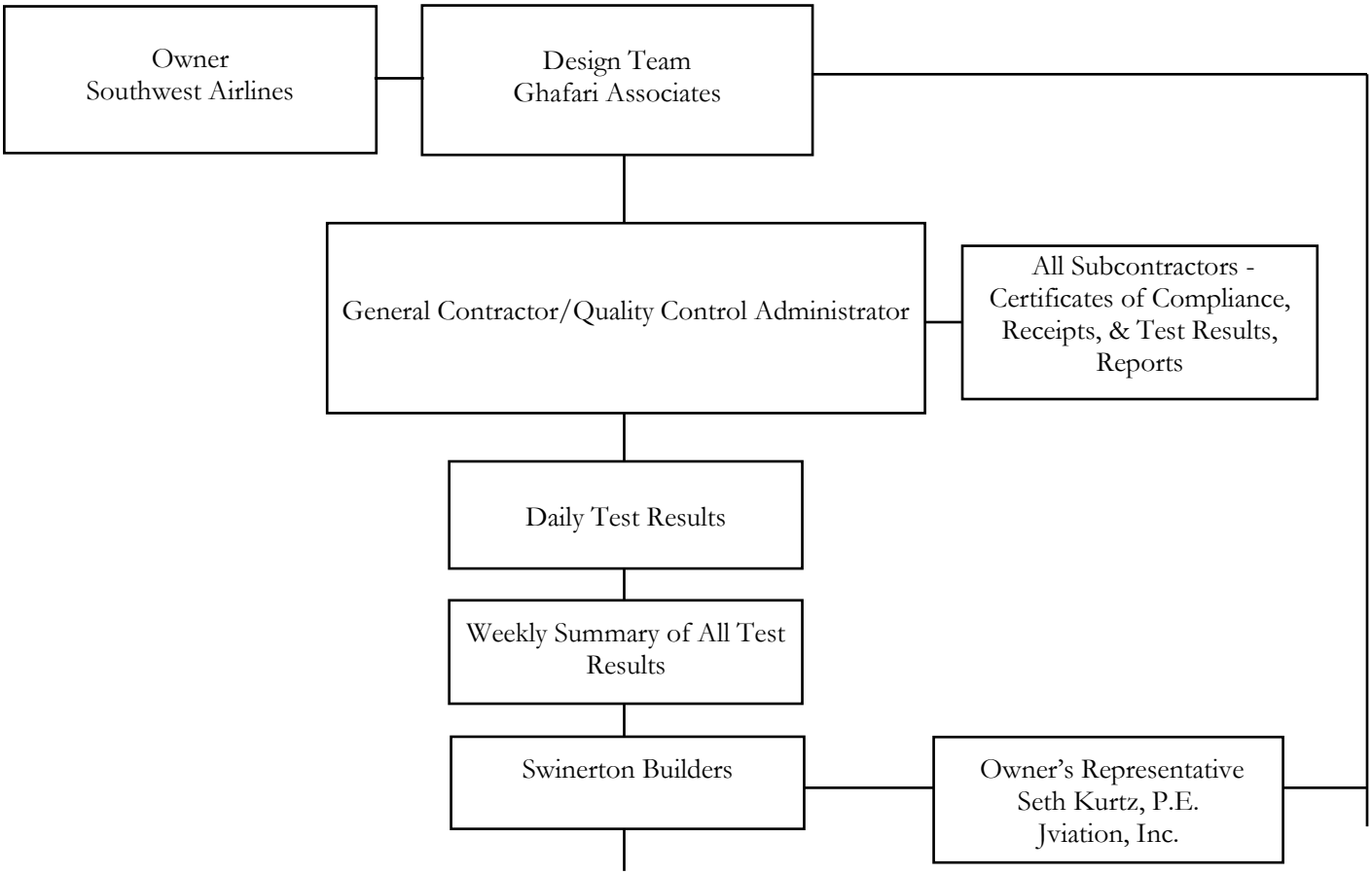
A. TEST STANDARD, SHORT TITLE, FREQUENCY, AND SAMPLING METHOD

The quality control testing plan is included in Site Specific Quality Management Plan.

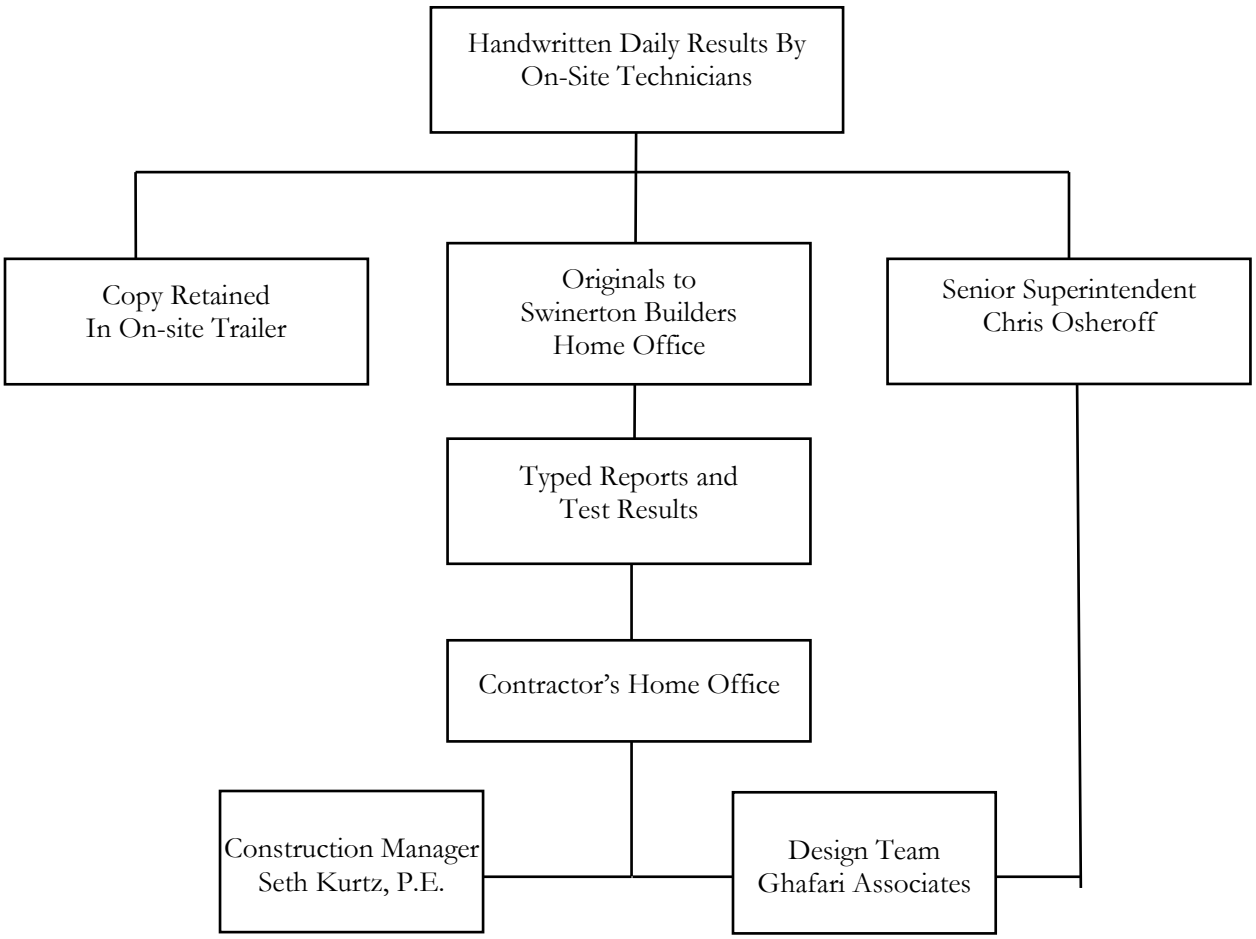
The Contractor is responsible for any additional quality control testing or increasing minimum frequencies as they deem necessary, throughout construction, to control the various materials and processes, to provide for the production of acceptable quality materials.

B. RESPONSIBILITY FLOW CHARTS

Quality Control Flow Chart



Quality Control Paperwork Flow Chart



C. CORRECTIVE ACTIONS TO BE TAKEN

Should test results indicate noncompliance with project requirements, the following communication and follow-up action shall be implemented:

I. Immediate verbal notification - to Construction Superintendent, Work Area Foreman and/or Plant Operator, Owner's Representative, and the Design Team.

II. Document the noncompliant test results for inclusion in the daily report. The QCP shall be referenced in regards to corrective actions for individual items of work contained in the technical specifications.

III. The equipment utilized for testing shall be verified that it is functioning properly and is calibrated appropriately.

IV. Retest failed material(s) to verify non-compliance.

V. Notification to the Program Administrator for assessment and direction.

VI. If a determination to the cause of the noncompliant observation(s) and/or test result(s), as well as, a solution are not reached quickly, additional personnel from the Contractor, and, if necessary, other specialized personnel will be sought to assist in identifying and correcting the problem.

VII. If the cause and/or solution cannot be determined in a reasonable time frame, the Program Administrator will consult with the Owner's Representative and the Design Team and the work will be suspended.

VIII. Work will commence only after the Program Administrator, Owner's Representative, and the Design Team have successfully found and implemented a solution to the problem. All corrective action measures shall be documented in the daily report.

IX. Upon commencement of the corrective action, testing and observations will be performed at higher frequencies for a reasonable amount of time until confidence is achieved in the remedy.

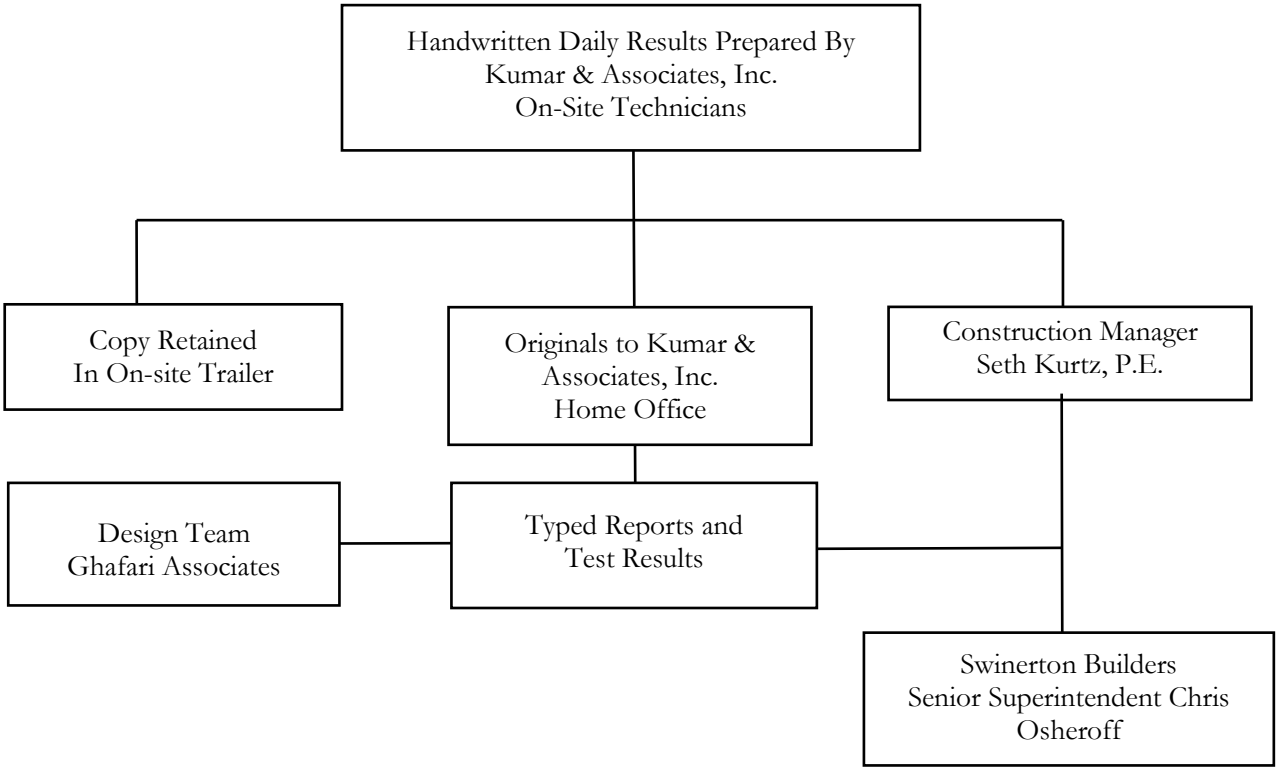
6. ACCEPTANCE TESTING

A. TEST STANDARD, SHORT TITLE, FREQUENCY, AND SAMPLING METHOD

The quality acceptance testing plan is included in Appendix A.

B. RESPONSIBILITY FLOW CHART

Acceptance Testing



7. TEST RESULTS

A. DOCUMENTATION

I. LABORATORY/FIELD DAILY TEST REPORT FORMS

The Contractor or their representative shall summarize quality control laboratory and field testing activities as well as the corresponding quality control testing results on reports utilized by the quality control testing firm. These forms are included at the end of this section. The reports shall be submitted to the Owner's Representative on a daily basis, handwritten reports are acceptable for daily reports.

II. ACCEPTANCE TESTING SUMMARY FORMS

The acceptance test results will be compiled and summarized on forms acceptable to the FAA. Blank copies are attached to this section.

III. DOCUMENTATION OF FAILING TESTS AND ACTIONS TAKEN

Final acceptance testing will include documentation of failing test and correlation between failing tests and retests. Retests will be correlated to the original failing test by using the original failing test's number followed by a period and the number 1; additionally the word "retest" will appear in the remark box on the test report form. If no retest was made this will be stated, including appropriate justification.

IV. RECORDS AND REPORTING

Preliminary written test reports will be supplied to the Owner's Representative and Construction Superintendent daily. After the reports have been reviewed by Kumar & Associates, Inc.'s Quality Assurance Manager, typed test reports will be submitted to the Contractor's home office, The Design Team, and to the Owner's Representative concurrently on a timely basis. Copies of all test reports will also remain on file at the project trailer. After completion of the project, a final bound report will be submitted in triplicate, showing all test data reports and mix designs. Also included as part of this final report will be an analysis of results showing ranges, averages and special comments. This final submittal will also be submitted in an electronic format acceptable to all parties. Final inspection will be delayed until receipt of an approved final report.

B. TEST SUMMARY FORMS

Copies of the acceptance test summary forms are included in Appendix B.

8. FINAL TESTS AND QUALITY CONTROL REPORT

A final quality control testing report will be prepared by the Contractor. This report will summarize the testing of each item. The report will summarize the testing by pay item or by lot. Failing tests will be identified and explained. Payment deductions will be shown where appropriate.

Initially, this report will be submitted to the Engineer electronically. The statistical tracking charts shall be included as part of this final report. Upon review and approval the report will be submitted in triplicate (2 bound and 1 loose leaf copy) along with an electronic version acceptable to all parties. The final report shall remain subject to review and comment by the Design Team, Owner's Representative, and Contractor. Any final corrections or additions will be included prior to submitting the report to the Owner and DEN for acceptance and scheduling of final inspection.

The final testing report must be reviewed and approved by the Owner and DEN prior to scheduling a final inspection and release of any retainage.

APPENDIX A

QUALITY ASSURANCE LABORATORY'S

RESUMES & ACCREDIDATION

Kumar & Associates, Inc.®
Geotechnical and Materials Engineers
and Environmental Scientists

An Employee Owned Company

2390 South Lipan Street
Denver, CO 80223
phone: (303) 742-9700
fax: (303) 742-9666
email: kadenver@kumarusa.com
www.kumarusa.com

Office Locations: Denver (HQ), Parker, Colorado Springs, Fort Collins, Glenwood Springs, and Summit County, Colorado

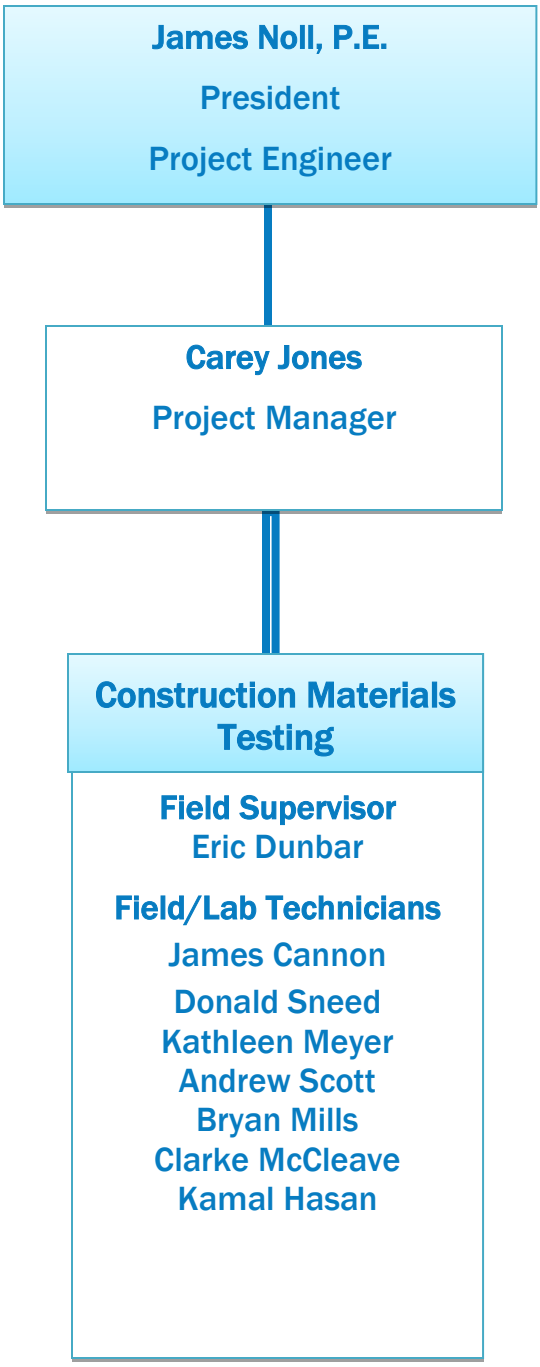
Preliminary Material Testing Agency Plan

Denver International Airport (DEN)
WN Southwest RON Hangar

List of Contents

Organizational Chart

K+A Organizational Chart



Laboratory Accreditation

Results found: 1

Kumar & Associates, Inc.

Denver, Colorado Show This Entry Only

View Accreditation Certificate

David Scott
2250 South Lipan Street
Denver , Colorado 80223

Phone: (303) 742-9700
Fax:
dscott@kumarusa.com
http://www.kumarusa.com

Quality Management System - accredited since 8/1/2002
R18, C1077 (Aggregate), C1077 (Concrete), C1093 (Masonry), D3666 (Aggregate), D3666 (Asphalt Mixture), D3740 (Soil), E329 (Aggregate), E329 (Asphalt Mixture), E329 (Concrete), E329 (Soil)

Asphalt Mixture - accredited since 8/1/2002
R47, R68, T30, T166, T209, T245, T246, T269, T283, T287, T308, T312, T329, T331, CP-L 5106, CP-L 5115, D1560 (Stability), D2041, D2726, D3203, D4125, D4867, D5444, D6307, D6752, D6925, D6926, D6927

Soil - accredited since 8/1/2002
R58, R74, T88, T89, T90, T99, T100, T134, T135, T136, T180, T190, T191, T193, T208, T216, T265, T267, T288, T289, T310, D421, D422, D558, D559, D560, D698, D854, D1140, D1556, D1557, D1883, D2166, D2216, D2435, D2487, D2488, D2844, D2974, D4318, D4546, D4643, D4718, D4972, D6913, D6938

Aggregate - accredited since 8/1/2002
R76, T2, T11, T19, T21, T27, T37, T84, T85, T96, T104, T112, T113, T176, T255, T303, T335, C29, C40, C88, C117, C123, C127, C128, C131, C136, C142, C535, C566, C702, C1260, C1567, D75, D546, D2419, D4791, D5821

Concrete - accredited since 1/30/2003
M201, R39, R60, T22, T23, T24, T97, T119, T121, T148, T152, T196, T197, T198, T231 (7000 psi and below), T303, T309, C31, C39, C42, C78, C138, C143, C172, C173, C174, C192, C231, C403, C496, C511, C617 (7000 psi and below), C1064, C1170, C1231 (7000 psi and below), C1260, C1567

Masonry - accredited since 10/6/2005
C140 (CMU: Absorption)
C140 (CMU: Compressive Strength)
C140 (CMU: Measurement)
C140 (CMU: Sampling)
C511 (Moist Cabinets, Moist Rooms, and Water Storage Tanks Used in the testing of Hydraulic Cements and Concretes)
C780 (Annex 6) (Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry -

Compressive Strength)
C1019 (Sampling and Testing Grout)
C1314 (Compressive Strength of Masonry Prisms)
C1552 (Capping Concrete Masonry Units, Related Units and Masonry Prisms for Compression Testing)

Please note that our accreditations do not include an expiration date. An accreditation only expires when the laboratory fails to comply with our accreditation requirements.

* This information is only valid as of 10/19/2018. Please visit http://www.aashtoresource.org for current accreditation status.

Testing Procedures

Kumar & Associates, Inc.
Geotechnical and Materials Engineers
and Environmental Scientists

ACEC MEMBER

2390 South Lipan Street
Denver, CO 80223
phone: (303) 742-9700
fax: (303) 742-9666
email: kadenver@kumarusa.com
www.kumarusa.com

Office Locations: Denver (HQ), Parker, Colorado Springs, Fort Collins, Glenwood Springs, and Summit County, Colorado

Testing Procedures

The following is a list of testing procedures that Kumar & Associates will follow while performing the quality control functions on the WN Southwest RON Hangar project.

P-152: Excavation, Subgrade, and Embankment

- Moisture-Density Relations Testing per ASTM D698
- In-place Density and Moisture Content Testing per ASTM D1556 or ASTM D6938
- Gradation Testing per ASTM D422 or ASTM D6913
- Atterberg Limits per ASTM D4318

P-153: CLSM

- Compressive Strength Testing per ASTM D4832 or ASMT C39

P-301: Soil-Cement Base Course

- Moisture-Density Relations Testing per ASTM D558
- In-place Density and Moisture Content Testing per ASTM D1556, ASTM D2167 or ASTM D6938
- Compressive Strength ASTM D1633

P-304: Cement-Treated Base Course

- Moisture-Density Relations Testing per ASTM D558
- In-place Density and Moisture Content Testing per ASTM D1556, ASTM D2167 or ASTM D6938

P-403: HMA Pavement

- Asphalt Content Testing per ASTM D6307
- Gradation Testing per ASTM D5444
- Moisture Content of Aggregates per ASTM D566
- Moisture Content of HMA per ASTM D1461 or CDOT CP-43
- In-place Density Testing per ASTM D2950

P-501: Portland Cement Concrete Pavement

- Fine Aggregate Gradation Testing per ASTM C136
- Coarse Aggregate Gradation Testing per ASTM C36
- Moisture Content of Fine and Coarse Aggregates per ASTM D566
- Slump Testing per ASTM C143
- Air Content Testing per ASTM C173 or ASTM C231
- Temperature per ASTM C1064
- Unit Weight and Yield per ASTM C138
- Flexural Strength Testing per ASTM C31 and C78
- Sampling Concrete per ASTM C172

P-610: Structural Portland Cement Concrete

- Slump Testing per ASTM C143
- Air Content Testing per ASTM C173 or ASTM C231
- Temperature per ASTM C1064
- Unit Weight and Yield per ASTM C138
- Flexural Strength Testing per ASTM C31 and C78
- Sampling Concrete per ASTM C172

Testing Matrix

Specification Section	Title	Test Type	Test Standard	Test Frequency	Control Requirements
P-152	Excavation, Subgrade, and Embankment	Moisture/Density Relations	ASTM D698	One test per material type	
		In-place Density and Moisture Content	ASTM D1556, ASTM D2167 or ASTM D6938	**a**. In areas of excavation a minimum of 2 density and moisture content tests shall be taken each day, or a minimum of one every 500sy, whichever results in a great number of tests. **b.** In emankment areas a minimum of 2 density and moisture content tests shall be taken each day, or a minimum of one every 1000cy, whichever results in a great number of tests.	95% compaction at minus 1% to plus 3% optimum mositure, or otherwise prescibed based upon the soil's expansiveness.
		Soluble Sulfates	ASTM D516	One test per material type	Maximum water soluble sulfate content of 0.5% in upper select embankment
		Swell Consolidation	Denver Swell Test Method	One test per material type	Less than a 3% Swell potential in select embankment
		Gradation	ASTM C1064	One test per material type	Lower Select contain 100% passing 3" sieve and less than 90% passing No. 200 sieve: Upper Select contain 100% passing 1" sieve, no more than 45% retained on No. 4 sieve, and lass than 50% passing the No. 200 sieve
		Atterberg Limits	ASTM D4318 dry prep and Method B liquid limit	One test per material type	Lower Select maximum liquid limit of 40 and maximum plastic index of 30; Upper Select maximum plastic index of 15
		Classification	ASTM D 2487 ASTM D 2488	In conjunction with Proctor, Gradation, and Atterberg tests.	

Specification Section	Title	Test Type	Test Standard	Test Frequency	Control Requirements
P-153	Controlled Low Strength Material	Confirm Material Proportion		One test per 1,000 cy	Meet original approved mix design
		Compressive Strength	ASTM C39 / ASTM D4832	One test per 1,000 cy	100 to 300psi

Specification Section	Title	Test Type	Test Standard	Test Frequency	Control Requirements
P-301	Soil-Cement Base Course	Moisture/Density Relations	ASTM D558	Two each for the first 2 days of placement, then 1 test each day thereafter.	
		In-place Density and Moisture Content	ASTM D1556, ASTM D2167 or ASTM D6938	One test for each 300 sy of material placed per lift, per day, or a fraction of.	98% compaction at plus or minus 2% of optimum mositure.
		Compressive Strength	ASTM D1633	One set of 4 cylinders (2 tested at 5 days, 2 tested at 28 days) per 1,000sy.	200 psi minimum at 5 days

Specification Section	Title	Test Type	Test Standard	Test Frequency	Control Requirements
P-304	Cement-Treated Base Course	Moisture/Density Relations	ASTM D558	2/day for the first two days, and then as needed thereafter.	
		In-place Density and Moisture Content	ASTM D1556, ASTM D2167 or ASTM D6938	One test within each sublot within a lot. A lot consists of a day's productions not to exceed 2,000 square yards, or a half days production where a day's production consists of 2,000 to 4,000 square yards.	The average in-place denisity of the LOT is equal or greater than 98% compaction. Moisture at plus or minus 2% of optimum mositure.

Specification Section	Title	Test Type	Test Standard	Test Frequency	Control Requirements
P-403	HMA Pavements	Asphalt Content	ASTM D6307	Minimum of two asphalt content tests per lot	See Control Chart
		Gradation	ASTM D5444	minimum of twice per lot	See Control Chart
		Moisture Content of Aggregates	ASTM C566	minimum of once per lot	
		Moisture Content of HMA	ASTM D1461 or CDOT CP-43	minimum of once per lot	
		Temperatures		A least four per lot	
		In-place Density	ASTM D2950	Any necessary testing to ensure compaction is being met	96% - Mat Density 94% - Joint Density
		additonal testing		Any deemed necessary	

Specification Section	Title	Test Type	Test Standard	Test Frequency	Control Requirements
P-501	Portland Cement Concrete Pavement	Fine Aggregate Gradation	ASTM C136	At least twice per day	See Control Chart
		Coarse Aggregate Gradation	ASTM C136	At least twice per day	See Control Chart
		Moisture Content	ASTM C566	Direct measurements at least twice per day	
		Slump	ASTM C143	First three loads at the beginning of the day and every 100cy thereafter and with each set of flexural strengths	**Slip Form** +0 to -1" (action limit) +0.5" to -1.5" (suspension limit) **Side Form** +0.5 to -1" (action limit) +1" to -1.5" (suspension limit)
		Air Content	ASTM C173 or ASTM C231	First three loads at the beginning of the day and every 100cy thereafter and with each set of flexural strengths	+/- 1.2% action limit +/- 1.8 suspension limit
		Temperature	ASTM C1064	In-conjunction with slump and air content tests	50-90 degrees F
		Unit Weight and Yield	ASTM C138	In-conjunction with slump and air content tests	Per Mix Design
		Flexural Strength	ASTM C31 and ASTM C78	In-conjunction with DEN QA. Four sets per lot, a lot shall consist of a days production not to exceed 4,000 sy	700 psi
		Sampling Concrete	ASTM C172	To support above tests	

Specification Section	Title	Test Type	Test Standard	Test Frequency	Control Requirements
P-610	Structural Portland Cement Concrete	Slump	ASTM C143	First load of concrete placed and each additional 50 cy	0" - 4"
		Air Content	ASTM C231	First load of concrete placed and each additional 50 cy	4.0% -6.0%
		Temperature	ASTM C1064	In-conjunction with slump and air content tests	50 - 90 degrees F
		Unit Weight and Yield	ASTM C138	In-conjunction with slump and air content tests	Per Mix Design
		Compressive Strength	ASTM C31 and ASTM C39	First load of concrete placed and each additional 50 cy, with a minimum of one test per structure.	4000 psi structures and mix design; 3000 psi encased lighting ducts, light cans; 1200 psi cement treated base course
		Sampling Concrete	ASTM C172	To support above tests	

Professional Engineer Overview

Kumar & Associates, Inc.
Geotechnical and Materials Engineers
and Environmental Scientists

ACEC MEMBER

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Professional Engineer Overview

Mr. James Noll, P.E. will be providing profession engineering services for this contract. His services will include reviewing and signing of reports. His resume and Profession Engineers license are provided following this page.

James A. Noll, P.E.

Senior Engineer / President

Education
University of Colorado
B.S. Civil Engineering, 1985

Winona State University
B.S., Geology, Winona, MN, 1979

Professional Registration
Registered Professional Engineer: Colorado

Professional Affiliations
Past President Colorado Association of Geotechnical Engineers (CAGE)

American Council of Engineering Companies of Colorado (ACEC/CO)

American Society of Civil Engineers (ASCE)

Qualifications Summary

Mr. Noll has over **34 years of experience** in geotechnical, geological and materials engineering. He has performed a wide variety of investigations and engineering services for projects including transportation; drainage/ waterways; retail, industrial and commercial buildings; water and wastewater treatment/distribution facilities; residential development; earthen dams; and mining operations. Transportation related projects range from urban interchanges to mountainous terrain to rural aggregate surface roadways. Structures associated with the projects include single to multi span bridges and viaducts, and numerous retaining wall types. His background includes project management ranging from small-scale projects to large, multi-year contracts for various governmental agencies.

Professional Experience

- Project Manager for non-project specific contracts with Public Works entities include the City of Arvada, Adams County, City and County of Denver, Douglas County, Jefferson County and Arapahoe County involved street reconstruction projects ranging from low volume residential streets to high volume arterial roadways.

- Project Manager for large infrastructure and warehouse/industrial projects including Prologis Park 70 and Porteos in Aurora, Colorado.

- Project Manager for buildings ranging from one-story commercial / warehouse facilities to 15-story office buildings and a 28-story condominium building; geotechnical recommendations were provided.

- Project Engineer / Manager for single span to multi-span bridge structures located in urban and remote rural areas. The bridge projects include CDOT R6 FASTER, Federal Blvd. Bridge Replacement over Colfax Ave., I-25 and 144th Ave., Yale / Wabash Street bridge over Cherry Creek, Kipling Street bridge replacement over Bear Creek, Rio Grande Ave. Plum Creek bridge replacement, Gun Barrel Creek bridge replacement. The rural area bridge projects were performed for County agencies including Adams, Arapahoe, Boulder, Chaffee, Conejos, Douglas, Grand, Jefferson, Larimer, and Weld.

- Project Manager for a wide variety of water and wastewater projects including pipelines, 0.5 to 5 million-gallon water tanks, and new treatment facility construction and existing facility expansion. The water and sanitation districts include the City of Aurora, City of Arvada, City of Brighton, Centennial Water and Sanitation, Denver Water, Town of Erie, Southgate Water and Sanitation, Stonegate Sanitation, Roxborough Water and Sanitation District, City of Thornton, and Westminster TOD Waterline, City of Westminster. Project examples include the City of Aurora Prairie Water Project consisting of 32 miles of a 60-inch diameter, flexible steel pipe which transmits raw water from Brighton to the Aurora Reservoir; and, the Roxborough Water and Sanitation District Wastewater Regionalization Project consisting of 13.5 miles of sanitary sewer installation.

- Project Manager for numerous Colorado roadway construction / interchange projects; for example, I-25 and 84th Ave. Interchange Improvements; Colfax Ave. (SH 40) and Federal Blvd. Bridge Replacement; I-70 and S.H. 58 Interchange Improvements; I-70 / E-470 Interchange Design / Build Project; Westminster Blvd. Extension over U.S. 36; I-225 and Alameda Ave. Interchange; C-470 Extension from I-70 to U.S. 6; Lucent Blvd. and C-470 Interchange; East and West Interchanges for U.S. 36 at Interlocken Loop; State Highway 40 Limon to Hugo; State Highway 50C in Pueblo; and the Park Ave. Viaduct from the Platte River to Blake Street.

Colorado Department of Regulatory Agencies
Division of Professions and Occupations

State Board of Licensure for Architects, Professional Engineers and Professional Land Surveyors

James Allen Noll

Professional Engineer

PE.0027051
Number

11/01/2017
Issue Date

Active
Credential Status

10/31/2019
Expire Date

Verify this credential at: www.colorado.gov/dora/dpo

Division Director: Ronne Hines

Credential Holder Signature

Resumes

Carey L. Jones, PMP

Project Manager

Education

B.S. University of Colorado at Denver, Pursuing Civil Engineering Degree

Professional Certifications

- Project Management Professional (PMP), Project Management Institute, PMP No. 2237752
- NICET Level III Soils, Concrete and Asphalt
- Principals of Masonry Engineering, RMMI
- NCAT- Asphalt Technology
- Radiation Safety Officer
- Nuclear Gauge Safety Training

Professional Affiliations

Member, ASTM Road and Paving Materials Committee, D04

LabCAT Board of Directors

Qualifications Summary

Mr. Jones has over **30 years of experience** in geotechnical engineering and construction materials testing. He is responsible for construction project scheduling, report review, supervision and training of engineering technicians, as well as developing technical and cost proposals for specific construction projects. His background includes extensive work on numerous state, commercial and infrastructure projects throughout the Front Range. Materials testing services includes soils, asphalt, concrete and aggregate bases. He also has extensive experience in drilled caisson observation for various structures such as buildings and bridges. Testing of chemically stabilized subgrade materials include lime, fly ash, cement and kiln dust.

Professional Experience

- City of Arvada On-Call. Provided supervision and review of construction observation and materials testing projects including: Kipling Underpass, Ridge Road, 74th Avenue Pedestrian Bridge, city wide paving, and the City Transit Hub.

- E-470 Public Highway Authority. Provided supervision and review of material for several projects along the E-470 corridor including: E-470 Segment I Reconstruction, Douglas County CO E-470/Chambers Road Interchange, Douglas County, CO; E-470/Jordan Road Ramp Dualization, Aurora, CO; E-470 Segment II and III Overlay, Aurora, CO; E-470 Segment IV.

- Douglas County Transportation projects. Provided supervision and review of construction observation and materials testing services and documentation in accordance with Douglas County and CDOT specifications for projects including: Roxborough EEE Roadway, Lincoln Ave. overlay, Spruce Mountain Road over Plum Creek Bridge replacement, Sageport/Inca/Delaware LID, Douglas County 2007 concrete pavement replacement, Crystal Valley Parkway, Douglas County 2005 and 2006 asphalt overlay, Tomahawk Road reconstruction, Democrat Road reconstruction, I-25 West Frontage Road.

- Jefferson County Transportation projects. Provided supervision and review of construction observation and materials testing services and documentation in accordance with Jefferson County and CDOT specifications for projects including: Chatfield Avenue Reconstruction, West Belleview Avenue Widening, Indiana Street over Croke Canal Bridge replacement, South Wadsworth Boulevard and West Bowles Avenue Interchange, Jefferson County Government Center Roadway Improvements, Jefferson County Highway 73, Jefferson County Road and Bridge 2003 through 2013 Services, Deer Creek Canyon Road reconstruction, Swamp Angel Detention Basin.

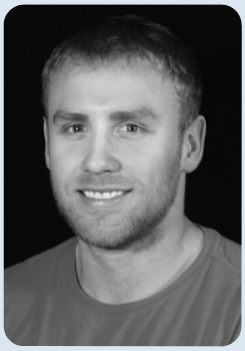
- Provided supervision and review of construction observation and materials testing projects including: CDOT, I-70 Reconstruction, Phases I and II, Denver, CO, U.S. 40 Winter Park East, Winter Park, CO, I-25 Climbing Lanes, Douglas County, CO, CDOT, U.S. 285, Phases IV and V, Jefferson County, CO, I-225 and Parker Road Reconstruction, Aurora, CO, Mineral Avenue Reconstruction, Littleton, CO, 104th Avenue Reconstruction, Westminster, CO, I-76 Concrete Paving, Hudson, CO, Rio Grande Avenue Bridge over Plum Creek, Douglas County, CO.

- Stapleton Redevelopment Infrastructure Project, Denver, CO. Provided supervision and review of large scale infrastructure construction materials testing and observation including overlot grading, utility placement backfill, sidewalk, curb and gutter construction, pavement subgrade preparation, aggregate base course and asphalt placements. The project included the recycling of asphalt and concrete runways to produce an aggregate class 6 base course. He also provided review of the materials submitted for use on the project.

- Lowry Air Force Base Redevelopment Infrastructure Project, Denver, CO. Provided supervision and review of large scale infrastructure construction materials testing and observation including overlot grading, utility placement backfill, sidewalk, curb and gutter construction, pavement subgrade preparation, aggregate base course and asphalt placements. The project included the recycling of asphalt and concrete runways to produce an aggregate class 6 base course.
- Blackstone Country Club, Aurora, CO. Provided supervision and review of infrastructure construction materials testing and observation including overlot grading, utility placement backfill, sidewalk, curb and gutter construction, pavement subgrade preparation and asphalt placements. The project included the construction of several drainage structures and a mechanically stabilized soil wall for Mutchie Creek. In addition, Mr. Jones provided the City of Aurora with all documentation required for the City acceptance of completed construction.
- Belleview Avenue Widening, Jefferson County, CO. Provided supervision and review of infrastructure construction materials testing and observation including overlot grading, utility placement backfill, sidewalk, curb and gutter construction, pavement subgrade preparation and asphalt placements. In addition, Mr. Jones provided the review of materials submitted for use on the project.
- Project Supervisor – C-470/Alameda Parkway Interchange, Lakewood, CO.
- Project Supervisor – I-25/144th Avenue Interchange, Westminster, CO.
- Project Supervisor – Willow Springs, Phases V through XIV, Infrastructure Projects, Jefferson County, CO.
- Project Supervisor – Buckley Air Force Base Improvements, Infrastructure Project, Aurora, CO.
- Project Supervisor – E-470 and Chambers Road Interchange, Douglas County, CO.
- Project Supervisor – Castle Rock Front Street Flyover, Castle Rock, CO.
- Project Supervisor – Westminster Boulevard Extension over U.S. 36, Westminster, CO.

Eric Dunbar

Engineering Technician



Education

Skiatook, Oklahoma- High School Diploma, 2006

Professional Registration/ Certifications

- ACI Concrete Laboratory Testing Technician – Level 1
- ACI Aggregate Testing Technician – Level 1
- ACI Concrete Field Testing Technician – Grade 1
- ACI Concrete Strength Testing Technician
- LabCAT Level A - Laydown
- LabCAT Level B - Plant Materials Control
- LabCAT Level C - Volumetrics & Stability
- LabCAT Level E - Aggregates
- WAQTC Embankment & Base Testing Technician
- Nuclear Gauge Safety Training
- National Safety Council Defensive Driving Course
- OHSA Confined Space
- OSHA – 10 Hour Construction Safety and Health

Qualifications Summary

Mr. Dunbar has over **6 years of experience** with field and laboratory testing and a primary emphasis in testing of hot mix asphalt pavements. Additional testing experience include standard and modified Proctors, gradation analysis, Atterberg limits, swell-consolidation and compressive strength of concrete cylinders.

Professional Experience

- **DEN Quality Assurance Lab:** performs all soil, aggregate, concrete, and asphalt testing for all construction projects at the Denver International Airport.

- **CDOT Region 4 Remote Materials Lab, I-76 Phase III:** performed laboratory testing on approximately 60,000 tons of hot mix asphalt, including asphalt content correction, asphalt binder content, gradation, bulk specific gravity, maximum theoretical specific gravity, superpave gyratory compaction, Lottman and Hveem stability in accordance with CDOT specifications.

- **E-470- Segment I Reconstruction:** performed laboratory testing, including asphalt content correction, asphalt binder content, gradation, bulk specific gravity, maximum theoretical specific gravity, superpave gyratory compaction, Lottman and Hveem stability, on 60,000 tons of hot mix asphalt and 30,000 tons of stone matrix asphalt in accordance with CDOT specifications.

- **West Quincy Avenue Reconstruction Phase II:** performed laboratory testing, including asphalt content correction, asphalt binder content, gradation, bulk specific gravity, maximum theoretical specific gravity, superpave gyratory compaction, Lottman and Hveem stability, on 40,000 tons of hot mix asphalt in accordance with CDOT specifications.

- **Jefferson County Road and Bridge 2012 Paving Operations:** performed laboratory testing, including asphalt content correction, asphalt binder content, gradation, bulk specific gravity, maximum theoretical specific gravity, superpave gyratory compaction, Lottman and Hveem stability, on 50,000 tons of hot mix asphalt in accordance with CDOT specifications.

- **Rocky Mountain Metropolitan Airport:** performed laboratory testing, including asphalt content correction, asphalt binder content, gradation, bulk specific gravity, marshall, superpave gyratory compaction, Lottman and Hveem stability, on 20,000 tons of hot mix asphalt in accordance with FAA specifications.

- **Denver West Parkway Reconstruction, National Renewable Energy Laboratory:** performed laboratory testing, including asphalt content correction, asphalt binder content, gradation, bulk specific gravity, maximum theoretical specific gravity, superpave gyratory compaction, Lottman and Hveem stability, on 5,000 tons of hot mix asphalt in accordance with CDOT specifications.

- **Denargo Market Roads:** performed laboratory testing, including asphalt binder content, gradation, bulk specific gravity, maximum theoretical specific gravity and superpave gyratory compaction, on 10,000 tons of hot mix asphalt in accordance with City of Denver and CDOT specifications.

James Cannon

Materials Testing Technician

Education

University of Colorado, Boulder
F.E. Civil Engineering

Professional Registration

- ACI Concrete Field Testing Technician – Grade 1
- ACI Strength Testing Technician
- WAQTC Embankment & Base Testing Technician
- Nuclear Gauge Safety Training
- National Safety Council Defensive Driving Course
- OSHA – 10 Hour Construction Safety and Health
- OSHA Confined Space

Qualifications Summary

Mr. Cannon has over **4 years of experience** in construction materials testing and construction observation. He is responsible for testing construction materials for numerous projects at Denver International Airport. He is qualified to test, document, and report quality assurance material testing activities on both landside and airside projects

Professional Experience

Some of the projects on which he has provided construction observation and testing include:

- Fire Station #35
- Roadway Erosion Control
- Concourse C Gate Apron Rehabilitation and Drainage Improvements
- North Airfield Fuel Station
- MOD 4 East Parking Garage
- RW 17R/35L Complex Pavement Rehabilitation & ADG V Improvements
- 2014 and 2015 Annual Airfield Pavement Rehabilitation
- MOD 4 East Parking Garage
- Pena Blvd. Bridge Rehab, Phase 1
- Miscellaneous Roadway & Parking Lot Improvements 2014

Don Sneed

Engineering Technician

Education

Community College of Denver, 2013-2014

Professional Registration

- ACI Concrete Laboratory Testing Technician – Level 1
- ACI Aggregate Testing Technician – Level 1
- ACI Concrete Field Testing Technician – Grade 1
- ACI Concrete Strength Testing Technician
- LabCAT Level A - Laydown
- LabCAT Level B - Plant Materials Control
- LabCAT Level C - Volumetrics & Stability
- Nuclear Gauge Safety Training
- National Safety Council Defensive Driving Course
- OHSA Confined Space
- OSHA – 10 Hour Construction Safety and Health

Qualifications Summary

Mr. Sneed has **29 years of experience** in the construction observation and materials testing field. He has extensive experience in a wide range of projects involving compaction tests for soils, pier observation, asphalt extraction, asphalt and concrete coring, rebar masonry observations, and excavation observation.

Professional Experience

- **Denver International Airport - QA lab/field testing** (Denver, CO)
  - MOD 4 East Parking Garage
  - North Airfield Fuel Station
  - Fire Station #35
  - Concourse C Gate Apron Rehabilitation and Drainage Improvements
  - Roadway Erosion Control
- **One Ski Hill** (Breckenridge, CO)
- **Arrabelle** (Vail Square, Vail)
- **Vail's Front Door** (Vail, CO)
- **Saint Joseph Hospital** (Denver, CO)
- **2010 Renovation of U.S. Highway 287** (Baca County, CO)

Kathleen Meyer

Field Engineer

Education

B.S. Applied Geology,
Metro State University

Professional Certifications

- ACI Concrete Field Testing Technician – Grade 1
- OSHA 10-Hour Construction Safety and Health

Qualifications Summary

Ms. Meyer is a has **2 years of experience** as a field engineer with experience in concrete testing, pier observation, rebar placement, post-tensioning, shotcrete, and soil sampling.

Professional Experience

- **Filing 54, 56th Avenue and Havana Street** (Aurora, CO): Soil sampling to determine over burden, groundwater, and bedrock depths.
- **Newstar Golden Senior Community** (Golden, CO): Soil sampling and well construction to determine seasonal groundwater levels.
- **Denver Recreation Center** (Denver, CO): Pier observation, rebar inspection, concrete testing, and shotcrete.

Andrew Scott

Engineering Technician

Education

High School Diploma

Professional Certifications

- LabCAT, levels A, B, and C
- Certified Nuclear Density Gauge Operator
- ACI Field Technician, Grade 1
- ACI Aggregate Technician – Level 1
- ACI Laboratory Technician – Level 1
- ACI Strength Technician

Qualifications Summary

Mr. Scott has 3 years of experience working in laboratory testing. Mr. Scott has been trained in laboratory testing of soils, asphalt and concrete aggregates and masonry; he has provided these tests for numerous projects throughout Colorado.

Professional Experience

Mr. Scott has worked on testing materials submitted to our laboratory from various project sites around the metro area.

Bryan Mills

Engineering Technician

Education

B.S. Geology
Dietrich School of Arts and Science,
Pittsburg, PA

Professional Certifications

- OSHA 10 Hour Safety
- ICC Soils Special Inspector
- ACI Field Technician 1
- Nuclear Gauge Certification

Qualifications Summary

Mr. Mills has **2 years of experience** working in the materials testing field. His experience includes performing soils, aggregate, asphalt, and concrete and reinforcing steel testing.

Professional Experience

Mr. Mills has worked on various projects across the Denver Metro area involving soils, asphalt, and concrete testing.

Clarke McCleave

Engineering Technician

Professional Certifications

- ACI Field Technician 1

Qualifications Summary

Mr. Hasan has **1 years of experience** working in the materials testing field. His experience includes performing concrete and reinforcing steel testing.

Professional Experience

Mr. McCleave has worked on various projects across the Denver Metro area involving concrete testing.

Kamal Hasan

Engineering Technician

Education

B.S. of Civil Engineering
University of Colorado,
Denver CO

Professional Certifications

- ACI Field Technician 1
- 10-hour OSHA

Qualifications Summary

Mr. Hasan has **5 years of experience** working in the materials testing field. His experience includes performing soils, aggregate, asphalt, and concrete and reinforcing steel testing.

Professional Experience

Mr. Hasan has worked on various projects across the Denver Metro area involving soils, asphalt, and concrete testing.

Testing Forms

Kumar & Associates, Inc.
Geotechnical and Materials Engineers
and Environmental Scientists

Project Name:	
CCD Project Number:	
Date of Observation:	
Report Number:	
Beam Set Number:	
Date Beams in Laboratory:	

P-501 PCCP FIELD & LAB FLEXURAL STRENGTH TEST REPORT

Contractor:	Subcontractor:	
Concrete Supplier:	Ticket Number:	Time Batched:
Mix Design ID:	Cubic Yard/Load:	Time Arrived:
Site Water Added:	Max. Aggregate Size:	Time Placed:
Truck Number:	Cement Type:	Time Sampled:
Additives:		

WEATHER CONDITIONS

Temperature: °F	Wind:	Atmospheric Conditions:

FIELD TESTING INFORMATION

Sampling (ASTM C 172)	TEST RESULTS		SPECIFICATIONS		Number of Beams Cast (ASTM C 192, C 31):	
Slump (ASTM C 143)		Inches		Inches		
Air Content (ASTM C 231 or C 173)		Percent		Percent	Beam Size (in.):	
Temperature (ASTM C 1064)		°F		°F	Time Beams Cast:	
Wet Unit Weight (ASTM C 138)		pcf			Design Strength:	psi @ 28 days
Capped		Ground		Leather Shims		Sawed		Molded	

TEST RESULTS (ASTM C 78, ASTM C 617)

Placement Location:							CONFORMANCE STATUS
Beam Number							
Test Age (days)							☐ Meets project specifications, flexural strength requirements.
Test Date							
Weight (lb.)							
Span Length (in.)							☐ Does not meet project specifications, flexural strength requirements.
Average Width (in.)							
Average Depth (in.)							
Load (lb.)							☐ Test data for informational purposes only.
Average distance between line of fracture and the nearest support measured on the tension surface of the beam (in.)							☐ Test in progress.
Modulus of Rupture (psi)* ®							

NOTES: '*If the fracture occurs in the tension surface outside of the middle third of span length by not more than 5% of the span length, calculate $R=3Pa/bd^2$, Else $R=PL/bd^2$.

CURING HISTORY

Moist Room		MOISTURE CONDITION OF BEAMS AT TESTING					
Water Tank		Dry		Saturated Surface Dry		Surface Moisture	

REMARKS:	Field Technician:
	*Initial Cure Location: Lab
	Final Cure Location: Storage tanks @ Lab
	Beams Tested By:
	Reviewed By: Travis Zagar **Kumar & Associates, Inc.**
	*Initial cure temperatures ranged from to ° F.

Kumar & Associates, Inc.
Geotechnical and Materials Engineers
and Environmental Scientists

Project Name:	
CCD Project Number:	
Date of Observation:	
Report Number:	Page 1 of 1

P-501 PCCP FIELD TEST REPORT

Contractor:	Subcontractor:	
General Placement Location:		
Concrete Supplier:	Max Aggregate Size:	Slump Specification:
Mix Design ID:	Cement Type:	Air Content Specification:
Additives:		

WEATHER CONDITIONS

Temperature: ^{o}F	Wind:	Atmospheric Conditions:

TEST RESULTS (ASTM C 143; ASTM C 231 or C 173; ASTM C 138; ASTM C 1064)

Field Test Number					
Ticket Number					
Truck Number					
Load Number					
Load Size (yds^3)					
Batch Time					
Arrival Time					
Time Placed					
Time Sampled					
Water Added					
Slump (in)					
Air Content (%)					
Temperature (^{o} F)					
Unit Weight (pcf)					
No. of Specimens Cast					

All tests were performed in accordance with current ASTM specifications and test methods.

REMARKS:

Field Technician:	Reviewed By:	Travis Zagar **Kumar & Associates, Inc.**

Kumar & Associates, Inc.
Geotechnical and Materials Engineers
and Environmental Scientists

Project Name:	
CCD Project Number:	
Date of Observation:	
Report Number:	
Cylinder Set Number:	
Date Cylinders in Laboratory:	

P-610 LEAN CONCRETE FIELD & LAB COMPRESSIVE STRENGTH TEST REPORT

Contractor:	Subcontractor:	
Concrete Supplier:	Ticket Number:	Time Batched:
Mix Design ID:	Cubic yard/Load:	Time Arrived:
Site Water Added:	Max. Aggregate Size:	Time Placed:
Truck Number:	Cement Type:	Time Sampled:
Additives:		

WEATHER CONDITIONS

Temperature: °F	Wind:	Atmospheric Conditions:

FIELD TESTING INFORMATION

Sampling (ASTM C 172)	TEST RESULTS		SPECIFICATIONS		Number of Cylinders Cast (ASTM C 31):	
Slump (ASTM C 143)		Inches		Inches	Cylinder Size:	
Air Content (ASTM C 231 or C 173)		Percent		Percent	Time Cylinders Cast:	
Temperature (ASTM C 1064)		°F		°F	Design Strength	psi @
Wet Unit Weight (ASTM C 138)		pcf			Requirements:	1,200 psi @ 7 days
Cylinder Cap Type	Sulfur			Gypsum		Unbonded

TEST RESULTS (ASTM C 39, ASTM C 1231)

Placement Location:							
Cylinder Number							
Test Age (days)							
Test Date							
Weight (lb.)							
Height (in.)							
Diameter (in.)							
Area (in.^{2})							
Load (lb.)							
Failure Type (* *)							
Strength (psi)							

* * NOTES: 1=Cone 2=Cone and Vertical 3=Columnar 4=Diagonal 5=Fractures at top or bottom 6=Pointed

All tests were performed in accordance with current ASTM specifications and test methods. Specific instances of non-conformances are listed in the Remarks Section below.

CONFORMANCE STATUS

	Meets project specifications, compressive strength requirements.
	Does not meet project specifications, compressive strength requirements.
	Test data for informational purposes only.
	Test in progress.

REMARKS:

Field Technician:	
*Initial Cure Location:	Lab
Final Cure Location:	Storage tanks @ Lab
Cylinders Tested By:	
Reviewed By:	Travis Zagar **Kumar & Associates, Inc.**

*Initial cure temperatures ranged from to ° F.

Kumar & Associates, Inc.
Geotechnical and Materials Engineers
and Environmental Scientists

Project Name:	
CCD Project Number:	
Date of Observation:	
Report Number:	Page 1 of 1

P-610 STRUCTURAL PCC FIELD TEST REPORT

Contractor:	Subcontractor:	
General Placement Location:		
Concrete Supplier:	Max Aggregate Size:	Slump Specification:
Mix Design ID:	Cement Type:	Air Content Specification:
Additives:		

WEATHER CONDITIONS

Temperature: °F	Wind:	Atmospheric Conditions:

TEST RESULTS (ASTM C 143; ASTM C 231 or C 173; ASTM C 138; ASTM C 1064)

Field Test Number					
Ticket Number					
Truck Number					
Load Number					
Load Size (yds³)					
Batch Time					
Arrival Time					
Time Placed					
Time Sampled					
Water Added					
Slump (in)					
Air Content (%)					
Temperature (° F)					
Unit Weight (pcf)					
No. of Specimens Cast					

All tests were performed in accordance with current ASTM specifications and test methods.

REMARKS:

Field Technician:	Reviewed By: Travis Zagar **Kumar & Associates, Inc.**

Kumar & Associates, Inc.
Geotechnical and Materials Engineers
and Environmental Scientists

Project Name:	
CCD Project Number:	
Date of Observation:	
Report Number:	
Cylinder Set Number:	
Date Cylinders in Laboratory:	

P-610 STRUCTURAL PCC FIELD & LAB COMPRESSIVE STRENGTH TEST REPORT

Contractor:	Subcontractor:	
Concrete Supplier:	Ticket Number:	Time Batched:
Mix Design ID:	Cubic yard/Load:	Time Arrived:
Site Water Added:	Max. Aggregate Size: ¾	Time Placed:
Truck Number:	Cement Type: I / II, FA (F)	Time Sampled:
Additives: Eucon LW, AEA 92		

WEATHER CONDITIONS

Temperature: °F	Wind:	Atmospheric Conditions:

FIELD TESTING INFORMATION

Sampling (ASTM C 172)	TEST RESULTS		SPECIFICATIONS		Number of Cylinders Cast (ASTM C 31): 7	
Slump (ASTM C 143)		Inches		Inches	Cylinder Size:	4 X 8
Air Content (ASTM C 231 or C 173)		Percent		Percent	Time Cylinders Cast:	
Temperature (ASTM C 1064)		°F		°F	Design Strength	psi @
Wet Unit Weight (ASTM C 138)		pcf			Requirements:	psi @ 28 days
Cylinder Cap Type	Sulfur			Gypsum		Unbonded

TEST RESULTS (ASTM C 39, ASTM C 1231)

Placement Location:							
Cylinder Number							
Test Age (days)							
Test Date							
Weight (lb.)							
Height (in.)							
Diameter (in.)							
Area (in.²)							
Load (lb.)							
Failure Type (* *)							
Strength (psi)							

* * NOTES: 1=Cone 2=Cone and Vertical 3=Columnar 4=Diagonal 5=Fractures at top or bottom 6=Pointed

All tests were performed in accordance with current ASTM specifications and test methods. Specific instances of non-conformances are listed in the Remarks Section below.

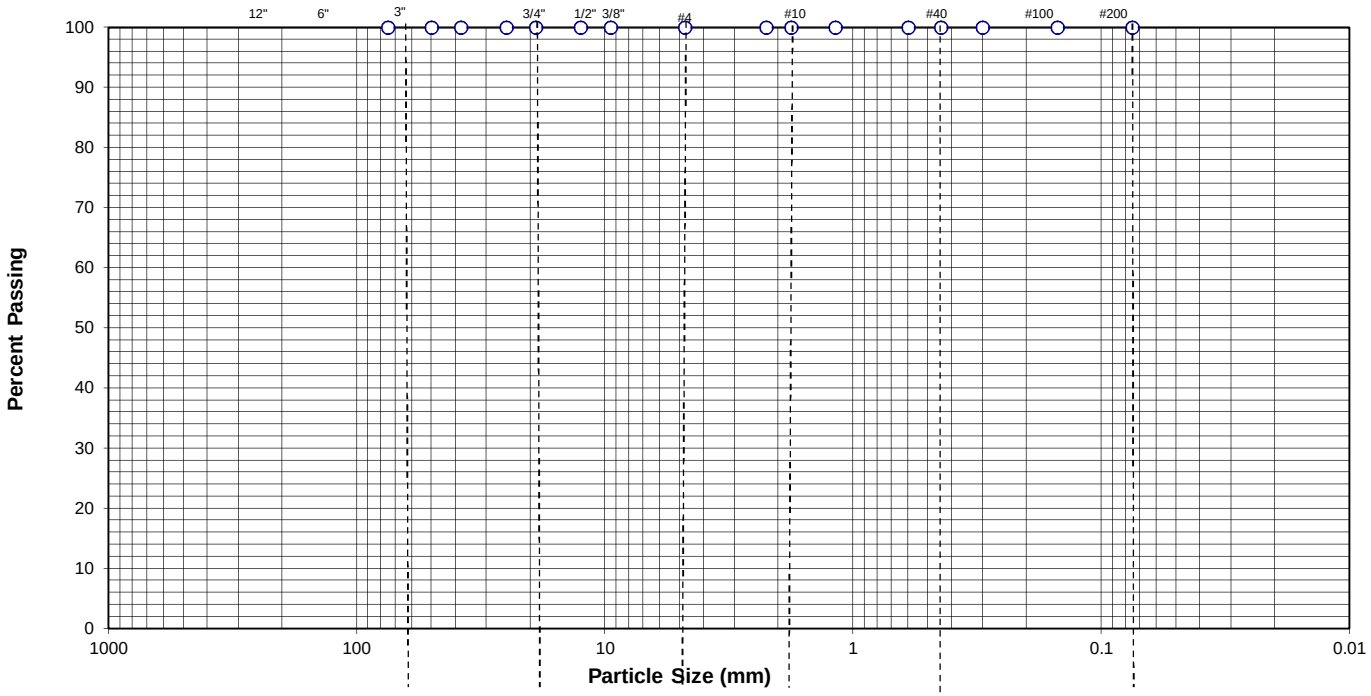
CONFORMANCE STATUS

	Meets project specifications, compressive strength requirements.
	Does not meet project specifications, compressive strength requirements.
	Test data for informational purposes only.
	Test in progress.

REMARKS:

Field Technician:	
*Initial Cure Location:	Lab
Final Cure Location:	Storage tanks @ Lab
Cylinders Tested By:	
Reviewed By:	Travis Zagar **Kumar & Associates, Inc.**

*Initial cure temperatures ranged from to ° F.



Boulders	Cobbles	Gravel		Sand			Silt and Clay
		Coarse	Fine	Coarse	Medium	Fine	

SOIL DESCRIPTION						
SAMPLE ID.	SAMPLE LOCATION	SAMPLE TYPE	COBBLES (%)	GRAVEL (%)	SAND (%)	SILT CLAY (%)
0	0	bulk	0	0	0	100.0

Kumar & Associates, Inc.
Geotechnical and Materials Engineers and Environmental Scientists

GRAIN-SIZE DISTRIBUTION CURVE (ASTM C 136)

DRAWN BY:	PROJECT NO.:	0
CHECKED BY:		
DATE:	PLATE NO.:	0

Kumar & Associates, Inc.
Geotechnical and Materials Engineers
and Environmental Scientists

Project Name:	
CCD Project Number:	
Sample Number:	
Sample Location:	
Date Sample Obtained:	
Sample Description:	

Particle Size Analysis, Atterberg Limits, Moisture Analysis

Particle Size Analysis (ASTM C 136)					
Sieve size (in / #)	Cumulative weight (g)	% Retained	% Passing	Specification Min	Specification Max
3"					
2"					
1 1/2"					
1"					
3/4"					
1/2"					
3/8"					
#4					
#8					
#10					
#16					
#30					
#40					
#50					
#100					
#200					
Pan					
Wash loss					
Total					

Moisture Analysis (ASTM C 566)	
Pan ID	
Wt. of pan (g)	
Wt. of wet soil + pan (g)	
Wt. of dry soil + pan (g)	
Wt. of water (g)	
Wt. of dry soil (g)	
Moisture content %	

- #200 Wash for Particle Size Analysis - dry sample (ASTM C 117)	
Pan ID	
Wt. of pan (g)	
Wt. of dry soil + pan before wash (g)	
Wt. of dry soil (g)	
Wt. of dry soil + pan after wash (g)	
Wt. of - #200 sieve material (g)	
- #200 sieve material percent	

Atterberg Limits		Specification
Liquid limit		
Plastic limit		
Plasticity index		

Remarks:
Atterberg Limit material was prepared using the dry method
Plastic Limit was hand rolled.
Liquid Limit device is manual.
Grooving tool used is plastic

Dish number

Atterberg Limits (ASTM D 4318)

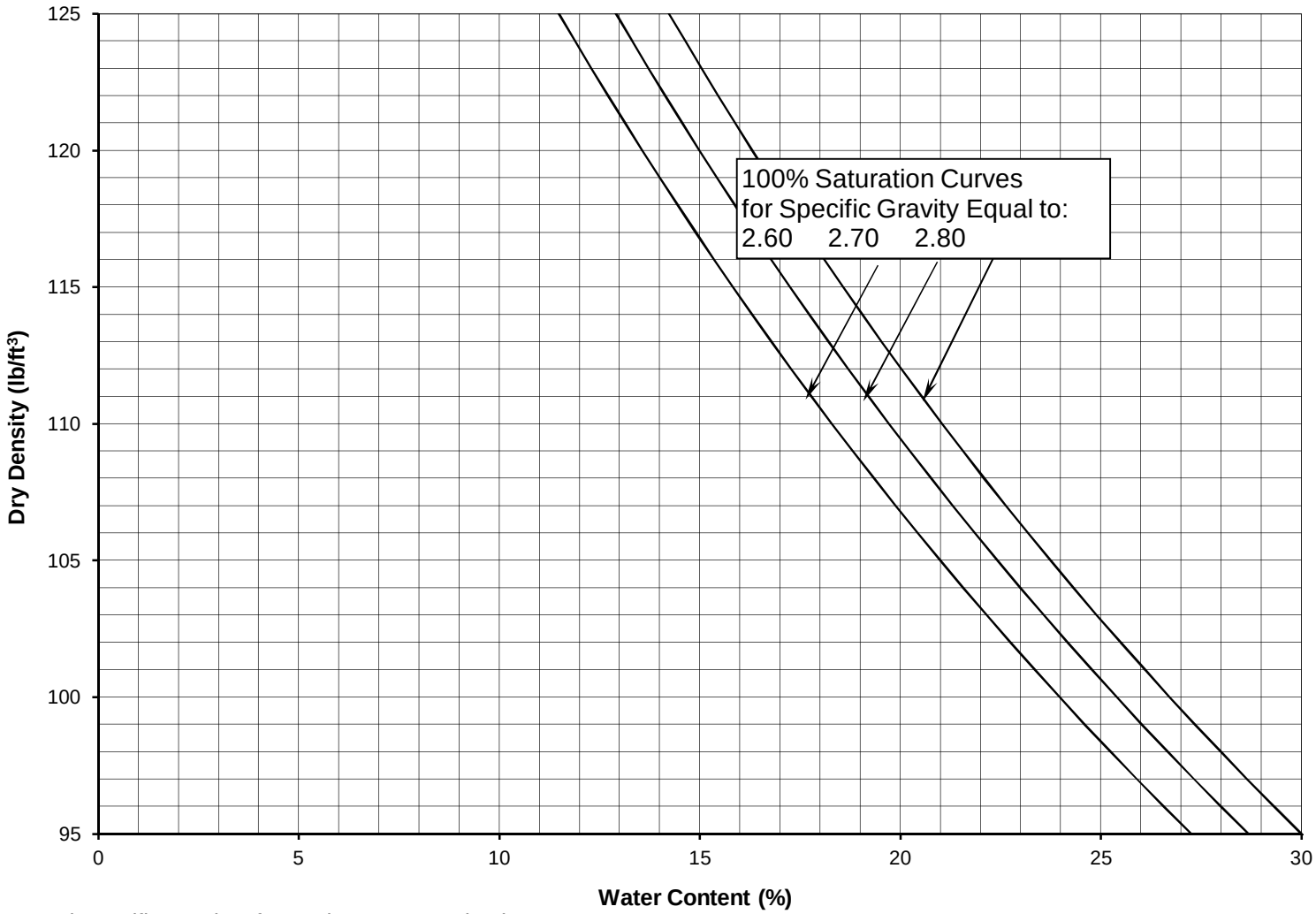
Dish drops	15-25	20-30	25-35	Plastic limit	
Dish number					
Dish and wet soil weight (g)					
Dish and dry soil weight (g)					
Dish weight (g)					
Weight of water (g)					
Weight of dry soil (g)					
Percent moisture					
Number of blows					
Corrected percent moisture					

Kumar & Associates, Inc.
Geotechnical and Materials Engineers
and Environmental Scientists

Plate Number:
Project Name:
CCD Project No:
Sample Number:
Date Sampled:

Moisture / Density Relationship Curve

Sample Location:
Visual Description:



Actual Specific Gravity of Sample Not Determined

ASTM Designation:			>#4:	0%	LL:
Method:			#4 to #200:	0%	PL:
Maximum Dry Density (pcf):			<#200:	100.0%	PI: NP
Optimum Moisture Content (%):			Field Moisture (If Determined):		
Mold Size:	4 inch	6 inch	Oversize Correction fraction:	Not Applicable	
Hammer Type:	Manual		Classification:		
Sampled By:	Date:		Calculated By:	Date:	
Set-up By:	Date:		Drawn By:	Date:	
Tested By:	Date:		Reviewed By:	Date:	

Kumar & Associates, Inc.
Geotechnical and Materials Engineers
and Environmental Scientists

Data for Proctor Plate Number:
Project Name:
CCD Project No:
Sample Number:
Date Sampled:

Moisture / Density Relationship

Sample Location:								
Visual Description:								
	Water Added (g)							
A	Weight of Mold & Wet Soil (g)							
B	Weight of Mold (g)							
C	Weight of Wet Soil (g) (A-B)							
D	Mold Volume (ft^3)							
E	Wet Density (lb/ft^3) (C/D)/453.59							

Percent Moisture Determination

	Dish Number							
F	Weight Dish & Wet Soil (g)							
G	Weight Dish & Dry Soil (g)							
H	Weight Dish (g)							
J	Weight Water (g) (F-G)							
K	Weight Dry Soil (g) (G-H)							
L	Percent Moisture (J/K)*100							
	Dry Density (lb/ft^3) (E/L)							

ASTM Designation:		Sampled By:	Date:
Method:		Set-up By:	Date:
Hammer Serial Number:		Tested By:	Date:
Mold Serial Number:		Calculated By:	Date:
Preparation Method:	Dry / Moist	Reviewed By:	Date:

Kumar & Associates, Inc.
Geotechnical and Materials Engineers
and Environmental Scientists

Technician:	Project Name:
Nuclear Gauge ID:	CCD Project Number:
Density Standard Count:	Contractor:
Moisture Standard Count:	Date of Observation:
Probe Depth (inches):	Report Number: Page: 1 of 1
Make: Serial Number:	Reviewed By:
Model:	

FIELD COMPACTION TEST AND LOCATION DATA

ASTM D 6938 AASHTO T 310

TEST NUMBER	Nuclear Moisture (pcf)	Nuclear Moisture (%)	Nuclear Wet Density (pcf)	Nuclear Dry Density (pcf)	Proctor Curve Number	Optimum Moisture Content (%)	Maximum Dry Density (pcf)	Deviation from Optimum Moisture	Upper Allowable Moisture Deviation	Lower Allowable Moisture Deviation	Tested Compaction (%)	Specified Compaction (%)	Pass/Fail	
													Moisture Content	Compaction
LOCATION														
LOCATION														
LOCATION														
LOCATION														
LOCATION														
LOCATION														
LOCATION														

REMARKS:

403 HOT MIX ASPHALT PROPERTIES TESTS (CDOT Gyratory)

PROJECT NO:
SAMPLE ID:
PROJECT NAME:
DATE SAMPLED:
MIX DESIGN NO.:
SUPPLIER:

Sieve Gradation Test					
sieve size	weight (g)	%retained	%loss	Spec	
1 1/2"					
1"					
3/4"					
1/2"					
3/8"					
#4					
#8					
#16					
#30					
#50					
#100					
#200					
pan					
total					
start total					
		Efficiency Check			

AC Content By Ignition Method	
Tare weight	
Start Sample Weight	
Start Sample Weight w/ tare	
Final Sample Weight w/ tare	
Weight Loss	
Initial % AC	
Ignition Oven Correction Factor	
Moisture content	
Corrected % AC	

Moisture Content	
wet asphalt + pan (g)	
dry asphalt + pan (g)	
wt. of pan (g)	

#200 wash for Gradation	
dry wt. before wash	
dry wt. after wash	
% wash loss	

Maximum Specific Gravity (Rice)			
A) Sample Wt		A) Sample Wt	
B) Flask+Water+Lid Wt		B) Flask+Water+Lid Wt	
C) Sample+Flask+Water+Lid Wt		C) Sample+Flask+Water+Lid Wt	
Rice = A/(A+B-C)		Rice = A/(A+B-C)	
	PCF		

Gyratory Compaction			# Gyr.		Temp ^{0}F	Mold Dia., mm			
Lab ID	air wt	ssd wt	subm wt	spec grav	Ht, mm	Hor. psi	D value	Stability	Corrected Stability
A									
B									
C									
AVE:			PCF						

SUMMARY OF TEST RESULTS			
Property	Result	Specifications	
AC			
Rice			
Air Voids			
VMA			
VFA			
Dust Prop.			
Stability			

METHOD USED	ASTM	AASHTO	CDOT
AC Ignition	D6307	T 308	CP-L 5120
Moisture Content	D2216	T 265	CP-L 43
Wash Loss	C117	T 11	AASHTO T 11
Sieve Analysis	D5444	T 30	CP-L 31
Max. Specific Gravity	D2041	T 209	CP-L 51
Bulk Specific Gravity	D2726	T 166	CP-L 44
Gyratory Compaction	D6925	T 312	CP-L 5115
Hveem Stabilty	D1560	T 246	CP-L 5106

Test Technicians	
AC by	Rice by
Moisture by	Bulk by
Wash by	Gyro by
Sieve by	Hveem by

Lab Manager: _____ Date _____

Reviewed By: _____ Date _____

Technician:		Project Name:	
Nuclear Gauge ID:		Project Number:	
Density Standard Count:		Date of Observation:	
Moisture Standard Count:		Report Number:	Page: 1 of 1
Probe Depth (inches):	Back Scatter	Reviewed By:	
Mix ID:		Make:	Model
Lift thickness:		Serial No.	

ASPHALT FIELD COMPACTION TEST AND LOCATION DATA

ASTM D 2950

Test Number	Nuclear Moisture (pcf)	Nuclear Moisture (%)	Wet Density (pcf)	Maximum Density (pcf)	Lift Number	Surface or Base	Percent Compaction (%)	Specified Compaction (%)	Pass / Fail
LOCATION									
LOCATION									
LOCATION									
LOCATION									
LOCATION									
LOCATION									
LOCATION									
REMARKS:									

Kumar & Associates, Inc.
Geotechnical and Materials Engineers
and Environmental Scientists

Technician:		Project Name:
Nuclear Gauge ID:		CCD Project Number:
Density Standard Count:		Contractor:
Moisture Standard Count:		Date of Report:
Probe Depth (inches):		Report Number: Page: 1 of 1
Make:	Serial Number:	Reviewed By: Travis Zagar
Model:		

P-304 CTB FIELD COMPACTION TEST AND LOCATION DATA

ASTM D 6938

DATE	Lot / Sublot	Grid #	Test Locations			Gauge Density (pcf)		Maximum Dry Density from Proctor (pcf)	Percent Compaction		
			Northing	Easting	Elevation	Wet	Dry		Per Test	Average per Sublot	Average per Lot

REMARKS:

APPENDIX B

QUALITY ASSURANCE

MATERIAL TEST REPORT FORMS

(P-152, P-154, P-208, P-209) ACCEPTANCE TESTS

AIRPORT: Denver International Airport

PROJECT NO: DEN Tenant Project No. swa_1901.SWA.RON.Hangar

P-152, 154, P-208, P-209 DENSITY TESTS SUMMARY

DATE	LOT/SAMPLE NUMBER	* MOISTURE CONTENT (%)	OPT MOISTURE (%)	MINIMUM Density (%) SPECIFIED	ACTUAL Density (%)	REMARKS

*For expansive clays only (PI > 12)

NOTE: Retests must be identified and cross - referenced to original failed test.

DENVER INTERNATIONAL AIRPORT
DENVER, COLORADO
DEN TENANT PROJECT NO.: swa_1901.SWA.RON.Hangar
P-153 CONTROLLED LOW STRENGTH MATERIAL ACCEPTANCE

Date	Location or Structure ID	28-Day Strength
Specification Limits		100-200 psi

Footnotes:

DENVER INTERNATIONAL AIRPORT
DENVER, COLORADO

ACCEPTANCE TESTS
P-501 CONCRETE SUMMARY
DESIGN THICKNESS = _ _ _"
SPECIFIED COMPRESSIVE STRENGTH = ____ PSI

PROJECT NO.: swa_1901.SWA.RON.Hangar

LOT X	CORE THICKNESS (INCHES)				COMPRESSIVE STRENGTH				TOTAL % PAY	LOT QUANTITY	UNIT PRICE	TOTAL PAYMENT
		LOT AVG.	PWL	% PAY	28 DAY SET AVG.	LOT AVG.	PWL	% PAY				
Sublot 1												
Sublot 2												
Sublot 3												
Sublot 4												
LOT X	CORE THICKNESS (INCHES)				COMPRESSIVE STRENGTH				TOTAL % PAY	LOT QUANTITY	UNIT PRICE	TOTAL PAYMENT
		LOT AVG.	PWL	% PAY	28 DAY SET AVG.	LOT AVG.	PWL	% PAY				
Sublot 1												
Sublot 2												
Sublot 3												
Sublot 4												
LOT X	CORE THICKNESS (INCHES)				COMPRESSIVE STRENGTH				TOTAL % PAY	LOT QUANTITY	UNIT PRICE	TOTAL PAYMENT
		LOT AVG.	PWL	% PAY	28 DAY SET AVG.	LOT AVG.	PWL	% PAY				
Sublot 1												
Sublot 2												
Sublot 3												
Sublot 4												
LOT X	CORE THICKNESS (INCHES)				COMPRESSIVE STRENGTH				TOTAL % PAY	LOT QUANTITY	UNIT PRICE	TOTAL PAYMENT
		LOT AVG.	PWL	% PAY	28 DAY SET AVG.	LOT AVG.	PWL	% PAY				
Sublot 1												
Sublot 2												
Sublot 3												
Sublot 4												

GRADE TOLERANCE SUMMARY
P-501 CONCRETE PAVING
DENVER INTERNATIONAL AIRPORT
DENVER, COLORADO
DEN TENANT PROJECT NO. swa_1901.SWA.RON.Hangar

Date/Lot	Number of Elevation Checks/Lot	Elevation Checks Meeting Spec. (%)	Number of Elevation Checks Out of Specification (Action Taken)

GRADE TOLERANCE SUMMARY
P-501 CONCRETE PAVING
DENVER INTERNATIONAL AIRPORT
DENVER, COLORADO
DEN TENANT PROJECT NO. swa_1901.SWA.RON.Hangar

Date/Lot	Number of Observations/Lot	Observations Meeting Spec.(%)	Number of Observations Checks Out of Specification (Action Taken)

APPENDIX C

WELDING CERTIFICATIONS

Weld Certificates

Southwest Maintenance Hangar

– Commercial – Industrial – Military – Mining –

7528 South Cornia Drive
South Weber, UT 84405

Phone: (801) 917-5800
Fax: (801) 917-5799

Reference: Joel Botello
Date: 2/1/2019

Subject: AWS D1.1, Section 4 Qualification, Part 4.1.3 Period of Effectiveness.

To Whom It May Concern:

Requirement: In accordance with the welder qualifications outlined in section 4 of AWS D1.1/D1.1M:2010 Structural Welding Code the welder named in this letter has been tested by Sure Steel, Inc. and is qualified to weld within the range listed on their welders certification. This letter also signifies that the holder has been actively engaged in the welding processes and positions listed on this letter since the date on their welder certification with no break in welding service greater than 6 months.

Sure Steel, Inc. certifies that Joel Botello has been welding within his qualification range since the date of certification, with no break in welding service greater than 6 months. Joel Botello has demonstrated the ability to perform satisfactory within the limits of his qualifications. Welding will conform to all requirements specified in AWS D1.1 / D1.1M.

Welding Process:	FCAW				SMAW				Arc Spot			D1.8
Welding Position:					1F	2F	3F	4F				
					1G	2G	3G	4G				

Please contact me should you have any questions.
Respectfully,
Sure Steel, Inc.

Kade Bingham
Quality Control Manager

SURE STEEL, INC.

7528 South Cornia Drive - South Weber, UT 84405
P 801-917-5800 F 801-917-5799 www.SureSteel.com

Welder Qualification Test Record

Name: Joel Botello
Type of Welder: Manual
Welding Procedure Specification No.: B-U2a-18

Certification Date: 12/19/2014
I.D. No.: 2107

Welding Variables	Actual Values	Qualification Range
Process/type	SMAW	SMAW
Position	3G	1F, 2F, 3F, 1G, 2G, 3G
Electrode (single or multiple)	Single	Single
Current/polarity	DCEP	N/A
Weld progression	Uphand	
Backing (yes/no)	Yes	Backing required
Material/spec.	A36	Group 1 & 2
Base Metal Thickness (Plate)		
Groove	3/8"	1/8" to 3/4"
Fillet	N/A	1/8" to 3/4"
Thickness (Pipe/Tube)		
Groove	N/A	1/8" to 3/4"
Fillet	N/A	1/8" to 3/4"
Diameter (Pipe)		
Groove	N/A	> 24"
Fillet	N/A	> 24"
Filler metal spec. No.	AWS-5.1 &5.5	AWS-5.1 & 5.5
Class	E7018	
F number	F-4	F-4 & Lower
Gas/flux type		
Other		

Visual Inspection			
Acceptable: Yes ☒ No ☐			
Guided Bend Test Results			
Type: N/A	Results: Pass ☐ Fail ☐	Type: N/A	Results: Pass ☐ Fail ☐
Comments: N/A			
Fillet Test Results			
Appearance: Acceptable ☐ Not Acceptable ☐		**Fillet size:** N/A	
Fracture test root penetration: Acceptable ☐ Not Acceptable ☐		**Macrotech:** Acceptable ☐ Not Acceptable ☐	
Volumetric NDE Results			
Testing agency: Skyview (Radiographic)			
Lab test no.: SSI2107-G		Results: Acceptable ☒ Not Acceptable ☐	

REMARKS: N/A

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of AWS D1.1.

Jared P Mortensen
CWI 09094111
QC1 EXP. 9/1/2015

Sure Steel, Inc.:

Kade Bingham ~ Phone: (801) 917-5800

Skyview Testing:

Jared Mortensen ~ Phone: (801) 940-2329

Reference: Guillermo Garcia
Date: 2/1/2019

Subject: AWS D1.1, Section 4 Qualification, Part 4.1.3 Period of Effectiveness.

To Whom It May Concern:

Requirement: In accordance with the welder qualifications outlined in section 4 of AWS D1.1/D1.1M:2010 Structural Welding Code the welder named in this letter has been tested by Sure Steel, Inc. and is qualified to weld within the range listed on their welders certification. This letter also signifies that the holder has been actively engaged in the welding processes and positions listed on this letter since the date on their welder certification with no break in welding service greater than 6 months.

Sure Steel, Inc. certifies that Guillermo Garcia has been welding within his qualification range since the date of certification, with no break in welding service greater than 6 months. Guillermo Garcia has demonstrated the ability to perform satisfactory within the limits of his qualifications. Welding will conform to all requirements specified in AWS D1.1 / D1.1M.

Welding Process:	FCAW				SMAW				Arc Spot			D1.8
Welding Position:	1F	2F	3F	4F	1F	2F	3F	4F				
	1G	2G	3G	4G	1G	2G	3G	4G				

Please contact me should you have any questions.
Respectfully,
Sure Steel, Inc.

Kade Bingham
Quality Control Manager

SURE STEEL, INC.
7528 South Cornia Drive - South Weber, UT 84405
P 801-917-5800 F 801-917-5799 www.SureSteel.com

Welder Qualification Test Record

Name: Guillermo Garcia
Certification Date: 5/9/2017
Type of Welder: Manual
I.D. No.: 9390
Welding Procedure Specification No.: F-U1a-18 & B-U2a-18

Welding Variables	Actual Values	Qualification Range
Process/type	FCAW	FCAW
Position	3G, 4G	1F, 2F, 3F, 4F 1G, 2G, 3G, 4G
Electrode (single or multiple)	Single	Single
Current/polarity	DC	N/A
Weld progression	Uphand/overhead	
Backing (yes/no)	Yes	Backing required
Material/spec.	A36	Group 1 & 2
Base Metal Thickness (Plate)		
Groove	1″	1/8″ to unlimited
Fillet	N/A	Unlimited
Thickness (Pipe/Tube)		
Groove	N/A	1/8″ to unlimited
Fillet	N/A	Unlimited
Diameter (Pipe)		
Groove	N/A	> 24″
Fillet	N/A	> 24″
Filler metal spec. No.	AWS-5.20	AWS-5.20
Class	E71T-8	
F number		
Gas/flux type		
Other		

Visual Inspection			
Acceptable: Yes ☒ No ☐			
Guided Bend Test Results			
Type: Side	Results: Pass	Type: Side	Results: Pass
Comments: None.			
Fillet Test Results			
Appearance: Acceptable ☐ Not Acceptable ☐		**Fillet size:** -	
Fracture test root penetration: Acceptable ☐ Not Acceptable ☐		**Macrotech:** Acceptable ☐ Not Acceptable ☐	
Volumetric NDE Results			
Testing agency:			
Lab test no.:		Results:	

REMARKS: N/A

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of AWS D1.1.

Sure Steel, Inc.:

Kade Bingham ~ Phone: (801) 917-5800

Kade Bingham
CWI 16010091
QC1 EXP 1/1/2019

SURE STEEL, INC.

7528 South Cornia Drive - South Weber, UT 84405
P 801-917-5800 F 801-917-5799 www.SureSteel.com

Welder Qualification Test Record

Name: Guillermo Garcia
Certification Date: 5/9/2017
Type of Welder: Manual
I.D. No.: 9390
Welding Procedure Specification No.: B-U2a-18

Welding Variables	Actual Values	Qualification Range
Process/type	SMAW	SMAW
Position	3G, 4G	1F, 2F, 3F, 4F, 1G, 2G, 3G, 4G
Electrode (single or multiple)	Single	Single
Current/polarity	DCEP	N/A
Weld progression	Uphand/Overhead	
Backing (yes/no)	Yes	Backing required
Material/spec.	A36	Group 1 & 2
Base Metal Thickness (Plate)		
Groove	1″	1/8″ to unlimited
Fillet	N/A	Unlimited
Thickness (Pipe/Tube)		
Groove	N/A	1/8″ to unlimited
Fillet	N/A	Unlimited
Diameter (Pipe)		
Groove	N/A	> 24″
Fillet	N/A	> 24″
Filler metal spec. No.	AWS-5.1 & 5.5	AWS-5.1 & 5.5
Class	E7018	
F number	F-4	F-4 & lower
Gas/flux type		
Other		

Visual Inspection			
Acceptable: Yes ☒ No ☐			
Guided Bend Test Results			
Type: 3G, 4G side	Results: Pass ☒ Fail ☐	Type: 3G, 4G side	Results: Pass ☒ Fail ☐
Comments: None.			
Fillet Test Results			
Appearance: Acceptable ☐ Not Acceptable ☐		**Fillet size:** N/A	
Fracture test root penetration: Acceptable ☐ Not Acceptable ☐		**Macrotech:** Acceptable ☐ Not Acceptable ☐	
Volumetric NDE Results			
Testing agency: N/A			
Lab test no.:	Results: Acceptable ☐ Not Acceptable ☐		

REMARKS: N/A

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of AWS D1.1.

Kade Bingham
CWI 16010091
QC1 EXP 1/1/2019

Sure Steel, Inc.:

Kade Bingham ~ Phone: (801) 917-5800

Reference: Juan Carlos Garcia Sr
Date: 2/1/2019

Subject: AWS D1.1, Section 4 Qualification, Part 4.1.3 Period of Effectiveness.

To Whom It May Concern:

Requirement: In accordance with the welder qualifications outlined in section 4 of AWS D1.1/D1.1M:2010 Structural Welding Code the welder named in this letter has been tested by Sure Steel, Inc. and is qualified to weld within the range listed on their welders certification. This letter also signifies that the holder has been actively engaged in the welding processes and positions listed on this letter since the date on their welder certification with no break in welding service greater than 6 months.

Sure Steel, Inc. certifies that Juan Carlos Garcia Sr has been welding within his qualification range since the date of certification, with no break in welding service greater than 6 months. Juan Carlos Garcia Sr has demonstrated the ability to perform satisfactory within the limits of his qualifications. Welding will conform to all requirements specified in AWS D1.1 / D1.1M.

Welding Process:	FCAW	SMAW	Arc Spot	D1.8
Welding Position:			16ga, 18ga, 19ga, 20ga, 22ga	

Please contact me should you have any questions.
Respectfully,
Sure Steel, Inc.

Kade Bingham
Quality Control Manager

SURE STEEL, INC.

7528 South Cornia Drive - South Weber, UT 84405
P 801-917-5800 F 801-917-5799 www.SureSteel.com

Welder Qualification Test Record for Sheet Steel

Name: Juan Garcia Sr
Type of Welder: Manual
In accordance with WPS No. APWZ-18-1, APWZ-18-2

Certification Date: 6/15/15
I.D. No: 7108
Welding Process: SMAW

Welding Variables	Actual Values	Qualification Range
Joint		
Joint type	Arc spot	Arc spot
Backing material type	A36 Steel	AWS D1:1 group 1 & 2
Groove welded from: (one side or both)	N/A	N/A
Material Specification		
Sheet steel	A653	
Supporting base metal	1/2" plate A36	Unlimited
Sheet Thickness		
Arc spot	18 ga,	22 ga to 16 ga
Arc seam	N/A	N/A
Coating(s)		
Type	Galvanized	Galvanized
Thickness		
Position (4.7.1.5 and 4.7.1.6)		
Arc spot	Flat	Flat
Arc seam	N/A	N/A
Gas (4.7.1.4)	N/A	N/A
Electrode (4.7.3.1 and 4.7.1.4)		
Size	1/8"	Unlimited
Group designation	F4	F4, F3, F2
Visual Examination Results Test 1 Single Thickness		
Specimen 1: Arc spot weld, 18 ga single ply Appearance: Pass ☒ Fail ☐ Undercut: No	Specimen 2: Arc spot weld, 18 ga single ply Reinforcement: 1/16" Diameter of arc spot nugget: 1/2"	
Visual Examination Results Test 2 Double Thickness		
Specimen 1: 18 ga double ply Appearance: Pass ☒ Fail ☐ Undercut: No	Specimen 2: 18 ga double ply Reinforcement: 1/32 Diameter of arc spot nugget: 1/2"	

REMARKS: N/A

Jared P Mortensen
CWI 09094111
QC1 EXP. 9/1/2015

We, the undersigned, certify that the statements in the record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of AWS D1.3 clause 4.

Sure Steel, Inc.:

Kade Bingham ~ Phone: (801) 917-5800

Skyview Testing:

Jared Mortensen ~ Phone: (801) 940-2329

Reference: Javier Luis Garcia
Date: 2/1/2019

Subject: AWS D1.1, Section 4 Qualification, Part 4.1.3 Period of Effectiveness.

To Whom It May Concern:

Requirement: In accordance with the welder qualifications outlined in section 4 of AWS D1.1/D1.1M:2010 Structural Welding Code the welder named in this letter has been tested by Sure Steel, Inc. and is qualified to weld within the range listed on their welders certification. This letter also signifies that the holder has been actively engaged in the welding processes and positions listed on this letter since the date on their welder certification with no break in welding service greater than 6 months.

Sure Steel, Inc. certifies that Javier Luis Garcia has been welding within his qualification range since the date of certification, with no break in welding service greater than 6 months. Javier Luis Garcia has demonstrated the ability to perform satisfactory within the limits of his qualifications. Welding will conform to all requirements specified in AWS D1.1 / D1.1M.

Welding Process:	FCAW				SMAW				Arc Spot			D1.8
Welding Position:					1F	2F	3F					
					1G	2G	3G					

Please contact me should you have any questions.
Respectfully,
Sure Steel, Inc.

Kade Bingham
Quality Control Manager

SURE STEEL, INC.

7528 South Cornia Drive - South Weber, UT 84405
P 801-917-5800 F 801-917-5799 www.SureSteel.com

Welder Qualification Test Record

Name: Javier Louis Garcia
Type of Welder: Manual
Welding Procedure Specification No.: B-U2a-18

Certification Date: 12/19/2014
I.D. No.: 9892

Welding Variables	Actual Values	Qualification Range
Process/type	SMAW	SMAW
Position	3G	1F, 2F, 3F, 1G, 2G, 3G
Electrode (single or multiple)	Single	Single
Current/polarity	DC	N/A
Weld progression	Uphand	
Backing (yes/no)	Yes	As required
Material/spec.	A36	Group 1 & 2
Base Metal Thickness (Plate)		
Groove	3/8"	1/8" to 3/4"
Fillet	N/A	1/8" to 3/4"
Thickness (Pipe/Tube)		
Groove	N/A	1/8" to 3/4"
Fillet	N/A	1/8" to 3/4"
Diameter (Pipe)		
Groove	N/A	> 24"
Fillet	N/A	> 24"
Filler metal spec. No.	AWS-5.1	AWS-5.1
Class	E7018	
F number	F-4	F-4 & Lower
Gas/flux type		
Other		

Visual Inspection			
Acceptable: Yes ☒ No ☐			
Guided Bend Test Results			
Type: Side	Results: Pass ☒ Fail ☐	Type: Side	Results: Pass ☒ Fail ☐
Comments: None.			
Fillet Test Results			
Appearance: Acceptable ☐ Not Acceptable ☐		**Fillet size:** N/A	
Fracture test root penetration: Acceptable ☐ Not Acceptable ☐		**Macrotech:** Acceptable ☐ Not Acceptable ☐	
Volumetric NDE Results			
Testing agency: N/A			
Lab test no.: N/A		Results: Acceptable ☐ Not Acceptable ☐	

REMARKS: N/A

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of AWS D1.1.

Jared P Mortensen
CWI 09094111
QC1 EXP. 9/1/2015

Sure Steel, Inc.:

Kade Bingham ~ Phone: (801) 917-5800

Skyview Testing:

Jared Mortensen ~ Phone: (801) 940-2329

Reference: Josue Martinez
Date: 2/1/2019

Subject: AWS D1.1, Section 4 Qualification, Part 4.1.3 Period of Effectiveness.

To Whom It May Concern:

Requirement: In accordance with the welder qualifications outlined in section 4 of AWS D1.1/D1.1M:2010 Structural Welding Code the welder named in this letter has been tested by Sure Steel, Inc. and is qualified to weld within the range listed on their welders certification. This letter also signifies that the holder has been actively engaged in the welding processes and positions listed on this letter since the date on their welder certification with no break in welding service greater than 6 months.

Sure Steel, Inc. certifies that Josue Martinez has been welding within his qualification range since the date of certification, with no break in welding service greater than 6 months. Josue Martinez has demonstrated the ability to perform satisfactory within the limits of his qualifications. Welding will conform to all requirements specified in AWS D1.1 / D1.1M.

Welding Process:	FCAW				SMAW				Arc Spot			D1.8
Welding Position:						2F				16ga	18ga	
									19ga	20ga	22ga	

Please contact me should you have any questions.
Respectfully,
Sure Steel, Inc.

Kade Bingham
Quality Control Manager

SURE STEEL, INC.

7528 South Cornia Drive - South Weber, UT 84405
P 801-917-5800 F 801-917-5799 www.SureSteel.com

Welder Qualification Test Record

Name: Josue Martinez
Type of Welder: Manual
Welding Procedure Specification No.: F-U1a-18

Certification Date: 11/27/2017
I.D. No.: 9662

Welding Variables	Actual Values	Qualification Range
Process/type	SMAW	SMAW
Position	2F	2F
Electrode (single or multiple)	Single	Single
Current/polarity	DCEP	N/A
Weld progression	Horizontal (Fillet),	
Backing (yes/no)	No	N/A
Material/spec.	A36	Group 1 & 2
Base Metal Thickness (Plate)		
Groove	N/A	N/A
Fillet	1/2"	1/8" to unlimited
Thickness (Pipe/Tube)		
Groove	N/A	N/A
Fillet	N/A	1/8" to unlimited
Diameter (Pipe)		
Groove	N/A	N/A
Fillet	N/A	> 24"
Filler metal spec. No.	A5.1	A5.1
Class	E7018	
F number	F-4	F-4 & Lower
Gas/flux type		
Other		

Visual Inspection			
Acceptable: Yes ☒ No ☐			
Guided Bend Test Results			
Type: N/A	Results: Pass ☐ Fail ☐	Type: N/A	Results: Pass ☐ Fail ☐
Comments: N/A			
Fillet Test Results			
Appearance: Acceptable ☒ Not Acceptable ☐		**Fillet size:** 5/16"	
Fracture test root penetration: Acceptable ☒ Not Acceptable ☐		**Macrotech:** Acceptable ☒ Not Acceptable ☐	
Volumetric NDE Results			
Testing agency: N/A			
Lab test no.: SSI9662-F	Results: Acceptable ☒ Not Acceptable ☐		

REMARKS: N/A

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of AWS D1.1.

Sure Steel, Inc.:

Kade Bingham ~ Phone: (801) 917-5800

Kade Bingham
CWI 16010091
QC1 EXP. 1/1/2019

Reference: Leonel Sauceda
Date: 2/1/2019

Subject: AWS D1.1, Section 4 Qualification, Part 4.1.3 Period of Effectiveness.

To Whom It May Concern:

Requirement: In accordance with the welder qualifications outlined in section 4 of AWS D1.1/D1.1M:2010 Structural Welding Code the welder named in this letter has been tested by Sure Steel, Inc. and is qualified to weld within the range listed on their welders certification. This letter also signifies that the holder has been actively engaged in the welding processes and positions listed on this letter since the date on their welder certification with no break in welding service greater than 6 months.

Sure Steel, Inc. certifies that Leonel Sauceda has been welding within his qualification range since the date of certification, with no break in welding service greater than 6 months. Leonel Sauceda has demonstrated the ability to perform satisfactory within the limits of his qualifications. Welding will conform to all requirements specified in AWS D1.1 / D1.1M.

Welding Process:	FCAW				SMAW				Arc Spot			D1.8
Welding Position:					1F	2F	3F					

Please contact me should you have any questions.
Respectfully,
Sure Steel, Inc.

Kade Bingham
Quality Control Manager

SURE STEEL, INC.

7528 South Cornia Drive - South Weber, UT 84405
P 801-917-5800 F 801-917-5799 www.SureSteel.com

Welder Qualification Test Record

Name: Leonel Sauceda
Certification Date: 11/27/2017
Type of Welder: Manual
I.D. No.: 0452
Welding Procedure Specification No.: F-U1a-18

Welding Variables	Actual Values	Qualification Range
Process/type	SMAW	SMAW
Position	3F	1F, 2F, 3F
Electrode (single or multiple)	Single	Single
Current/polarity	DCEP	N/A
Weld progression	Uphand/overhead	
Backing (yes/no)	No	
Material/spec.	A36	Group 1 & 2
Base Metal Thickness (Plate)		
Groove	N/A	N/A
Fillet	1/2"	1/8" to Unlimited
Thickness (Pipe/Tube)		
Groove	N/A	N/A
Fillet	1/2"	1/8" to Unlimited
Diameter (Pipe)		
Groove	N/A	N/A
Fillet	N/A	> 24"
Filler metal spec. No.	AWS-5.1-81	AWS-5.1-81
Class	E7018	
F number	F-4	F-4 & Lower
Gas/flux type		
Other		

Visual Inspection			
Acceptable: Yes ☒ No ☐			
Guided Bend Test Results			
Type: N/A	Results: Pass ☐ Fail ☐	Type: N/A	Results: Pass ☐ Fail ☐
Comments: N/A			
Fillet Test Results			
Appearance: Acceptable ☒ Not Acceptable ☐		**Fillet size:** 5/16"	
Fracture test root penetration: Acceptable ☒ Not Acceptable ☐		**Macrotech:** Acceptable ☒ Not Acceptable ☐	
Volumetric NDE Results			
Testing agency: N/A			
Lab test no.: SSI0452-3F		Results: Acceptable ☒ Not Acceptable ☐	

REMARKS: N/A

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of AWS D1.1.

Sure Steel, Inc.:

Kade Bingham ~ Phone: (801) 917-5800

AWS® Kade Bingham CWI 16010091 QC1 EXP. 1/1/2019

Reference: Nazaria Sauceda
Date: 2/1/2019

Subject: AWS D1.1, Section 4 Qualification, Part 4.1.3 Period of Effectiveness.

To Whom It May Concern:

Requirement: In accordance with the welder qualifications outlined in section 4 of AWS D1.1/D1.1M:2010 Structural Welding Code the welder named in this letter has been tested by Sure Steel, Inc. and is qualified to weld within the range listed on their welders certification. This letter also signifies that the holder has been actively engaged in the welding processes and positions listed on this letter since the date on their welder certification with no break in welding service greater than 6 months.

Sure Steel, Inc. certifies that Nazaria Sauceda has been welding within his qualification range since the date of certification, with no break in welding service greater than 6 months. Nazaria Sauceda has demonstrated the ability to perform satisfactory within the limits of his qualifications. Welding will conform to all requirements specified in AWS D1.1 / D1.1M.

Welding Process:	FCAW				SMAW				Arc Spot			D1.8
Welding Position:					1F	2F		4F				

Please contact me should you have any questions.
Respectfully,
Sure Steel, Inc.

Kade Bingham
Quality Control Manager

SURE STEEL, INC.

7528 South Cornia Drive - South Weber, UT 84405
P 801-917-5800 F 801-917-5799 www.SureSteel.com

Welder Qualification Test Record

Name: Nazaria Sauceda
Type of Welder: Manual
Welding Procedure Specification No.: F-U1a-18

Certification Date: 11/27/2017
I.D. No.: 7359

Welding Variables	Actual Values	Qualification Range
Process/type	SMAW	SMAW
Position	4F	1F, 2F, 4F
Electrode (single or multiple)	Single	Single
Current/polarity	DCEP	N/A
Weld progression	Overhead	
Backing (yes/no)	No	
Material/spec.	A36	Group 1 & 2
Base Metal Thickness (Plate)		
Groove	N/A	N/A
Fillet	1/2"	1/8" to unlimited
Thickness (Pipe/Tube)		
Groove	N/A	N/A
Fillet	N/A	1/8" to unlimited
Diameter (Pipe)		
Groove	N/A	N/A
Fillet	N/A	> 24"
Filler metal spec. No.	AWS-5.1 & 5.5	AWS-5.1 & 5.5
Class	E7018	
F number	F-4	F-4 & Lower
Gas/flux type		
Other		

Visual Inspection			
Acceptable: Yes ☒ No ☐			
Guided Bend Test Results			
Type: N/A	Results: Pass ☐ Fail ☐	Type: N/A	Results: Pass ☐ Fail ☐
Comments: N/A			
Fillet Test Results			
Appearance: Acceptable ☒ Not Acceptable ☐		**Fillet size:** 5/16"	
Fracture test root penetration: Acceptable ☒ Not Acceptable ☐		**Macrotech:** Acceptable ☒ Not Acceptable ☐	
Volumetric NDE Results			
Testing agency: N/A			
Lab test no.: SSI7357-4F	Results: Acceptable ☒ Not Acceptable ☐		

REMARKS: N/A

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of AWS D1.1.

Sure Steel, Inc.:

Kade Bingham ~ Phone: (801) 917-5800

AWS® Kade Bingham CWI 16010091 KB QC1 EXP. 1/1/2019

Reference: Filipe Yerena
Date: 2/1/2019

Subject: AWS D1.1, Section 4 Qualification, Part 4.1.3 Period of Effectiveness.

To Whom It May Concern:

Requirement: In accordance with the welder qualifications outlined in section 4 of AWS D1.1/D1.1M:2010 Structural Welding Code the welder named in this letter has been tested by Sure Steel, Inc. and is qualified to weld within the range listed on their welders certification. This letter also signifies that the holder has been actively engaged in the welding processes and positions listed on this letter since the date on their welder certification with no break in welding service greater than 6 months.

Sure Steel, Inc. certifies that Filipe Yerena has been welding within his qualification range since the date of certification, with no break in welding service greater than 6 months. Filipe Yerena has demonstrated the ability to perform satisfactory within the limits of his qualifications. Welding will conform to all requirements specified in AWS D1.1 / D1.1M.

Welding Process:	FCAW	SMAW	Arc Spot	D1.8
Welding Position:			16ga, 18ga, 19ga, 20ga, 22ga	

Please contact me should you have any questions.
Respectfully,
Sure Steel, Inc.

Kade Bingham
Quality Control Manager

SURE STEEL, INC.

7528 South Cornia Drive - South Weber, UT 84405
P 801-917-5800 F 801-917-5799 www.SureSteel.com

Welder Qualification Test Record

Name: Felipe Yerena
Certification Date: 11/27/2017
Type of Welder: Manual
I.D. No.: 8527
Welding Procedure Specification No.: F-U1a-18

Welding Variables	Actual Values	Qualification Range
Process/type	SMAW	SMAW
Position	2F	2F
Electrode (single or multiple)	Single	Single
Current/polarity	DCEP	N/A
Weld progression	Horizontal (Fillet),	
Backing (yes/no)	No	N/A
Material/spec.	A36	Group 1 & 2
Base Metal Thickness (Plate)		
Groove	N/A	N/A
Fillet	1/2"	1/8" to unlimited
Thickness (Pipe/Tube)		
Groove	N/A	N/A
Fillet	N/A	1/8" to unlimited
Diameter (Pipe)		
Groove	N/A	N/A
Fillet	N/A	> 24"
Filler metal spec. No.	A5.1	A5.1
Class	E7018	
F number	F-4	F-4 & Lower
Gas/flux type		
Other		

Visual Inspection			
Acceptable: Yes ☒ No ☐			
Guided Bend Test Results			
Type: N/A	Results: Pass ☐ Fail ☐	Type: N/A	Results: Pass ☐ Fail ☐
Comments: N/A			
Fillet Test Results			
Appearance: Acceptable ☒ Not Acceptable ☐		**Fillet size:** 5/16"	
Fracture test root penetration: Acceptable ☒ Not Acceptable ☐		**Macrotech:** Acceptable ☒ Not Acceptable ☐	
Volumetric NDE Results			
Testing agency: N/A			
Lab test no.: SSI8527-F		Results: Acceptable ☒ Not Acceptable ☐	

REMARKS: N/A

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of AWS D1.1.

Sure Steel, Inc.:

Kade Bingham Phone: (801) 917-5800

Kade Bingham
CWI 16010091 KB
QC1 EXP. 1/1/2019

American Institute of Steel Construction

is proud to recognize that

PKM Steel Service, Inc.

maintains operations located at

228 East Ave. A, Salina, KS

that successfully meet the quality certification requirements for

Standard for Steel Building Structures
Certified Bridge Fabrication - Intermediate (Major)
Sophisticated Paint Endorsement - Covered

Certificate Issued: August 16, 2018

Charles J. Carter

201101061-07R1T
Certification Number

Certification valid through: **October 31, 2019**

INTERNATIONAL ACCREDITATION SERVICE®

CERTIFICATE OF ACCREDITATION

This is to attest that

PKM STEEL SERVICE INC.

228 E. AVENUE A
SALINA, KS 67401

Fabricator Inspection Program FA-487

has met the requirements of AC172, *IAS Accreditation Criteria for Fabricator Inspection Programs for Structural Steel*, and its in-plant inspection program for structural steel fabrication is in compliance with Section 1704.2.5.1 of the 2015 *International Building Code*®, Section 1704.2.5.2 of the 2012 *International Building Code*®, and Section 1704.2.2 of earlier code editions. Periodic plant inspections are conducted by Lenard Gabert & Associates (AA-640) to monitor compliance with the requirements of AC172.

This certificate is valid up to July 1, 2019.

(Accreditation does not cover the product or the specific design or performance characteristic of the fabricated products)

This accreditation certificate supersedes any IAS accreditation bearing an earlier effective date. The certificate becomes invalid upon suspension, cancellation or revocation of accreditation. See www.iasonline.org for current accreditation information, or contact IAS at 562-364-8201.

ACCREDITED®

Raj Nathan
President

15-12065

WELDER, WELDING OPERATOR, OR TACK WELDER QUALIFICATION TEST RECORD

Type of Welder **WELDER**

Name **Joseph Hansen** Identification No. **0-4**

Welding Procedure Specification No. **GMAW-1G** Rev **0** Date

Variables	Record Actual Values Used In Qualification	Qualification Range
Process / Type [Table 4.11, Item (1)]	**GMAW / SEMI-AUTO**	
Electrode (single or multiple) [Table 4.11, Item (8)]	**SINGLE**	**SINGLE**
Current / Polarity	**DCEP**	
Position [Table 4.11, Item (4)]	**1G**	**1G, 1F, 2F**
Weld Progression [Table 4.11, Item (6)]	**NA**	**NA**
Backing (YES or NO) [Table 4.11, Item (7)]	**YES**	**WITH BACKING OR BACKGOUGINC**
Material / Spec.	**A572 GR 50 to A572 GR 50**	**GROUP I TO GROUP I OR II**
Base Metal		
Thickness: (Plate)		
Groove	**1"**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Thickness: (Pipe / tube)		
Groove	**NA**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Diameter: (Pipe)	**NA**	
Groove	**NA**	**OVER 24" OD ROTATED**
Fillet	**NA**	**OVER 24" OD ROTATED**
Filler Metal [Table 4.11, Item (3)]		
Spec. No.	**A5.18**	
Class	**E70C-6M-H4**	
F-No. [Table 4.11, Item (2)]	**6**	
Gas / Flux Type [Table 4.11, Item (3)]	**80% ARGON 20% CO2**	
Other		

VISUAL INSPECTION (4.8.1)

Acceptable YES or NO **YES**

Guided Bend Test Results (4.30.5)

Type	Result	Type	Result
Side	**ACCEPT**		
Side	**ACCEPT**		

Fillet Test Results (4.30.2.3 and 4.30.4.10)

Appearance Fillet Size

Fracture Test Root Penetration Macroetch

(Describe the location, nature, and size of any crack or tearing of the specimen.)

Inspected by

Organization **Quality Control, PKM Steel Services.** Test Number **312131**

Date **3/12/2013**

RADIOGRAPHIC TEST RESULTS (4.30.3.2)

Film Identification Number	Results	Remarks	Film Identification Number	Results	Remarks

Interpreted by Test Number

Organization Date

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in conformance with the requirements of Clause 4 of AWS D1.1/D1.1M: 2010 Structural Welding Code -Steel.

Manufacturer or Contractor **PKM Steel Services** Authorized By

Date 3-12-13

WELDER, WELDING OPERATOR, OR TACK WELDER QUALIFICATION TEST RECORD
PERFORMANCE QUALIFICATION TEST RECORD

Name	Dan Cash	OPTIONAL PHOTO ID	Test Date:	11/27/2018	Rev.
ID Number	—		Record No.	1127181	0
Stamp No.	2		Std. Test No.	—	—
Company	PKM Steel Service Inc.		WPS No.	GMAW4	0
Division	—		Qualified To	AWS D1.1	

BASE METALS	Specification	Type or Grade	AWS Group No.	Size (NPS)	Schedule	Thickness	Diameter
Base Material	ASTM A572	50	I	—	—	1.0"	—
Welded To	ASTM A572	50	I	—	—	—	—

VARIBLES	Actual Values		RANGE QUALIFIED
Type of Weld Joint	Plate - Groove (Fig 4.19)		1G,2G,1F, 2F
Base Metal	Group 1 to Group 1		Group 1 & 2

	Groove	Fillet		Groove	Fillet
Plate Thickness	1.0"	—		1/8" to Unlimited	1/8" to Unlimited
Pipe / Tube Thickness	—	—		1/8" to Unlimited	Unlimited
Pipe Diameter	—	—		24" min. diameter	Unlimited

Welding Process	GMAW		GMAW
Type (Manual, Semiautomatic, Mechanized, Automatic)	Semiautomatic		Semiautomatic, Mechanized, Automatic
Backing	Yes		With Backing or Backgouging
Filler Metal (AWS Spec.)	A5.18		—
AWS Classification	E70C-6M-H4		—
F- Number	6		6
Position	2G		
Groove - Plate and Pipe ≥ 24 in.			2G
Groove - Pipe < 24 in.			—
Fillet - Plate and Pipe ≥ 24 in.			1F, 2F
Fillet - Pipe < 24 in.			—
Progression	—		—
GMAW Transfer Mode	Spray		Spray
Single or Multiple Electrodes	Single		Single
Gas / Flux Type	80% Argon / 20%CO2		80% Argon / 20%CO2

TEST RESULTS

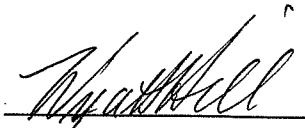
Type of Test	Acceptance Criteria	Results	Remarks
Visual Examination per 4.9.1	4.9.1	Acceptable	—
Each Position: 2 Side Bends per 4.9.3.1 and Fig. 4.9	4.9.3.3	Acceptable	—
Each Position:			—

CERTIFICATION

Test Conducted by	
Laboratory	**PKM Steel Service Quality Control Department**
Test Number	**1127181**
File Number	—

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in accordance with the requirements of Clause 4 of AWS D1.1/D1.1M 2015 Structural Welding Code-Steel.

Manufacturer of Contractor **PKM Steel Service Inc.**

Authorized by 

Date 11-27-18

Form M-4

WELDER, WELDING OPERATOR, OR TACK WELDER QUALIFICATION TEST RECORD

Type of Welder **WELDER**

Name **Steve Riley** Identification No. **3**

Welding Procedure Specfication No. **GMAW-2G** Rev **0** Date

Variables	Record Actual Values Used In Qualification	Qualification Range
Process / Type [Table 4.11, Item (1)]	**GMAW / SEMI-AUTO**	
Electrode (single or multiple) [Table 4.11, Item (8)]	**SINGLE**	**SINGLE**
Current / Polarity	**DCEP**	
Position [Table 4.11, Item (4)]	**2G**	**2G,1G, 1F, 2F**
Weld Progression [Table 4.11, Item (6)]	**NA**	**NA**
Backing (YES or NO) [Table 4.11, Item (7)]	**YES**	**BACKING REQUIRED**
Material / Spec.	**A572 GR 50 to A572 GR 50**	**GROUP I TO GROUP I OR II**
Base Metal		
Thickness: (Plate)		
Groove	**1"**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Thickness: (Pipe / tube)		
Groove	**NA**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Diameter: (Pipe)	**NA**	
Groove	**NA**	**OVER 24" OD ROTATED**
Fillet	**NA**	**OVER 24" OD ROTATED**
Filler Metal [Table 4.11, Item (3)]		
Spec. No.	**A5.18**	
Class	**E70C-6M-H4**	
F-No. [Table 4.11, Item (2)]	**N/A**	
Gas / Flux Type [Table 4.11, Item (3)]	**80% ARGON 20% CO2**	
Other		

VISUAL INSPECTION (4.8.1)

Acceptable YES or NO **YES**

Guided Bend Test Results (4.30.5)

Type	Result	Type	Result
Side	**ACCEPT**		
Side	**ACCEPT**		

Fillet Test Results (4.30.2.3 and 4.30.4.10)

Appearance Fillet Size

Fracture Test Root Penetration Macroetch

(Describe the location, nature, and size of any crack or tearing of the specimen.)

Inspected by

Organization **Quality Control, PKM Steel Services.**

Test Number **321071**

Date **3/21/2007**

RADIOGRAPHIC TEST RESULTS (4.30.3.2)

Film Identification Number	Results	Remarks	Film Identification Number	Results	Remarks

Interpreted by

Organization

Test Number

Date

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in conformance with the requirements of Section 4 of AWS D1.1/D1.1M: 2006 Structural Welding Code -Steel.

Manufacturer or Contractor **PKM Steel Services**

Authorized By

Date 3-21-07

WELDER, WELDING OPERATOR, OR TACK WELDER QUALIFICATION TEST RECORD

Type of Welder: **WELDER**

Name: **Steve Riley** Identification No.: **3**

Welding Procedure Specfication No.: **SAW-2G** Rev: **0** Date:

Variables	Record Actual Values Used In Qualification	Qualification Range
Process / Type [Table 4.12, Item (1)]	**SAW / AUTOMATIC**	
Electrode (single or multiple) [Table 4.12, Item (7)]	**SINGLE**	**SINGLE**
Current / Polarity	**DCEP**	
Position [Table 4.12, Item (4)]	**2G**	**2G,1G, 1F, 2F**
Weld Progression [Table 4.12, Item (5)]	**NA**	**NA**
Backing (YES or NO) [Table 4.12, Item (6)]	**NO**	**WITH OR WITHOUT BACKING**
Material / Spec.	**A572 GR 50 to A572 GR 50**	**GROUP I TO GROUP I OR II**
Base Metal		
Thickness: (Plate)		
Groove	**1"**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Thickness: (Pipe / tube)		
Groove	**NA**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Diameter: (Pipe)	**NA**	
Groove	**NA**	**OVER 24" OD ROTATED**
Fillet	**NA**	**OVER 24" OD ROTATED**
Filler Metal (Table 4.12)		
Spec. No.	**A5.17**	
Class	**EM13K**	
F-No. [Table 4.12, Item (2)]	**6**	
Gas / Flux Type (Table 4.1)	**LINCOLN 980**	
Other		

VISUAL INSPECTION (4.9.1)

Acceptable YES or NO: **YES**

Guided Bend Test Results (4.31.5)

Type	Result	Type	Result
Side	**ACCEPT**		
Side	**ACCEPT**		

Fillet Test Results (4.31.2.3 and 4.31.4.10)

Appearance: Fillet Size:

Fracture Test Root Penetration: Macroetch:

(Describe the location, nature, and size of any crack or tearing of the specimen.)

Inspected by: Test Number: **35141**

Organization: **Quality Control, PKM Steel Services.** Date: **3/5/2014**

RADIOGRAPHIC TEST RESULTS (4.31.3.2)

Film Identification Number	Results	Remarks	Film Identification Number	Results	Remarks

Interpreted by: Test Number:

Organization: Date:

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in conformance with the requirements of Section 4 of AWS D1.1/D1.1M: 2010 Structural Welding Code -Steel.

Manufacturer or Contractor: **PKM Steel Services** Authorized By:

Date: 3-5-14

WELDER, WELDING OPERATOR, OR TACK WELDER QUALIFICATION TEST RECORD

Type of Welder **WELDER**

Name **JOHNATHAN VILLA** Identification No. **5**

Welding Procedure Specfication No. **GMAW- U4** Rev **0** Date

Variables	Record Actual Values Used In Qualification	Qualification Range
Process / Type [Table 4.12, Item (1)]	**GMAW / SEMI-AUTO**	
Electrode (single or multiple) [Table 4.12, Item (7)]	**SINGLE**	**SINGLE**
Current / Polarity	**DCEP**	
Position [Table 4.12, Item (4)]	**2G**	**1G,2G,1F,2F.**
Weld Progression [Table 4.12, Item (5)]	**NA**	**NA**
Backing (YES or NO) [Table 4.12, Item (6)]	**YES**	**WITH BACKING OR BACKGOUGIN**
Material / Spec.	**A572 GR 50 to A572 GR 50**	**GROUP I TO GROUP I OR II**
Base Metal		
Thickness: (Plate)		
Groove	**1"**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Thickness: (Pipe / tube)		
Groove	**NA**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Diameter: (Pipe)	**NA**	
Groove	**NA**	**OVER 24" OD ROTATED**
Fillet	**NA**	**OVER 24" OD ROTATED**
Filler Metal (Table 4.12)		
Spec. No.	**A5.18**	
Class	**E70C-6M-H4**	
F-No. [Table 4.12, Item (2)]	**6**	
Gas / Flux Type (Table 4.12)	**80% ARGON 20% CO2**	
Other		

VISUAL INSPECTION (4.9.1)

Acceptable YES or NO **YES**

Guided Bend Test Results (4.31.5)

Type	Result	Type	Result
Side	**ACCEPT**		
Side	**ACCEPT**		

Fillet Test Results (4.31.2.3 and 4.31.4.1)

Appearance Fillet Size

Fracture Test Root Penetration Macroetch

(Describe the location, nature, and size of any crack or tearing of the specimen.)

Inspected by **RICHARD GLAVIN** Test Number **515186**

Organization **Quality Control, PKM Steel Services.** Date **5/15/2018**

RADIOGRAPHIC TEST RESULTS (4.31.3.2)

Film Identification Number	Results	Remarks	Film Identification Number	Results	Remarks

Interpreted by Test Number

Organization Date

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in conformance with the requirements of Clause 4 of AWS D1.1/D1.1M: 2010 Structural Welding Code -Steel.

Manufacturer or Contractor **PKM Steel Services** Authorized By

Date 5-15-2018

WELDER, WELDING OPERATOR, OR TACK WELDER QUALIFICATION TEST RECORD

Type of Welder **WELDER**

Name **CHRIS SNYDER** Identification No. **A**

Welding Procedure Specfication No. **GMAW- U4** Rev **0** Date

Variables	Record Actual Values Used In Qualification	Qualification Range
Process / Type [Table 4.12, Item (1)]	**GMAW / SEMI-AUTO**	
Electrode (single or multiple) [Table 4.12, Item (7)]	**SINGLE**	**SINGLE**
Current / Polarity	**DCEP**	
Position [Table 4.12, Item (4)]	**2G**	**1G,2G,1F,2F.**
Weld Progression [Table 4.12, Item (5)]	**NA**	**NA**
Backing (YES or NO) [Table 4.12, Item (6)]	**YES**	**WITH BACKING OR BACKGOUGINC**
Material / Spec.	**A572 GR 50 to A572 GR 50**	**GROUP I TO GROUP I OR II**
Base Metal		
Thickness: (Plate)		
Groove	**1"**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Thickness: (Pipe / tube)		
Groove	**NA**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Diameter: (Pipe)	**NA**	
Groove	**NA**	**OVER 24" OD ROTATED**
Fillet	**NA**	**OVER 24" OD ROTATED**
Filler Metal (Table 4.12)		
Spec. No.	**A5.18**	
Class	**E70C-6M-H4**	
F-No. [Table 4.12, Item (2)]	**6**	
Gas / Flux Type (Table 4.12)	**80% ARGON 20% CO2**	
Other		

VISUAL INSPECTION (4.9.1)

Acceptable YES or NO **YES**

Guided Bend Test Results (4.31.5)

Type	Result	Type	Result
Side	**ACCEPT**		
Side	**ACCEPT**		

Fillet Test Results (4.31.2.3 and 4.31.4.1)

Appearance Fillet Size

Fracture Test Root Penetration Macroetch

(Describe the location, nature, and size of any crack or tearing of the specimen.)

Inspected by Test Number **83181**

Organization **Quality Control, PKM Steel Services.** Date **8/3/2018**

RADIOGRAPHIC TEST RESULTS (4.31.3.2)

Film Identification Number	Results	Remarks	Film Identification Number	Results	Remarks

Interpreted by Test Number

Organization Date

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in conformance with the requirements of Clause 4 of AWS D1.1/D1.1M: 2010 Structural Welding Code-Steel.

Manufacturer or Contractor **PKM Steel Services** Authorized By

Date 8-3-18

WELDER, WELDING OPERATOR, OR TACK WELDER QUALIFICATION TEST RECORD

Type of Welder **WELDER**

Name **CLIFFORD GUSTUS** Identification No. **C**

Welding Procedure Specfication No. **GMAW- U4** Rev **0** Date

Variables	Record Actual Values Used In Qualification	Qualification Range
Process / Type [Table 4.12, Item (1)]	**GMAW / SEMI-AUTO**	
Electrode (single or multiple) [Table 4.12, Item (7)]	**SINGLE**	**SINGLE**
Current / Polarity	**DCEP**	
Position [Table 4.12, Item (4)]	**2G**	**1G,2G,1F,2F.**
Weld Progression [Table 4.12, Item (5)]	**NA**	**NA**
Backing (YES or NO) [Table 4.12, Item (6)]	**YES**	**WITH BACKING OR BACKGOUGIN**
Material / Spec.	**A572 GR 50 to A572 GR 50**	**GROUP I TO GROUP I OR II**
Base Metal		
Thickness: (Plate)		
Groove	**1"**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Thickness: (Pipe / tube)		
Groove	**NA**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Diameter: (Pipe)	**NA**	
Groove	**NA**	**OVER 24" OD ROTATED**
Fillet	**NA**	**OVER 24" OD ROTATED**
Filler Metal (Table 4.12)		
Spec. No.	**A5.18**	
Class	**E70C-6M-H4**	
F-No. [Table 4.12, Item (2)]	**6**	
Gas / Flux Type (Table 4.12)	**80% ARGON 20% CO2**	
Other		

VISUAL INSPECTION (4.9.1)

Acceptable YES or NO **YES**

Guided Bend Test Results (4.31.5)

Type	Result	Type	Result
Side	**ACCEPT**		
Side	**ACCEPT**		

Fillet Test Results (4.31.2.3 and 4.31.4.1)

Appearance Fillet Size

Fracture Test Root Penetration Macroetch

(Describe the location, nature, and size of any crack or tearing of the specimen.)

Inspected by Test Number **76162**

Organization **Quality Control, PKM Steel Services.** Date **7/6/2016**

RADIOGRAPHIC TEST RESULTS (4.31.3.2)

Film Identification Number	Results	Remarks	Film Identification Number	Results	Remarks

Interpreted by Test Number

Organization Date

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in conformance with the requirements of Clause 4 of AWS D1.1/D1.1M: 2010 Structural Welding Code -Steel.

Manufacturer or Contractor **PKM Steel Services** Authorized By

Date 7-6-2016

WELDER, WELDING OPERATOR, OR TACK WELDER QUALIFICATION TEST RECORD

Type of Welder **WELDER**

Name **Andolfo Valtierra** Identification No. D

Welding Procedure Specfication No. **GMAW- U4** Rev **0** Date

Variables	Record Actual Values Used In Qualification	Qualification Range
Process / Type [Table 4.12, Item (1)]	**GMAW / SEMI-AUTO**	
Electrode (single or multiple) [Table 4.12, Item (7)]	**SINGLE**	**SINGLE**
Current / Polarity	**DCEP**	
Position [Table 4.12, Item (4)]	**2G**	**1G,2G,1F,2F.**
Weld Progression [Table 4.12, Item (5)]	**NA**	**NA**
Backing (YES or NO) [Table 4.12, Item (6)]	**YES**	**WITH BACKING OR BACKGOUGIN**
Material / Spec.	**A572 GR 50 to A572 GR 50**	**GROUP I TO GROUP I OR II**
Base Metal		
Thickness: (Plate)		
Groove	**1"**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Thickness: (Pipe / tube)		
Groove	**NA**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Diameter: (Pipe)	**NA**	
Groove	**NA**	**OVER 24" OD ROTATED**
Fillet	**NA**	**OVER 24" OD ROTATED**
Filler Metal (Table 4.12)		
Spec. No.	**A5.18**	
Class	**E70C-6M-H4**	
F-No. [Table 4.12, Item (2)]	**6**	
Gas / Flux Type (Table 4.12)	**80% ARGON 20% CO2**	
Other		

VISUAL INSPECTION (4.9.1)

Acceptable YES or NO **YES**

Guided Bend Test Results (4.31.5)

Type	Result	Type	Result
Side	**ACCEPT**		
Side	**ACCEPT**		

Fillet Test Results (4.31.2.3 and 4.31.4.1)

Appearance Fillet Size

Fracture Test Root Penetration Macroetch

(Describe the location, nature, and size of any crack or tearing of the specimen.)

Inspected by Test Number **1010141**

Organization **Quality Control, PKM Steel Services.** Date **10/10/2014**

RADIOGRAPHIC TEST RESULTS (4.31.3.2)

Film Identification Number	Results	Remarks	Film Identification Number	Results	Remarks

Interpreted by Test Number

Organization Date

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in conformance with the requirements of Clause 4 of AWS D1.1/D1.1M: 2010 Structural Welding Code–Steel.

Manufacturer or Contractor **PKM Steel Services** Authorized By

Date 10-10-2014

WELDER, WELDING OPERATOR, OR TACK WELDER QUALIFICATION TEST RECORD

Type of Welder **WELDER**

Name **CEASER HAROS** Identification No. **H**

Welding Procedure Specfication No. **GMAW-2G** Rev **0** Date

Variables	Record Actual Values Used In Qualification	Qualification Range
Process / Type [Table 4.12, Item (1)]	**GMAW / SEMI-AUTO**	
Electrode (single or multiple) [Table 4.12, Item (7)]	**SINGLE**	**SINGLE**
Current / Polarity	**DCEP**	
Position [Table 4.12, Item (4)]	**2G**	**1G,2G,1F,2F.**
Weld Progression [Table 4.12, Item (5)]	**NA**	**NA**
Backing (YES or NO) [Table 4.12, Item (6)]	**YES**	**WITH BACKING OR BACKGOUGIN**
Material / Spec.	**A572 GR 50 to A572 GR 50**	**GROUP I TO GROUP I OR II**
Base Metal		
Thickness: (Plate)		
Groove	**1"**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Thickness: (Pipe / tube)		
Groove	**NA**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Diameter: (Pipe)	**NA**	
Groove	**NA**	**OVER 24" OD ROTATED**
Fillet	**NA**	**OVER 24" OD ROTATED**
Filler Metal (Table 4.12)		
Spec. No.	**A5.18**	
Class	**E70C-6M-H4**	
F-No. [Table 4.12, Item (2)]	**6**	
Gas / Flux Type (Table 4.12)	**80% ARGON 20% CO2**	
Other		

VISUAL INSPECTION (4.8.1)

Acceptable YES or NO **YES**

Guided Bend Test Results (4.30.5)

Type	Result	Type	Result
Side	**ACCEPT**		
Side	**ACCEPT**		

Fillet Test Results (4.30.2.3 and 4.30.4.1)

Appearance Fillet Size

Fracture Test Root Penetration Macroetch

(Describe the location, nature, and size of any crack or tearing of the specimen.)

Inspected by

Organization **Quality Control, PKM Steel Services.**

Test Number **73121**

Date **7/3/2012**

RADIOGRAPHIC TEST RESULTS(4.30.3.2)

Film Identification Number	Results	Remarks	Film Identification Number	Results	Remarks

Interpreted by

Organization

Test Number

Date

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in conformance with the requirements of Clause 4 of AWS D1.1/D1.1M: 2010 Structural Welding Code -Steel.

Manufacturer or Contractor **PKM Steel Services**

Authorized By

Date 7-3-12

WELDER, WELDING OPERATOR, OR TACK WELDER QUALIFICATION TEST RECORD

Type of Welder **WELDER**

Name **Cesar Harros** Identification No. **H**

Welding Procedure Specfication No. **SAW-2G** Rev **0** Date

Variables	Record Actual Values Used In Qualification	Qualification Range
Process / Type [Table 4.12, Item (1)]	**SAW / AUTOMATIC**	
Electrode (single or multiple) [Table 4.12, Item (7)]	**SINGLE**	**SINGLE**
Current / Polarity	**DCEP**	
Position [Table 4.12, Item (4)]	**2G**	**2G,1G, 1F, 2F**
Weld Progression [Table 4.12, Item (5)]	**NA**	**NA**
Backing (YES or NO) [Table 4.12, Item (6)]	**NO**	**WITH OR WITHOUT BACKING**
Material / Spec.	**A572 GR 50 to A572 GR 50**	**GROUP I TO GROUP I OR II**
Base Metal		
Thickness: (Plate)		
Groove	**1"**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Thickness: (Pipe / tube)		
Groove	**NA**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Diameter: (Pipe)	**NA**	
Groove	**NA**	**OVER 24" OD ROTATED**
Fillet	**NA**	**OVER 24" OD ROTATED**
Filler Metal (Table 4.12)		
Spec. No.	**A5.17**	
Class	**EM13K**	
F-No. [Table 4.12, Item (2)]	**6**	
Gas / Flux Type (Table 4.1)	**LINCOLN 980**	
Other		

VISUAL INSPECTION (4.9.1)

Acceptable YES or NO **YES**

Guided Bend Test Results (4.31.5)

Type	Result	Type	Result
Side	**ACCEPT**		
Side	**ACCEPT**		

Fillet Test Results (4.31.2.3 and 4.31.4.10)

Appearance Fillet Size

Fracture Test Root Penetration Macroetch

(Describe the location, nature, and size of any crack or tearing of the specimen.)

Inspected by Test Number **515141**

Organization **Quality Control, PKM Steel Services.** Date **5/15/2014**

RADIOGRAPHIC TEST RESULTS (4.31.3.2)

Film Identification Number	Results	Remarks	Film Identification Number	Results	Remarks

Interpreted by Test Number

Organization Date

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in conformance with the requirements of Section 4 of AWS D1.1/D1.1M: 2010 Structural Welding Code -Steel.

Manufacturer or Contractor **PKM Steel Services** Authorized By

Date 5-15-14

WELDER, WELDING OPERATOR, OR TACK WELDER QUALIFICATION TEST RECORD

Type of Welder **WELDER**

Name **ANTONIO BANUELLOS** Identification No. **J**

Welding Procedure Specfication No. **GMAW-1G** Rev **0** Date

Variables	Record Actual Values Used In Qualification	Qualification Range
Process / Type [Table 4.11, Item (1)]	**GMAW / AUTOMATIC**	
Electrode (single or multiple) [Table 4.11, Item (8)]	**SINGLE**	**SINGLE**
Current / Polarity	**DCEP**	
Position [Table 4.11, Item (4)]	**1G**	**1G, 1F, 2F**
Weld Progression [Table 4.11, Item (6)]	**NA**	**NA**
Backing (YES or NO) [Table 4.11, Item (7)]	**YES**	**WITH BACKING OR BACKGOUGIN**
Material / Spec.	**A572 GR 50 to A572 GR 50**	**GROUP I TO GROUP I OR II**
Base Metal		
Thickness: (Plate)		
Groove	**1"**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Thickness: (Pipe / tube)		
Groove	**NA**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Diameter: (Pipe)	**NA**	
Groove	**NA**	**NA**
Fillet	**NA**	**NA**
Filler Metal [Table 4.11, Item (3)]		
Spec. No.	**A5.18**	
Class	**E70C-6M-H4**	
F-No. [Table 4.11, Item (2)]	**6**	
Gas / Flux Type [Table 4.11, Item (3)]	**80% ARGON 20% CO2**	
Other		

VISUAL INSPECTION (4.8.1)

Acceptable YES or NO **YES**

Guided Bend Test Results (4.30.5)

Type	Result	Type	Result
Side	**ACCEPT**		
Side	**ACCEPT**		

Fillet Test Results (4.30.2.3 and 4.30.4.10)

Appearance Fillet Size

Fracture Test Root Penetration Macroetch

(Describe the location, nature, and size of any crack or tearing of the specimen.)

Inspected by **Richard Glavin** Test Number **929171**

Organization **Quality Control, PKM Steel Services.** Date **9/29/2017**

RADIOGRAPHIC TEST RESULTS (4.30.3.2)

Film Identification Number	Results	Remarks	Film Identification Number	Results	Remarks

Interpreted by Test Number

Organization Date

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in conformance with the requirements of Clause 4 of AWS D1.1/D1.1M: 2010 Structural Welding Code - Steel.

Manufacturer or Contractor **PKM Steel Services** Authorized By

Date 9-29-17

WELDER, WELDING OPERATOR, OR TACK WELDER QUALIFICATION TEST RECORD

Type of Welder **WELDER**

Name **EMILIANO MENDOZA** Identification No. **K**

Welding Procedure Specfication No. **GMAW- U4** Rev **0** Date

Variables	Record Actual Values Used In Qualification	Qualification Range
Process / Type [Table 4.12, Item (1)]	**GMAW / SEMI-AUTO**	
Electrode (single or multiple) [Table 4.12, Item (7)]	**SINGLE**	**SINGLE**
Current / Polarity	**DCEP**	
Position [Table 4.12, Item (4)]	**2G**	**1G,2G,1F,2F.**
Weld Progression [Table 4.12, Item (5)]	**NA**	**NA**
Backing (YES or NO) [Table 4.12, Item (6)]	**YES**	**WITH BACKING OR BACKGOUGIN**
Material / Spec.	**A572 GR 50 to A572 GR 50**	**GROUP I TO GROUP I OR II**
Base Metal		
Thickness: (Plate)		
Groove	**1"**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Thickness: (Pipe / tube)		
Groove	**NA**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Diameter: (Pipe)	**NA**	
Groove	**NA**	**OVER 24" OD ROTATED**
Fillet	**NA**	**OVER 24" OD ROTATED**
Filler Metal (Table 4.12)		
Spec. No.	**A5.18**	
Class	**E70C-6M-H4**	
F-No. [Table 4.12, Item (2)]	**6**	
Gas / Flux Type (Table 4.12)	**80% ARGON 20% CO2**	
Other		

VISUAL INSPECTION (4.9.1)

Acceptable YES or NO **YES**

Guided Bend Test Results (4.31.5)

Type	Result	Type	Result
Side	**ACCEPT**		
Side	**ACCEPT**		

Fillet Test Results (4.31.2.3 and 4.31.4.1)

Appearance Fillet Size

Fracture Test Root Penetration Macroetch

(Describe the location, nature, and size of any crack or tearing of the specimen.)

Inspected by Test Number **816181**

Organization **Quality Control, PKM Steel Services.** Date **8/16/2018**

RADIOGRAPHIC TEST RESULTS (4.31.3.2)

Film Identification Number	Results	Remarks	Film Identification Number	Results	Remarks

Interpreted by Test Number

Organization Date

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in conformance with the requirements of Clause 4 of AWS D1.1/D1.1M: 2010 Structural Welding Code -Steel.

Manufacturer or Contractor **PKM Steel Services** Authorized By

Date 8-16-2018

WELDER, WELDING OPERATOR, OR TACK WELDER QUALIFICATION TEST RECORD
PERFORMANCE QUALIFICATION TEST RECORD

Name	David Brindle	OPTIONAL PHOTO ID	Test Date:	11/30/2018	Rev.
ID Number	—		Record No.	1130181	0
Stamp No.	L		Std. Test No.	—	—
Company	PKM Steel Service Inc.		WPS No.	GMAW2	0
Division	—		Qualified To	AWS D1.1	

BASE METALS	Specification	Type or Grade	AWS Group No.	Size (NPS)	Schedule	Thickness	Diameter
Base Material	ASTM A572	50	I	—	—	1.0"	—
Welded To	ASTM A572	50	I	—	—	—	—

VARIBLES	Actual Values		RANGE QUALIFIED
Type of Weld Joint	Plate - Groove (Fig 4.16)		1G, 1F, 2F
Base Metal	Group 1 to Group 1		Group 1 & 2

	Groove	Fillet		Groove	Fillet
Plate Thickness	1.0"	—		1/8" to Unlimited	1/8" to Unlimited
Pipe / Tube Thickness	—	—		1/8" to Unlimited	Unlimited
Pipe Diameter	—	—		24" min. diameter	Unlimited

Welding Process	GMAW		GMAW
Type (Manual, Semiautomatic, Mechanized, Automatic)	Semiautomatic		Semiautomatic, Mechanized, Automatic
Backing	Yes		With Backing or Backgouging
Filler Metal (AWS Spec.)	A5.18		—
AWS Classification	E70C-6M-H4		—
F- Number	6		6
Position	1G		
Groove - Plate and Pipe ≥ 24 in.			1G
Groove - Pipe < 24 in.			—
Fillet - Plate and Pipe ≥ 24 in.			1F, 2F
Fillet - Pipe < 24 in.			—
Progression	—		—
GMAW Transfer Mode	Spray		Spray
Single or Multiple Electrodes	Single		Single
Gas / Flux Type	80% Argon / 20%CO2		80% Argon / 20%CO2

TEST RESULTS

Type of Test	Acceptance Criteria	Results	Remarks
Visual Examination per 4.9.1	4.9.1	Acceptable	—
Each Position: 2 Side Bends per 4.9.3.1 and Fig. 4.9	4.9.3.3	Acceptable	—
Each Position:			—

CERTIFICATION

Test Conducted by	
Laboratory	**PKM Steel Service Quality Control Department**
Test Number	**1130181**
File Number	—

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in accordance with the requirements of Clause 4 of AWS D1.1/D1.1M 2015 Structural Welding Code-Steel.

Manufacturer of Contractor **PKM Steel Service Inc.**

Authorized by Wyatt Hall

Date 11-30-2018

Form M-4

WELDER, WELDING OPERATOR, OR TACK WELDER QUALIFICATION TEST RECORD

Type of Welder **WELDER**

Name **JOHN MOSHER** Identification No. **M**

Welding Procedure Specfication No. **GMAW- U4** Rev **0** Date

Variables	Record Actual Values Used In Qualification	Qualification Range
Process / Type [Table 4.12, Item (1)]	**GMAW / SEMI-AUTO**	
Electrode (single or multiple) [Table 4.12, Item (7)]	**SINGLE**	**SINGLE**
Current / Polarity	**DCEP**	
Position [Table 4.12, Item (4)]	**2G**	**1G,2G,1F,2F.**
Weld Progression [Table 4.12, Item (5)]	**NA**	**NA**
Backing (YES or NO) [Table 4.12, Item (6)]	**YES**	**WITH BACKING OR BACKGOUGIN**
Material / Spec.	**A572 GR 50 to A572 GR 50**	**GROUP I TO GROUP I OR II**
Base Metal		
Thickness: (Plate)		
Groove	**1"**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Thickness: (Pipe / tube)		
Groove	**NA**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Diameter: (Pipe)	**NA**	
Groove	**NA**	**OVER 24" OD ROTATED**
Fillet	**NA**	**OVER 24" OD ROTATED**
Filler Metal (Table 4.12)		
Spec. No.	**A5.18**	
Class	**E70C-6M-H4**	
F-No. [Table 4.12, Item (2)]	**6**	
Gas / Flux Type (Table 4.12)	**80% ARGON 20% CO2**	
Other		

VISUAL INSPECTION (4.9.1)

Acceptable YES or NO **YES**

Guided Bend Test Results (4.31.5)

Type	Result	Type	Result
Side	**ACCEPT**		
Side	**ACCEPT**		

Fillet Test Results (4.31.2.3 and 4.31.4.1)

Appearance

Fracture Test Root Penetration

Fillet Size

Macroetch

(Describe the location, nature, and size of any crack or tearing of the specimen.)

Inspected by **RICHARD GLAVIN**

Organization **Quality Control, PKM Steel Services.**

Test Number **76181**

Date **7/6/2018**

RADIOGRAPHIC TEST RESULTS (4.31.3.2)

Film Identification Number	Results	Remarks	Film Identification Number	Results	Remarks

Interpreted by

Organization

Test Number

Date

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in conformance with the requirements of Clause 4 of AWS D1.1/D1.1M: 2010 Structural Welding Code -Steel.

Manufacturer or Contractor **PKM Steel Services**

Authorized By

Date 7-6-18

WELDER, WELDING OPERATOR, OR TACK WELDER QUALIFICATION TEST RECORD

Type of Welder **WELDER**

Name **Ceaser Casillas** Identification No. **N**

Welding Procedure Specfication No. **GMAW-2G** Rev **0** Date

Variables	Record Actual Values Used In Qualification	Qualification Range
Process / Type [Table 4.12, Item (1)]	**GMAW / SEMI-AUTO**	
Electrode (single or multiple) [Table 4.12, Item (7)]	**SINGLE**	**SINGLE**
Current / Polarity	**DCEP**	
Position [Table 4.12, Item (4)]	**2G**	**1G,2G,1F,2F.**
Weld Progression [Table 4.12, Item (5)]	**NA**	**NA**
Backing (YES or NO) [Table 4.12, Item (6)]	**YES**	**WITH BACKING OR BACKGOUGINC**
Material / Spec.	**A572 GR 50 to A572 GR 50**	**GROUP I TO GROUP I OR II**
Base Metal		
Thickness: (Plate)		
Groove	**1"**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Thickness: (Pipe / tube)		
Groove	**NA**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Diameter: (Pipe)	**NA**	
Groove	**NA**	**OVER 24" OD ROTATED**
Fillet	**NA**	**OVER 24" OD ROTATED**
Filler Metal (Table 4.12)		
Spec. No.	**A5.18**	
Class	**E70C-6M-H4**	
F-No. [Table 4.12, Item (2)]	**6**	
Gas / Flux Type (Table 4.12)	**80% ARGON 20% CO2**	
Other		

VISUAL INSPECTION (4.8.1)

Acceptable YES or NO **YES**

Guided Bend Test Results (4.30.5)

Type	Result	Type	Result
Side	**ACCEPT**		
Side	**ACCEPT**		

Fillet Test Results (4.30.2.3 and 4.30.4.1)

Appearance Fillet Size

Fracture Test Root Penetration Macroetch

(Describe the location, nature, and size of any crack or tearing of the specimen.)

Inspected by

Organization **Quality Control, PKM Steel Services.**

Test Number **114141**

Date **1/14/2014**

RADIOGRAPHIC TEST RESULTS (4.30.3.2)

Film Identification Number	Results	Remarks	Film Identification Number	Results	Remarks

Interpreted by

Organization

Test Number

Date

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in conformance with the requirements of Clause 4 of AWS D1.1/D1.1M: 2010 Structural Welding Code -Steel.

Manufacturer or Contractor **PKM Steel Services**

Authorized By

Date 1-14-14

Type of Welder **WELDER**

Name **Rick Powell** Identification No. **P**

Welding Procedure Specfication No. **GMAW-2G** Rev **0** Date

Variables	Record Actual Values Used In Qualification	Qualification Range
Process / Type [Table 4.12, Item (1)]	**GMAW / SEMI-AUTO**	
Electrode (single or multiple) [Table 4.12, Item (7)]	**SINGLE**	**SINGLE**
Current / Polarity	**DCEP**	
Position [Table 4.12, Item (4)]	**2G**	**1G,2G,1F,2F.**
Weld Progression [Table 4.12, Item (5)]	**NA**	**NA**
Backing (YES or NO) [Table 4.12, Item (6)]	**YES**	**WITH BACKING OR BACKGOUGINC**
Material / Spec.	**A572 GR 50 to A572 GR 50**	**GROUP I TO GROUP I OR II**
Base Metal		
Thickness: (Plate)		
Groove	**1"**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Thickness: (Pipe / tube)		
Groove	**NA**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Diameter: (Pipe)	**NA**	
Groove	**NA**	**OVER 24" OD ROTATED**
Fillet	**NA**	**OVER 24" OD ROTATED**
Filler Metal (Table 4.12)		
Spec. No.	**A5.18**	
Class	**E70C-6M-H4**	
F-No. [Table 4.12, Item (2)]	**6**	
Gas / Flux Type (Table 4.12)	**80% ARGON 20% CO2**	
Other		

VISUAL INSPECTION (4.8.1)

Acceptable YES or NO **YES**

Guided Bend Test Results (4.30.5)

Type	Result	Type	Result
Side	**ACCEPT**		
Side	**ACCEPT**		

Fillet Test Results (4.30.2.3 and 4.30.4.1)

Appearance Fillet Size

Fracture Test Root Penetration Macroetch

(Describe the location, nature, and size of any crack or tearing of the specimen.)

Inspected by

Organization **Quality Control, PKM Steel Services.**

Test Number **219131**

Date **2/19/2013**

RADIOGRAPHIC TEST RESULTS (4.30.3.2)

Film Identification Number	Results	Remarks	Film Identification Number	Results	Remarks

Interpreted by

Organization

Test Number

Date

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in conformance with the requirements of Clause 4 of AWS D1.1/D1.1M: 2010 Structural Welding Code -Steel.

Manufacturer or Contractor **PKM Steel Services**

Authorized By

Date 2-19-13

WELDER, WELDING OPERATOR, OR TACK WELDER QUALIFICATION TEST RECORD

Type of Welder **WELDER**

Name **Rick Powell** Identification No. **P**

Welding Procedure Specfication No. **SAW-2G** Rev **0** Date

Variables	Record Actual Values Used In Qualification	Qualification Range
Process / Type [Table 4.12, Item (1)]	**SAW / AUTOMATIC**	
Electrode (single or multiple) [Table 4.12, Item (7)]	**SINGLE**	**SINGLE**
Current / Polarity	**DCEP**	
Position [Table 4.12, Item (4)]	**2G**	**2G,1G, 1F, 2F**
Weld Progression [Table 4.12, Item (5)]	**NA**	**NA**
Backing (YES or NO) [Table 4.12, Item (6)]	**NO**	**WITH OR WITHOUT BACKING**
Material / Spec.	**A572 GR 50 to A572 GR 50**	**GROUP I TO GROUP I OR II**
Base Metal		
Thickness: (Plate)		
Groove	**1"**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Thickness: (Pipe / tube)		
Groove	**NA**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Diameter: (Pipe)	**NA**	
Groove	**NA**	**OVER 24" OD ROTATED**
Fillet	**NA**	**OVER 24" OD ROTATED**
Filler Metal (Table 4.12)		
Spec. No.	**A5.17**	
Class	**EM13K**	
F-No. [Table 4.12, Item (2)]	**6**	
Gas / Flux Type (Table 4.1)	**LINCOLN 980**	
Other		

VISUAL INSPECTION (4.9.1)

Acceptable YES or NO **YES**

Guided Bend Test Results (4.31.5)

Type	Result	Type	Result
Side	**ACCEPT**		
Side	**ACCEPT**		

Fillet Test Results (4.31.2.3 and 4.31.4.10)

Appearance Fillet Size

Fracture Test Root Penetration Macroetch

(Describe the location, nature, and size of any crack or tearing of the specimen.)

Inspected by Test Number **35142**

Organization **Quality Control, PKM Steel Services.** Date **3/5/2014**

RADIOGRAPHIC TEST RESULTS (4.31.3.2)

Film Identification Number	Results	Remarks	Film Identification Number	Results	Remarks

Interpreted by Test Number

Organization Date

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in conformance with the requirements of Section 4 of AWS D1.1/D1.1M: 2010 Structural Welding Code -Steel.

Manufacturer or Contractor **PKM Steel Services** Authorized By

Date 3-5-14

WELDER, WELDING OPERATOR, OR TACK WELDER QUALIFICATION TEST RECORD

Type of Welder **WELDER**

Name **JAMES RAMEY** Identification No. R

Welding Procedure Specfication No. **GMAW- U4** Rev 1 Date 7/6/18

Variables	Record Actual Values Used In Qualification	Qualification Range
Process / Type [Table 4.12, Item (1)]	**GMAW / SEMI-AUTO**	
Electrode (single or multiple) [Table 4.12, Item (7)]	**SINGLE**	**SINGLE**
Current / Polarity	**DCEP**	
Position [Table 4.12, Item (4)]	**2G**	**1G,2G,1F,2F.**
Weld Progression [Table 4.12, Item (5)]	**NA**	**NA**
Backing (YES or NO) [Table 4.12, Item (6)]	**YES**	**WITH BACKING OR BACKGOUGINC**
Material / Spec.	**A572 GR 50 to A572 GR 50**	**GROUP I TO GROUP I OR II**
Base Metal		
Thickness: (Plate)		
Groove	**1"**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Thickness: (Pipe / tube)		
Groove	**NA**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Diameter: (Pipe)	**NA**	
Groove	**NA**	**OVER 24" OD ROTATED**
Fillet	**NA**	**OVER 24" OD ROTATED**
Filler Metal (Table 4.12)		
Spec. No.	**A5.18**	
Class	**E70C-6M-H4**	
F-No. [Table 4.12, Item (2)]	**6**	
Gas / Flux Type (Table 4.12)	**80% ARGON 20% CO2**	
Other		

VISUAL INSPECTION (4.9.1)

Acceptable YES or NO **YES**

Guided Bend Test Results (4.31.5)

Type	Result	Type	Result
Side	**ACCEPT**		
Side	**ACCEPT**		

Fillet Test Results (4.31.2.3 and 4.31.4.1)

Appearance _____ Fillet Size _____

Fracture Test Root Penetration _____ Macroetch _____

(Describe the location, nature, and size of any crack or tearing of the specimen.)

Inspected by _____ Test Number **216171**

Organization **Quality Control, PKM Steel Services.** Date **2/16/2017**

RADIOGRAPHIC TEST RESULTS (4.31.3.2)

Film Identification Number	Results	Remarks	Film Identification Number	Results	Remarks

Interpreted by _____ Test Number _____

Organization _____ Date _____

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in conformance with the requirements of Clause 4 of AWS D1.1/D1.1M: 2010 Structural Welding Code -Steel.

Manufacturer or Contractor **PKM Steel Services** Authorized By _____

Date 2-16-17

WELDER, WELDING OPERATOR, OR TACK WELDER QUALIFICATION TEST RECORD
PERFORMANCE QUALIFICATION TEST RECORD

Name	Juan Escalante	OPTIONAL PHOTO ID	Test Date:	12/6/2018	Rev.
ID Number	—		Record No.	126181	0
Stamp No.	T		Std. Test No.	—	—
Company	PKM Steel Service Inc.		WPS No.	GMAW2	0
Division	—		Qualified To	AWS D1.1	

BASE METALS	Specification	Type or Grade	AWS Group No.	Size (NPS)	Schedule	Thickness	Diameter
Base Material	ASTM A572	50	I	—	—	1.0"	—
Welded To	ASTM A572	50	I	—	—	—	—

VARIBLES	Actual Values		RANGE QUALIFIED
Type of Weld Joint	Plate - Groove (Fig 4.16)		1G, 1F, 2F
Base Metal	Group 1 to Group 1		Group 1 & 2

	Groove	Fillet		Groove	Fillet
Plate Thickness	1.0"	—		1/8" to Unlimited	1/8" to Unlimited
Pipe / Tube Thickness	—	—		1/8" to Unlimited	Unlimited
Pipe Diameter	—	—		24" min. diameter	Unlimited

Welding Process	GMAW		GMAW
Type (Manual, Semiautomatic, Mechanized, Automatic)	Semiautomatic		Semiautomatic, Mechanized, Automatic
Backing	Yes		With Backing or Backgouging
Filler Metal (AWS Spec.)	A5.18		—
AWS Classification	E70C-6M-H4		—
F- Number	6		6
Position	1G		
Groove - Plate and Pipe ≥ 24 in.			1G
Groove - Pipe < 24 in.			—
Fillet - Plate and Pipe ≥ 24 in.			1F, 2F
Fillet - Pipe < 24 in.			—
Progression	—		—
GMAW Transfer Mode	Spray		Spray
Single or Multiple Electrodes	Single		Single
Gas / Flux Type	80% Argon / 20%CO2		80% Argon / 20%CO2

TEST RESULTS

Type of Test	Acceptance Criteria	Results	Remarks
Visual Examination per 4.9.1	4.9.1	Acceptable	—
Each Position: 2 Side Bends per 4.9.3.1 and Fig. 4.9	4.9.3.3	Acceptable	—
Each Position:			—

CERTIFICATION

Test Conducted by	
Laboratory	**PKM Steel Service Quality Control Department**
Test Number	**126181**
File Number	—

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in accordance with the requirements of Clause 4 of AWS D1.1/D1.1M 2015 Structural Welding Code-Steel.

Manufacturer of Contractor **PKM Steel Service Inc.**

Authorized by [signature]

Date 12-6-2018

Form M-4

WELDER, WELDING OPERATOR, OR TACK WELDER QUALIFICATION TEST RECORD

Type of Welder **WELDER**

Name **CHRISTOPER YUNEBERG** Identification No. **V**

Welding Procedure Specfication No. **GMAW- U4** Rev **0** Date

Variables	Record Actual Values Used In Qualification	Qualification Range
Process / Type [Table 4.12, Item (1)]	**GMAW / SEMI-AUTO**	
Electrode (single or multiple) [Table 4.12, Item (7)]	**SINGLE**	**SINGLE**
Current / Polarity	**DCEP**	
Position [Table 4.12, Item (4)]	**2G**	**1G,2G,1F,2F.**
Weld Progression [Table 4.12, Item (5)]	**NA**	**NA**
Backing (YES or NO) [Table 4.12, Item (6)]	**YES**	**WITH BACKING OR BACKGOUGIN**
Material / Spec.	**A572 GR 50 to A572 GR 50**	**GROUP I TO GROUP I OR II**
Base Metal		
Thickness: (Plate)		
Groove	**1"**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Thickness: (Pipe / tube)		
Groove	**NA**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Diameter: (Pipe)	**NA**	
Groove	**NA**	**OVER 24" OD ROTATED**
Fillet	**NA**	**OVER 24" OD ROTATED**
Filler Metal (Table 4.12)		
Spec. No.	**A5.18**	
Class	**E70C-6M-H4**	
F-No. [Table 4.12, Item (2)]	**6**	
Gas / Flux Type (Table 4.12)	**80% ARGON 20% CO2**	
Other		

VISUAL INSPECTION (4.9.1)

Acceptable YES or NO **YES**

Guided Bend Test Results (4.31.5)

Type	Result	Type	Result
Side	**ACCEPT**		
Side	**ACCEPT**		

Fillet Test Results (4.31.2.3 and 4.31.4.1)

Appearance Fillet Size

Fracture Test Root Penetration Macroetch

(Describe the location, nature, and size of any crack or tearing of the specimen.)

Inspected by **RICHARD GLAVIN** Test Number **611181**

Organization **Quality Control, PKM Steel Services.** Date **6/11/2018**

RADIOGRAPHIC TEST RESULTS (4.31.3.2)

Film Identification Number	Results	Remarks	Film Identification Number	Results	Remarks

Interpreted by Test Number

Organization Date

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in conformance with the requirements of Clause 4 of AWS D1.1/D1.1M: 2010 Structural Welding Code -Steel.

Manufacturer or Contractor **PKM Steel Services** Authorized By

Date 6-11-18

WELDER, WELDING OPERATOR, OR TACK WELDER QUALIFICATION TEST RECORD
PERFORMANCE QUALIFICATION TEST RECORD

Name	Kenneth Nelson	OPTIONAL PHOTO ID	Test Date:	7/31/2018	Rev.
ID Number	—		Record No.	731181	0
Stamp No.	W		Std. Test No.	—	—
Company	PKM Steel Service Inc.		WPS No.	GMAW2	0
Division	—		Qualified To	AWS D1.1	

BASE METALS	Specification	Type or Grade	AWS Group No.	Size (NPS)	Schedule	Thickness	Diameter
Base Material	ASTM A572	50	I	—	—	1.0"	—
Welded To	ASTM A572	50	I	—	—	—	—

VARIBLES	Actual Values		RANGE QUALIFIED
Type of Weld Joint	Plate - Groove (Fig 4.16)		1G, 1F, 2F
Base Metal	Group 1 to Group 1		Group 1 & 2

	Groove	Fillet		Groove	Fillet
Plate Thickness	1.0"	—		1/8" to Unlimited	1/8" to Unlimited
Pipe / Tube Thickness	—	—		1/8" to Unlimited	Unlimited
Pipe Diameter	—	—		24" min. diameter	Unlimited

Welding Process	GMAW		GMAW
Type (Manual, Semiautomatic, Mechanized, Automatic)	Semiautomatic		Semiautomatic, Mechanized, Automatic
Backing	Yes		With Backing or Backgouging
Filler Metal (AWS Spec.)	A5.18		—
AWS Classification	E70C-6M-H4		—
F- Number	6		6
Position	1G		
Groove - Plate and Pipe ≥ 24 in.			1G
Groove - Pipe < 24 in.			—
Fillet - Plate and Pipe ≥ 24 in.			1F, 2F
Fillet - Pipe < 24 in.			—
Progression	—		—
GMAW Transfer Mode	Spray		Spray
Single or Multiple Electrodes	Single		Single
Gas / Flux Type	80% Argon / 20%CO2		80% Argon / 20%CO2

TEST RESULTS

Type of Test	Acceptance Criteria	Results	Remarks
Visual Examination per 4.9.1	4.9.1	Acceptable	—
Each Position: 2 Side Bends per 4.9.3.1 and Fig. 4.9	4.9.3.3	Acceptable	—
Each Position:			—

CERTIFICATION

Test Conducted by	
Laboratory	**PKM Steel Service Quality Control Department**
Test Number	**731181**
File Number	—

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in accordance with the requirements of Clause 4 of AWS D1.1/D1.1M 2015 Structural Welding Code-Steel.

Manufacturer of Contractor **PKM Steel Service Inc.**

Authorized by _____

Date _____

Form M-4

WELDER, WELDING OPERATOR, OR TACK WELDER QUALIFICATION TEST RECORD
PERFORMANCE QUALIFICATION TEST RECORD

Name	Richard Bird	OPTIONAL PHOTO ID	Test Date:	11/6/2018	Rev.
ID Number	—		Record No.	116181	0
Stamp No.	X		Std. Test No.	—	—
Company	PKM Steel Service Inc.		WPS No.	GMAW2	0
Division	—		Qualified To	AWS D1.1	

BASE METALS	Specification	Type or Grade	AWS Group No.	Size (NPS)	Schedule	Thickness	Diameter
Base Material	ASTM A572	50	I	—	—	1.0"	—
Welded To	ASTM A572	50	I	—	—	—	—

VARIBLES	Actual Values		RANGE QUALIFIED
Type of Weld Joint	Plate - Groove (Fig 4.16)		1G, 1F, 2F
Base Metal	Group 1 to Group 1		Group 1 & 2

	Groove	Fillet		Groove	Fillet
Plate Thickness	1.0"	—		1/8" to Unlimited	1/8" to Unlimited
Pipe / Tube Thickness	—	—		1/8" to Unlimited	Unlimited
Pipe Diameter	—	—		24" min. diameter	Unlimited

Welding Process	GMAW		GMAW
Type (Manual, Semiautomatic, Mechanized, Automatic)	Semiautomatic		Semiautomatic, Mechanized, Automatic
Backing	Yes		With Backing or Backgouging
Filler Metal (AWS Spec.)	A5.18		—
AWS Classification	E70C-6M-H4		—
F- Number	6		6
Position	1G		
Groove - Plate and Pipe ≥ 24 in.			1G
Groove - Pipe < 24 in.			—
Fillet - Plate and Pipe ≥ 24 in.			1F, 2F
Fillet - Pipe < 24 in.			—
Progression	—		—
GMAW Transfer Mode	Spray		Spray
Single or Multiple Electrodes	Single		Single
Gas / Flux Type	80% Argon / 20%CO2		80% Argon / 20%CO2

TEST RESULTS

Type of Test	Acceptance Criteria	Results	Remarks
Visual Examination per 4.9.1	4.9.1	Acceptable	—
Each Position: 2 Side Bends per 4.9.3.1 and Fig. 4.9	4.9.3.3	Acceptable	—
Each Position:			—

CERTIFICATION

Test Conducted by	
Laboratory	**PKM Steel Service Quality Control Department**
Test Number	**116181**
File Number	—

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in accordance with the requirements of Clause 4 of AWS D1.1/D1.1M 2015 Structural Welding Code-Steel.

Manufacturer of Contractor **PKM Steel Service Inc.**

Authorized by Wyatt Hall

Date 11-6-2018

Form M-4

WELDER, WELDING OPERATOR, OR TACK WELDER QUALIFICATION TEST RECORD

Type of Welder **WELDER**

Name **ZACHARY STUDNA** Identification No. **Z**

Welding Procedure Specfication No. **GMAW- U4** Rev **0** Date

	Record Actual Values Used In Qualification	Qualification Range
Variables		
Process / Type [Table 4.12, Item (1)]	**GMAW / SEMI-AUTO**	
Electrode (single or multiple) [Table 4.12, Item (7)]	**SINGLE**	**SINGLE**
Current / Polarity	**DCEP**	
Position [Table 4.12, Item (4)]	**2G**	**1G,2G,1F,2F.**
Weld Progression [Table 4.12, Item (5)]	**NA**	**NA**
Backing (YES or NO) [Table 4.12, Item (6)]	**YES**	**WITH BACKING OR BACKGOUGINC**
Material / Spec.	**A572 GR 50 to A572 GR 50**	**GROUP I TO GROUP I OR II**
Base Metal		
Thickness: (Plate)		
Groove	**1"**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Thickness: (Pipe / tube)		
Groove	**NA**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Diameter: (Pipe)	**NA**	
Groove	**NA**	**OVER 24" OD ROTATED**
Fillet	**NA**	**OVER 24" OD ROTATED**
Filler Metal (Table 4.12)		
Spec. No.	**A5.18**	
Class	**E70C-6M-H4**	
F-No. [Table 4.12, Item (2)]	**6**	
Gas / Flux Type (Table 4.12)	**80% ARGON 20% CO2**	
Other		

VISUAL INSPECTION (4.9.1)

Acceptable YES or NO **YES**

Guided Bend Test Results (4.31.5)

Type	Result	Type	Result
Side	**ACCEPT**		
Side	**ACCEPT**		

Fillet Test Results (4.31.2.3 and 4.31.4.1)

Appearance Fillet Size

Fracture Test Root Penetration Macroetch

(Describe the location, nature, and size of any crack or tearing of the specimen.)

Inspected by **RICHARD GLAVIN** Test Number **515183**

Organization **Quality Control, PKM Steel Services.** Date **5/15/2018**

RADIOGRAPHIC TEST RESULTS (4.31.3.2)

Film Identification Number	Results	Remarks	Film Identification Number	Results	Remarks

Interpreted by Test Number

Organization Date

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in conformance with the requirements of Clause 4 of AWS D1.1/D1.1M: 2010 Structural Welding Code - Steel.

Manufacturer or Contractor **PKM Steel Services** Authorized By

Date 5-15-2018

WELDER, WELDING OPERATOR, OR TACK WELDER QUALIFICATION TEST RECORD

Type of Welder **WELDER**

Name **David L Weltzin** Identification No. **1**

Welding Procedure Specfication No. **GMAW-2G** Rev **0** Date

Variables	Record Actual Values Used In Qualification	Qualification Range
Process / Type [Table 4.11, Item (1)]	**GMAW / SEMI-AUTO**	
Electrode (single or multiple) [Table 4.11, Item (8)]	**1/16" Single**	**1/16" Single**
Current / Polarity	**DCEP**	
Position [Table 4.11, Item (4)]	**2G**	**2G, 1G, 1F, 2F**
Weld Progression [Table 4.11, Item (6)]	**NA**	**NA**
Backing (YES or NO) [Table 4.11, Item (7)]	**YES**	**WITH**
Material / Spec.	**GROUP I TO GROUP I OR II**	**GROUP I TO GROUP I OR II**
Base Metal		
Thickness: (Plate)		
Groove	**1"**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Thickness: (Pipe / tube)		
Groove	**NA**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Diameter: (Pipe)	**NA**	
Groove	**NA**	**OVER 24" OD ROTATED**
Fillet	**NA**	**OVER 24" OD**
Filler Metal [Table 4.11, Item (3)]		
Spec. No.	**A5.18**	
Class	**ER70S-6**	
F-No. [Table 4.11, Item (2)]	**F-6**	
Gas / Flux Type [Table 4.11, Item (3)]	**75% ARGON 25% CO2**	
Other		

VISUAL INSPECTION (4.8.1)

Acceptable YES or NO **YES**

Guided Bend Test Results (4.30.5)

Type	Result	Type	Result
Side	**ACCEPT**		
Side	**ACCEPT**		

Fillet Test Results (4.30.2.3 and 4.30.4.10)

Appearance Fillet Size

Fracture Test Root Penetration Macroetch

(Describe the location, nature, and size of any crack or tearing of the specimen.)

Inspected by Test Number **118061**

Organization **Quality Control Mgr, PKM Steel Services.** Date **1/18/2006**

RADIOGRAPHIC TEST RESULTS (4.30.3.2)

Film Identification Number	Results	Remarks	Film Identification Number	Results	Remarks

Interpreted by Test Number

Organization Date

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in conformance with the requirements of Section 4 of AWS D1.1/D1.1M: 2004 Structural Welding Code -Steel.

Manufacturer or Contractor **PKM Steel Services** Authorized By

Date 1-18-2006

WELDER, WELDING OPERATOR, OR TACK WELDER QUALIFICATION TEST RECORD

Type of Welder **WELDER**

Name **Ronnie Mills** Identification No. **4**

Welding Procedure Specfication No. **GMAW-2G** Rev **0** Date

Variables	Record Actual Values Used In Qualification	Qualification Range
Process / Type [Table 4.12, Item (1)]	**GMAW / SEMI-AUTO**	
Electrode (single or multiple) [Table 4.12, Item (7)]	**SINGLE**	**SINGLE**
Current / Polarity	**DCEP**	
Position [Table 4.12, Item (4)]	**2G**	**1G,2G,1F,2F.**
Weld Progression [Table 4.12, Item (5)]	**NA**	**NA**
Backing (YES or NO) [Table 4.12, Item (6)]	**YES**	**WITH BACKING OR BACKGOUGIN**
Material / Spec.	**A572 GR 50 to A572 GR 50**	**GROUP I TO GROUP I OR II**
Base Metal		
Thickness: (Plate)		
Groove	**1"**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Thickness: (Pipe / tube)		
Groove	**NA**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Diameter: (Pipe)	**NA**	
Groove	**NA**	**OVER 24" OD ROTATED**
Fillet	**NA**	**OVER 24" OD ROTATED**
Filler Metal (Table 4.12)		
Spec. No.	**A5.18**	
Class	**E70C-6M-H4**	
F-No. [Table 4.12, Item (2)]	**6**	
Gas / Flux Type (Table 4.12)	**80% ARGON 20% CO2**	
Other		

VISUAL INSPECTION (4.8.1)

Acceptable YES or NO **YES**

Guided Bend Test Results (4.30.5)

Type	Result	Type	Result
Side	**ACCEPT**		
Side	**ACCEPT**		

Fillet Test Results (4.30.2.3 and 4.30.4.1)

Appearance Fillet Size

Fracture Test Root Penetration Macroetch

(Describe the location, nature, and size of any crack or tearing of the specimen.)

Inspected by **David L Weltzin** DLW Test Number **1205181**

Organization **Quality Control, PKM Steel Services.** Date **12/5/2018**

RADIOGRAPHIC TEST RESULTS (4.30.3.2)

Film Identification Number	Results	Remarks	Film Identification Number	Results	Remarks

Interpreted by Test Number

Organization Date

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in conformance with the requirements of Clause 4 of AWS D1.1/D1.1M: 2015 Structural Welding Code -Steel

Manufacturer or Contractor **PKM Steel Services** Authorized By

Date 12-5-18

WELDER, WELDING OPERATOR, OR TACK WELDER QUALIFICATION TEST RECORD

Type of Welder **WELDER**

Name **Randal Torres** Identification No. **7**

Welding Procedure Specfication No. **GMAW-2G** Rev **0** Date

Variables	Record Actual Values Used In Qualification	Qualification Range
Process / Type [Table 4.12, Item (1)]	**GMAW / SEMI-AUTO**	
Electrode (single or multiple) [Table 4.12, Item (7)]	**SINGLE**	**SINGLE**
Current / Polarity	**DCEP**	
Position [Table 4.12, Item (4)]	**2G**	**1G,2G,1F,2F.**
Weld Progression [Table 4.12, Item (5)]	**NA**	**NA**
Backing (YES or NO) [Table 4.12, Item (6)]	**YES**	**WITH BACKING OR BACKGOUGIN**
Material / Spec.	**A572 GR 50 to A572 GR 50**	**GROUP I TO GROUP I OR II**
Base Metal		
Thickness: (Plate)		
Groove	**1"**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Thickness: (Pipe / tube)		
Groove	**NA**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Diameter: (Pipe)	**NA**	
Groove	**NA**	**OVER 24" OD ROTATED**
Fillet	**NA**	**OVER 24" OD ROTATED**
Filler Metal (Table 4.12)		
Spec. No.	**A5.18**	
Class	**E70C-6M-H4**	
F-No. [Table 4.12, Item (2)]	**6**	
Gas / Flux Type (Table 4.12)	**80% ARGON 20% CO2**	
Other		

VISUAL INSPECTION (4.8.1)

Acceptable YES or NO **YES**

Guided Bend Test Results (4.30.5)

Type	Result	Type	Result
Side	**ACCEPT**		
Side	**ACCEPT**		

Fillet Test Results (4.30.2.3 and 4.30.4.1)

Appearance Fillet Size

Fracture Test Root Penetration Macroetch

(Describe the location, nature, and size of any crack or tearing of the specimen.)

Inspected by David L. Wellington dlw Test Number **123172**

Organization **Quality Control, PKM Steel Services.** Date **1/23/2017**

RADIOGRAPHIC TEST RESULTS (4.30.3.2)

Film Identification Number	Results	Remarks	Film Identification Number	Results	Remarks

Interpreted by Test Number

Organization Date

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in conformance with the requirements of Clause 4 of AWS D1.1/D1.1M: 2010 Structural Welding Code -Steel.

Manufacturer or Contractor **PKM Steel Services** Authorized By

Date 1-23-17

WELDER, WELDING OPERATOR, OR TACK WELDER QUALIFICATION TEST RECORD

Type of Welder **WELDER**

Name **Roy Thompson** Identification No. **8**

Welding Procedure Specfication No. **GMAW-1G** Rev **0** Date

Variables	Record Actual Values Used In Qualification	Qualification Range
Process / Type [Table 4.11, Item (1)]	**GMAW / AUTOMATIC**	
Electrode (single or multiple) [Table 4.11, Item (8)]	**SINGLE**	**SINGLE**
Current / Polarity	**DCEP**	
Position [Table 4.11, Item (4)]	**1G**	**1G, 1F, 2F**
Weld Progression [Table 4.11, Item (6)]	**NA**	**NA**
Backing (YES or NO) [Table 4.11, Item (7)]	**YES**	**WITH BACKING OR BACKGOUGIN**
Material / Spec.	**A572 GR 50 to A572 GR 50**	**GROUP I TO GROUP I OR II**
Base Metal		
Thickness: (Plate)		
Groove	**1"**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Thickness: (Pipe / tube)		
Groove	**NA**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Diameter: (Pipe)	**NA**	
Groove	**NA**	**NA**
Fillet	**NA**	**NA**
Filler Metal [Table 4.11, Item (3)]		
Spec. No.	**A5.18**	
Class	**E70C-6M-H4**	
F-No. [Table 4.11, Item (2)]	**6**	
Gas / Flux Type [Table 4.11, Item (3)]	**80% ARGON 20% CO2**	
Other		

VISUAL INSPECTION (4.8.1)

Acceptable YES or NO **YES**

Guided Bend Test Results (4.30.5)

Type	Result	Type	Result
Side	**ACCEPT**		
Side	**ACCEPT**		

Fillet Test Results (4.30.2.3 and 4.30.4.10)

Appearance Fillet Size

Fracture Test Root Penetration Macroetch

(Describe the location, nature, and size of any crack or tearing of the specimen.)

Inspected by **David L Weltzin** DLW Test Number **1114181**

Organization **Quality Control, PKM Steel Services.** Date **11/14/2018**

RADIOGRAPHIC TEST RESULTS (4.30.3.2)

Film Identification Number	Results	Remarks	Film Identification Number	Results	Remarks

Interpreted by Test Number

Organization Date

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in conformance with the requirements of Clause 4 of AWS D1.1/D1.1M: 2015 Structural Welding Code -Steel.

Manufacturer or Contractor **PKM Steel Services** Authorized By Paul Reder

Date 11-29-18

AWS D1.1/D1.1M: 2015 Structural Welding Code -Steel.

WELDER, WELDING OPERATOR, OR TACK WELDER QUALIFICATION TEST RECORD

Type of Welder **WELDER**

Name **ELUID RINCON** Identification No. **O**

Welding Procedure Specification No. **GMAW-2G** Rev **0** Date

Variables	Record Actual Values Used In Qualification	Qualification Range
Process / Type [Table 4.11, Item (1)]	**GMAW / SEMI-AUTO**	
Electrode (single or multiple) [Table 4.11, Item (8)]	**SINGLE**	**SINGLE**
Current / Polarity	**DCEP**	
Position [Table 4.11, Item (4)]	**2G**	**1G, 2G, 1F, 2F**
Weld Progression [Table 4.11, Item (6)]	**n/a**	**n/a**
Backing (YES or NO) [Table 4.11, Item (7)]	**YES**	**WITH BACKING OR BACKGOUGING**
Material / Spec.	**A572 GR 50 to A572 GR 50**	**GROUP I TO GROUP I OR II**
Base Metal		
Thickness: (Plate)		
Groove	**1.0"**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Thickness: (Pipe / tube)		
Groove	**NA**	**1/8" TO 3/4" MAX**
Fillet	**NA**	**1/8" TO UNLIMITED**
Diameter: (Pipe)		
Groove	**NA**	**OVER 24" OD ROTATED**
Fillet	**NA**	**OVER 24" OD ROTATED**
Filler Metal [Table 4.11, Item (3)]		
Spec. No.	**A5.18**	
Class	**E70C-6M-H4**	
F-No. [Table 4.11, Item (2)]	**6**	
Gas / Flux Type [Table 4.11, Item (3)]	**(80% Argon, 20% CO_2)**	
Other		

VISUAL INSPECTION (4.8.1)

Acceptable YES or NO **YES**

Guided Bend Test Results (4.30.5)

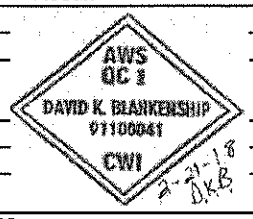
Type	Result	Type	Result
Side	**Accept**		
Side	**Accept**		

Fillet Test Results (4.30.2.3 and 4.30.4.10)

Appearance Fillet Size

Fracture Test Root Penetration Macroetch

(Describe the location, nature, and size of any crack or tearing of the specimen.)



Inspected by **David K. Blankenship** Test Number **221188**

Organization **BCS (Blankit Consulting Services)** Date **2/21/2018**

RADIOGRAPHIC TEST RESULTS (4.30.3.2)

Film Identification Number	Results	Remarks	Film Identification Number	Results	Remarks

Interpreted by Test Number

Organization Date

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in conformance with the requirements of Clause 4 of AWS D1.1/D1.1M: 2015 Structural Welding Code -Steel.

Manufacturer or Contractor **PKM STEEL SERVICE, INC.** Authorized By **Richard Glavin**

Date **2/21/2018**

WELDER, WELDING OPERATOR, OR TACK WELDER QUALIFICATION TEST RECORD

Type of Welder **WELDER**

Name **Alex Montoya** Identification No. **E**

Welding Procedure Specfication No. **GMAW-1G** Rev **0** Date

Variables	Record Actual Values Used In Qualification	Qualification Range
Process / Type [Table 4.11, Item (1)]	**GMAW / AUTOMATIC**	
Electrode (single or multiple) [Table 4.11, Item (8)]	**SINGLE**	**SINGLE**
Current / Polarity	**DCEP**	
Position [Table 4.11, Item (4)]	**1G**	**1G, 1F, 2F**
Weld Progression [Table 4.11, Item (6)]	**NA**	**NA**
Backing (YES or NO) [Table 4.11, Item (7)]	**YES**	**WITH BACKING OR BACKGOUGINC**
Material / Spec.	**A572 GR 50 to A572 GR 50**	**GROUP I TO GROUP I OR II**
Base Metal		
Thickness: (Plate)		
Groove	**1"**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Thickness: (Pipe / tube)		
Groove	**NA**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Diameter: (Pipe)	**NA**	
Groove	**NA**	**NA**
Fillet	**NA**	**NA**
Filler Metal [Table 4.11, Item (3)]		
Spec. No.	**A5.18**	
Class	**E70C-6M-H4**	
F-No. [Table 4.11, Item (2)]	**6**	
Gas / Flux Type [Table 4.11, Item (3)]	**80% ARGON 20% CO2**	
Other		

VISUAL INSPECTION (4.8.1)

Acceptable YES or NO **YES**

Guided Bend Test Results (4.30.5)

Type	Result	Type	Result
Side	**ACCEPT**		
Side	**ACCEPT**		

Fillet Test Results (4.30.2.3 and 4.30.4.10)

Appearance Fillet Size

Fracture Test Root Penetration Macroetch

(Describe the location, nature, and size of any crack or tearing of the specimen.)

Inspected by **David L Weltzin** DLW Test Number **1110181**

Organization **Quality Control, PKM Steel Services.** Date **11/10/2018**

RADIOGRAPHIC TEST RESULTS (4.30.3.2)

Film Identification Number	Results	Remarks	Film Identification Number	Results	Remarks

Interpreted by Test Number

Organization Date

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in conformance with the requirements of Clause 4 of AWS D1.1/D1.1M: 2015 Structural Welding Code -Steel.

Manufacturer or Contractor **PKM Steel Services** Authorized By

Date 11-12-18

WELDER, WELDING OPERATOR, OR TACK WELDER QUALIFICATION TEST RECORD

Type of Welder **WELDER**

Name **Peter Smith** Identification No. **J**

Welding Procedure Specfication No. **GMAW-1G** Rev **0** Date

Variables	Record Actual Values Used In Qualification	Qualification Range
Process / Type [Table 4.11, Item (1)]	**GMAW / AUTOMATIC**	
Electrode (single or multiple) [Table 4.11, Item (8)]	**SINGLE**	**SINGLE**
Current / Polarity	**DCEP**	
Position [Table 4.11, Item (4)]	**1G**	**1G, 1F, 2F**
Weld Progression [Table 4.11, Item (6)]	**NA**	**NA**
Backing (YES or NO) [Table 4.11, Item (7)]	**YES**	**WITH BACKING OR BACKGOUGINC**
Material / Spec.	**A572 GR 50 to A572 GR 50**	**GROUP I TO GROUP I OR II**
Base Metal		
Thickness: (Plate)		
Groove	**1"**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Thickness: (Pipe / tube)		
Groove	**NA**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Diameter: (Pipe)	**NA**	
Groove	**NA**	**NA**
Fillet	**NA**	**NA**
Filler Metal [Table 4.11, Item (3)]		
Spec. No.	**A5.18**	
Class	**E70C-6M-H4**	
F-No. [Table 4.11, Item (2)]	**6**	
Gas / Flux Type [Table 4.11, Item (3)]	**80% ARGON 20% CO2**	
Other		

VISUAL INSPECTION (4.8.1)

Acceptable YES or NO **YES**

Guided Bend Test Results (4.30.5)

Type	Result	Type	Result
Side	**ACCEPT**		
Side	**ACCEPT**		

Fillet Test Results (4.30.2.3 and 4.30.4.10)

Appearance Fillet Size

Fracture Test Root Penetration Macroetch

(Describe the location, nature, and size of any crack or tearing of the specimen.)

Inspected by **David L Weltzin** Test Number **228181**

Organization **Quality Control, PKM Steel Services.** Date **2/28/2018**

RADIOGRAPHIC TEST RESULTS(4.30.3.2)

Film Identification Number	Results	Remarks	Film Identification Number	Results	Remarks

Interpreted by Test Number

Organization Date

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in conformance with the requirements of Clause 4 of AWS D1.1/D1.1M: 2015 Structural Welding Code -Steel.

Manufacturer or Contractor **PKM Steel Services** Authorized By

Date 3-12-18

WELDER, WELDING OPERATOR OR TACK WELDER QUALIFICATION TEST RECORD

Name: PHON NOUANLASY Identification No.: L
Welding Procedure Specification No.: **GMAW 2G** Rev: **3** Date: **8/21/2014 (RG)**

Variables	Record Actual Values Used in Qualification	Qualification Range
Process/Type	GMAW\SEMI-AUTOMATIC	
Electrode Size	1/16"	1/16" and SMALLER
Current/Polarity	DCEP	
Position	2G	1G,2G,1F,2F
Weld Progression	NA	NA
Backing	Yes (X) No()	With Only
Material/Spec.	A572 Gr 50 to A572 Gr 50	
Base Metal		
Thickness: (Plate)		
Groove	1"	1/8" TO UNLIMITED
Fillet	NA	1/8" TO UNLIMITED
Thickness: (Pipe/tube)		
Groove	NA	NA
Fillet	NA	NA
Diameter: (Pipe)		
Groove	NA	Over 24" OD
Fillet	NA	Over 24" OD
Filler Metal		
Spec. No.	A5.18	
Class	E70C-6M,ER70S-3	
F-No.	F-6	NA
Gas/Flux Type	80% ARGON 20% CO2	

VISUAL INSPECTION

Acceptable YES (X) NO ()

Guided Bend Test Results

Type SIDE	Results ACCEPTABLE	Type	Results
Type SIDE	Results ACCEPTABLE	Type	Results

Fillet Test Results

Appearance NA Fillet Size NA

Fracture Test Root Penetration NA Macrotech NA

(Describe the location, nature, and size of any crack or tearing of the specimen.)

Inspected by: BLAKE ORR Test Number: NA
Organization: PKM STEEL SERVICE, INC. Date: 1/25/96

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in accordance with the requirements of Section 5, Part C or D of ANSI/AWS D1.1, 1996 Structural Welding Code - Steel

Manufacturer or Contractor PKM STEEL SERVICE, INC.

Authorized by Blake Orr Date 5/29/01

WELDER, WELDING OPERATOR OR TACK WELDER QUALIFICATION TEST RECORD

Name: SOUPHONH CHACKAMATH Identification No.: O____
Welding Procedure Specification No.: **GMAW 2G** Rev: **1** Date: **8/14/2014 (RG)**

Variables	Record Actual Values Used in Qualification	Qualification Range
Process/Type	GMAW\SEMI-AUTOMATIC	
Electrode Size	1/16"	1/16" and SMALLER
Current/Polarity	DCEP	
Position	2G	1G,2G,1F,2F
Weld Progression	NA	NA
Backing	Yes (X) No()	With Only
Material/Spec.	A572Gr 50 to A572 Gr 50	
Base Metal		
Thickness: (Plate)		
Groove	1"	1/8" TO UNLIMITED
Fillet	NA	1/8" TO UNLIMITED
Thickness: (Pipe/tube)		
Groove	NA	NA
Fillet	NA	NA
Diameter: (Pipe)		
Groove	NA	Over 24" OD
Fillet	NA	Over 24" OD
Filler Metal		
Spec. No.	A5.18	
Class	E 70C-6M	
F-No.	F-6	NA
Gas/Flux Type	80% ARGON 20% CO2	

VISUAL INSPECTION

Acceptable YES (X) NO ()

Guided Bend Test Results

Type SIDE Results ACCEPTABLE Type NA Results NA
Type SIDE Results ACCEPTABLE Type NA Results NA

Fillet Test Results

Appearance NA Fillet Size NA
Fracture Test Root Penetration NA Macrotech NA
(Describe the location, nature, and size of any crack or tearing of the specimen.)

Inspected by: RONALD WILBUR Test Number: NA
Organization: PKM STEEL SERVICE, INC. Date: 4/15/01

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in accordance with the requirements of Section 5, Part C or D of ANSI/AWS D1.1, 2000 Structural Welding Code - Steel

Manufacturer or Contractor PKM STEEL SERVICE, INC.

Authorized by Blake Orr Date 4/15/01

WELDER, WELDING OPERATOR, OR TACK WELDER QUALIFICATION TEST RECORD

Type of Welder **WELDER**

Name **Jason Ferrall** Identification No. **V**

Welding Procedure Specfication No. **GMAW-2G** Rev **0** Date

Variables	Record Actual Values Used In Qualification	Qualification Range
Process / Type [Table 4.12, Item (1)]	**GMAW / SEMI-AUTO**	
Electrode (single or multiple) [Table 4.12, Item (7)]	**SINGLE**	**SINGLE**
Current / Polarity	**DCEP**	
Position [Table 4.12, Item (4)]	**2G**	**1G,2G,1F,2F.**
Weld Progression [Table 4.12, Item (5)]	**NA**	**NA**
Backing (YES or NO) [Table 4.12, Item (6)]	**YES**	**WITH BACKING OR BACKGOUGIN**
Material / Spec.	**A572 GR 50 to A572 GR 50**	**GROUP I TO GROUP I OR II**
Base Metal		
Thickness: (Plate)		
Groove	**1"**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Thickness: (Pipe / tube)		
Groove	**NA**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Diameter: (Pipe)	**NA**	
Groove	**NA**	**OVER 24" OD ROTATED**
Fillet	**NA**	**OVER 24" OD ROTATED**
Filler Metal (Table 4.12)		
Spec. No.	**A5.18**	
Class	**E70C-6M-H4**	
F-No. [Table 4.12, Item (2)]	**6**	
Gas / Flux Type (Table 4.12)	**80% ARGON 20% CO2**	
Other		

VISUAL INSPECTION (4.8.1)

Acceptable YES or NO **YES**

Guided Bend Test Results (4.30.5)

Type	Result	Type	Result
Side	**ACCEPT**		
Side	**ACCEPT**		

Fillet Test Results (4.30.2.3 and 4.30.4.1)

Appearance Fillet Size

Fracture Test Root Penetration Macroetch

(Describe the location, nature, and size of any crack or tearing of the specimen.)

Inspected by David L. Weltzin dlw Test Number **1009181**

Organization **Quality Control, PKM Steel Services.** Date **10/9/2018**

RADIOGRAPHIC TEST RESULTS (4.30.3.2)

Film Identification Number	Results	Remarks	Film Identification Number	Results	Remarks

Interpreted by Test Number

Organization Date

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in conformance with the requirements of Clause 4 of AWS D1.1/D1.1M: 2015 Structural Welding Code -Steel

Manufacturer or Contractor **PKM Steel Services** Authorized By Paul L Ruder

Date 10-9-2018

WELDER, WELDING OPERATOR, OR TACK WELDER QUALIFICATION TEST RECORD

Type of Welder **WELDER**

Name **Kyle Hughes** Identification No. **X**

Welding Procedure Specfication No. **GMAW-2G** Rev **0** Date

Variables	Record Actual Values Used In Qualification	Qualification Range
Process / Type [Table 4.12, Item (1)]	**GMAW / SEMI-AUTO**	
Electrode (single or multiple) [Table 4.12, Item (7)]	**SINGLE**	**SINGLE**
Current / Polarity	**DCEP**	
Position [Table 4.12, Item (4)]	**2G**	**1G,2G,1F,2F.**
Weld Progression [Table 4.12, Item (5)]	**NA**	**NA**
Backing (YES or NO) [Table 4.12, Item (6)]	**YES**	**WITH BACKING OR BACKGOUGIN(**
Material / Spec.	**A572 GR 50 to A572 GR 50**	**GROUP I TO GROUP I OR II**
Base Metal		
Thickness: (Plate)		
Groove	**1"**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Thickness: (Pipe / tube)		
Groove	**NA**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Diameter: (Pipe)	**NA**	
Groove	**NA**	**OVER 24" OD ROTATED**
Fillet	**NA**	**OVER 24" OD ROTATED**
Filler Metal (Table 4.12)		
Spec. No.	**A5.18**	
Class	**E70C-6M-H4**	
F-No. [Table 4.12, Item (2)]	**6**	
Gas / Flux Type (Table 4.12)	**80% ARGON 20% CO2**	
Other		

VISUAL INSPECTION (4.8.1)

Acceptable YES or NO **YES**

Guided Bend Test Results (4.30.5)

Type	Result	Type	Result
Side	**ACCEPT**		
Side	**ACCEPT**		

Fillet Test Results (4.30.2.3 and 4.30.4.1)

Appearance Fillet Size

Fracture Test Root Penetration Macroetch

(Describe the location, nature, and size of any crack or tearing of the specimen.)

Inspected by David L. Wellington dlw Test Number **721141**

Organization **Quality Control, PKM Steel Services.** Date **7/21/2014**

RADIOGRAPHIC TEST RESULTS (4.30.3.2)

Film Identification Number	Results	Remarks	Film Identification Number	Results	Remarks

Interpreted by Test Number

Organization Date

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in conformance with the requirements of Clause 4 of AWS D1.1/D1.1M: 2010 Structural Welding Code -Steel.

Manufacturer or Contractor **PKM Steel Services** Authorized By

Date 7-21-14

WELDER, WELDING OPERATOR, OR TACK WELDER QUALIFICATION TEST RECORD

Type of Welder **WELDER**

Name **GERALD MITCHELL** Identification No. Z

Welding Procedure Specification No. **GMAW-2G** Rev **0** Date

Variables	Record Actual Values Used In Qualification	Qualification Range
Process / Type [Table 4.11, Item (1)]	**GMAW / SEMI-AUTO**	
Electrode (single or multiple) [Table 4.11, Item (8)]	**SINGLE**	**SINGLE**
Current / Polarity	**DCEP**	
Position [Table 4.11, Item (4)]	**2G**	**1G, 2G, 1F, 2F**
Weld Progression [Table 4.11, Item (6)]	**n/a**	**n/a**
Backing (YES or NO) [Table 4.11, Item (7)]	**YES**	**WITH BACKING OR BACKGOUGING**
Material / Spec.	**A572 GR 50 to A572 GR 50**	**GROUP I TO GROUP I OR II**
Base Metal		
Thickness: (Plate)		
Groove	**1.0"**	**1/8" TO UNLIMITED**
Fillet	**NA**	**1/8" TO UNLIMITED**
Thickness: (Pipe / tube)		
Groove	**NA**	**1/8" TO 3/4" MAX**
Fillet	**NA**	**1/8" TO UNLIMITED**
Diameter: (Pipe)		
Groove	**NA**	**OVER 24" OD ROTATED**
Fillet	**NA**	**OVER 24" OD ROTATED**
Filler Metal [Table 4.11, Item (3)]		
Spec. No.	**A5.18**	
Class	**E70C-6M-H4**	
F-No. [Table 4.11, Item (2)]	**6**	
Gas / Flux Type [Table 4.11, Item (3)]	**(80% Argon, 20% CO_2)**	
Other		

VISUAL INSPECTION (4.8.1)

Acceptable YES or NO **YES**

Guided Bend Test Results (4.30.5)

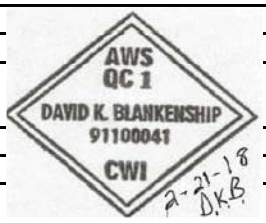
Type	Result	Type	Result
Side	**Accept**		
Side	**Accept**		

Fillet Test Results (4.30.2.3 and 4.30.4.10)

Appearance Fillet Size

Fracture Test Root Penetration Macroetch

(Describe the location, nature, and size of any crack or tearing of the specimen.)



Inspected by **David K. Blankenship** Test Number **2211819**

Organization **BCS (Blankit Consulting Services)** Date **2/21/2018**

RADIOGRAPHIC TEST RESULTS (4.30.3.2)

Film Identification Number	Results	Remarks	Film Identification Number	Results	Remarks

Interpreted by Test Number

Organization Date

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in conformance with the requirements of Clause 4 of AWS D1.1/D1.1M: 2015 Structural Welding Code -Steel.

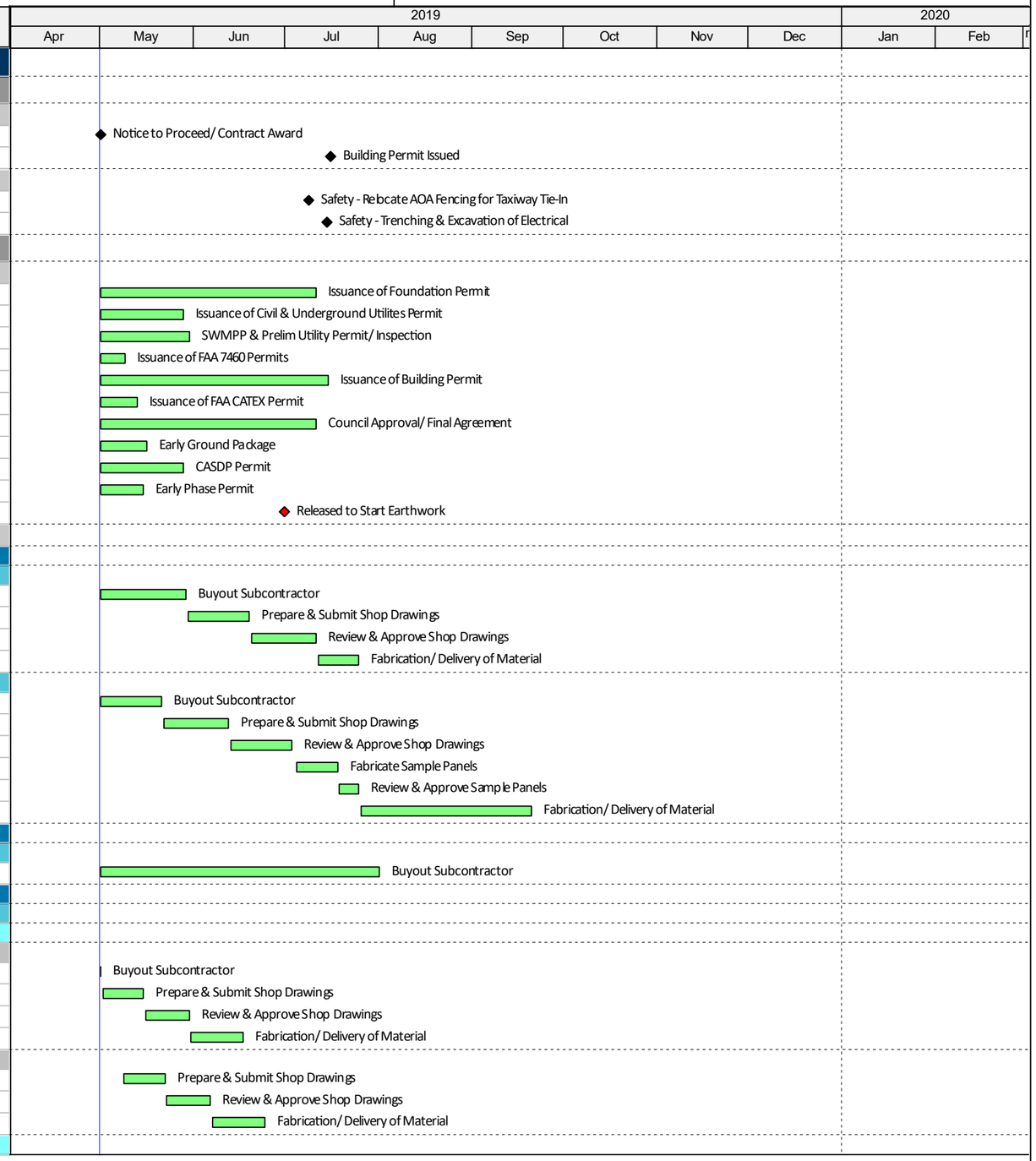
Manufacturer or Contractor **PKM STEEL SERVICE, INC.** Authorized By **Richard Glavin**

Date **2/21/2018**

APPENDIX D

PROJECT SCHEDULE

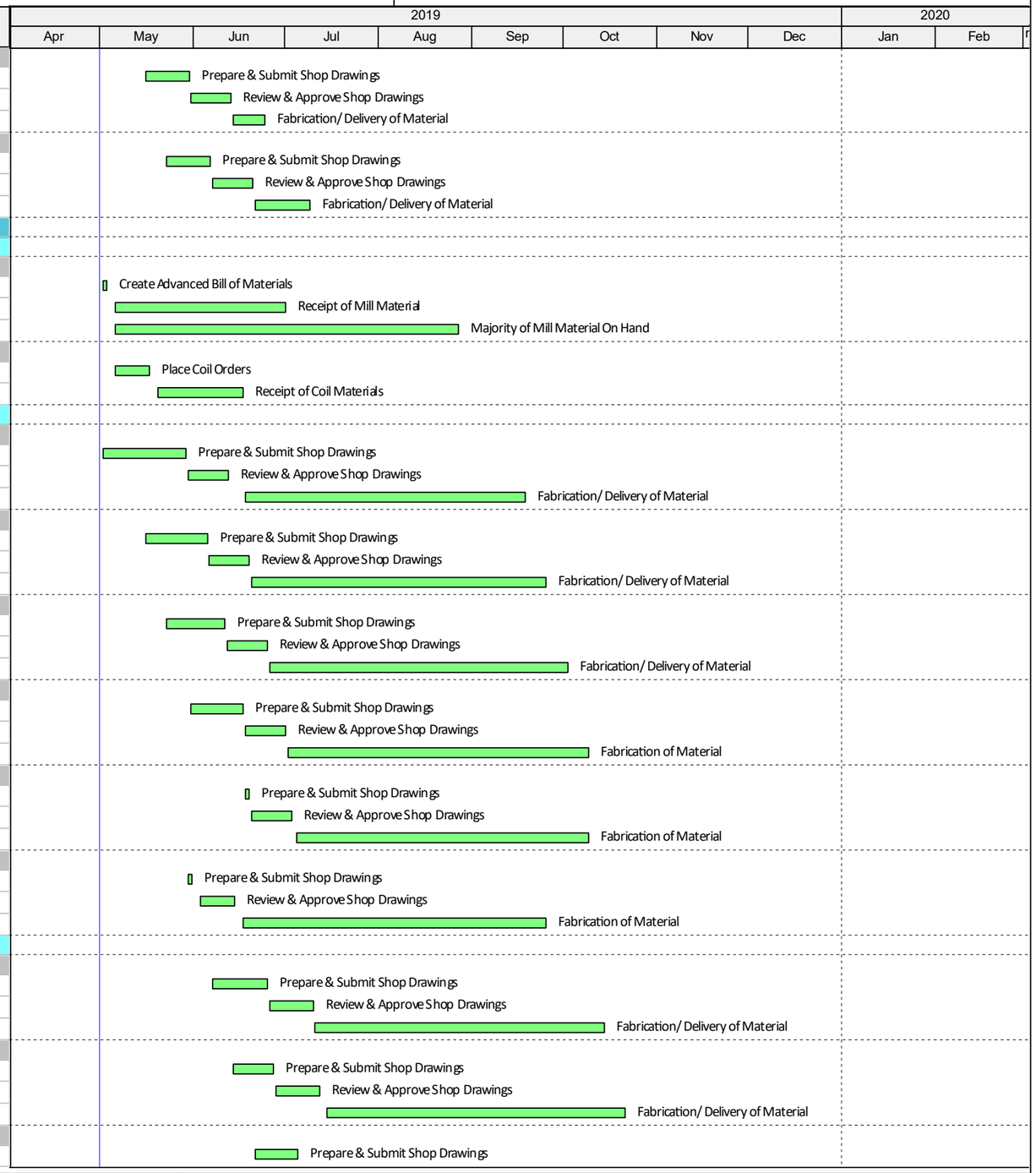
#	Activity ID	Activity Name	Duration	Start	Finish
1	**DEN RON Southwest Hangar - Preliminary Baseline**		149d	5/1/2019	12/2/2019
2	**Summary and Milestones**		52d	5/1/2019	7/16/2019
3	**General Requirements**		52d	5/1/2019	7/16/2019
4	SUM-1000	Notice to Proceed/ Contract Award	0d	5/1/2019	
5	SUM-1020	Building Permit Issued	0d	7/16/2019	
6	**Safety 5 Inspections**		4d	7/9/2019	7/15/2019
7	SAFE-1040	Safety - Relocate AOA Fencing for Taxiway Tie-In	0d	7/9/2019	
8	SAFE-1000	Safety - Trenching & Excavation of Electrical	0d	7/15/2019	
9	**Preconstruction**		149d	5/1/2019	12/2/2019
10	**Permitting**		52d	5/1/2019	7/15/2019
11	PRM-1040	Issuance of Foundation Permit	50d	5/1/2019	7/11/2019
12	PRM-1030	Issuance of Civil & Underground Utilites Permit	19d	5/1/2019	5/28/2019
13	PRM-1020	SWMPP & Prelim Utility Permit/ Inspection	21d	5/1/2019	5/30/2019
14	PRM-1010	Issuance of FAA 7460 Permits	7d	5/1/2019	5/9/2019
15	PRM-1000	Issuance of Building Permit	52d	5/1/2019	7/15/2019
16	PRM-1050	Issuance of FAA CATEX Permit	9d	5/1/2019	5/13/2019
17	PRM-1060	Council Approval/ Final Agreement	50d	5/1/2019	7/11/2019
18	PRM-1070	Early Ground Package	12d	5/1/2019	5/16/2019
19	PRM-1080	CASDP Permit	19d	5/1/2019	5/28/2019
20	PRM-1090	Early Phase Permit	11d	5/1/2019	5/15/2019
21	PRM-1100	Released to Start Earthwork	0d	7/1/2019*	
22	**Critical Engineering/ Material Procurement**		149d	5/1/2019	12/2/2019
23	**Div. 3 - Concrete**		100d	5/1/2019	9/20/2019
24	**033000 - CIP Concrete**		60d	5/1/2019	7/25/2019
25	PROC-1480	Buyout Subcontractor	20d	5/1/2019	5/29/2019
26	PROC-1490	Prepare & Submit Shop Drawings	15d	5/30/2019	6/19/2019
27	PROC-1500	Review & Approve Shop Drawings	15d	6/20/2019	7/11/2019
28	PROC-1510	Fabrication/ Delivery of Material	10d	7/12/2019	7/25/2019
29	**034100 - Precast**		100d	5/1/2019	9/20/2019
30	PROC-1440	Buyout Subcontractor	15d	5/1/2019	5/21/2019
31	PROC-1450	Prepare & Submit Shop Drawings	15d	5/22/2019	6/12/2019
32	PROC-1460	Review & Approve Shop Drawings	15d	6/13/2019	7/3/2019
33	PROC-1520	Fabricate Sample Panels	10d	7/5/2019	7/18/2019
34	PROC-1530	Review & Approve Sample Panels	5d	7/19/2019	7/25/2019
35	PROC-1470	Fabrication/ Delivery of Material	40d	7/26/2019	9/20/2019
36	**Div. 4 - Masonry**		65d	5/1/2019	8/1/2019
37	**042000 - Unit Masonry**		65d	5/1/2019	8/1/2019
38	PROC-2630	Buyout Subcontractor	65d	5/1/2019	8/1/2019
39	**Div. 5 - Metals**		149d	5/1/2019	12/2/2019
40	**Anchor Bolts**		48d	5/1/2019	7/9/2019
41	**Maintenance Support**		38d	5/1/2019	6/24/2019
42	**Sequence 01 (Grid 08.-8)**		33d	5/1/2019	6/17/2019
43	PROC-1870	Buyout Subcontractor	1d	5/1/2019	5/1/2019
44	PROC-1840	Prepare & Submit Shop Drawings	10d	5/2/2019	5/15/2019
45	PROC-1850	Review & Approve Shop Drawings	10d	5/16/2019	5/30/2019
46	PROC-1860	Fabrication/ Delivery of Material	12d	5/31/2019	6/17/2019
47	**Sequence 02 (Grid 8.6-14)**		32d	5/9/2019	6/24/2019
48	PROC-1890	Prepare & Submit Shop Drawings	10d	5/9/2019	5/22/2019
49	PROC-1900	Review & Approve Shop Drawings	10d	5/23/2019	6/6/2019
50	PROC-1910	Fabrication/ Delivery of Material	12d	6/7/2019	6/24/2019
51	**Hangar**		37d	5/16/2019	7/9/2019



◆ Milestone ◆ Critical Milestone ■ Critical Work

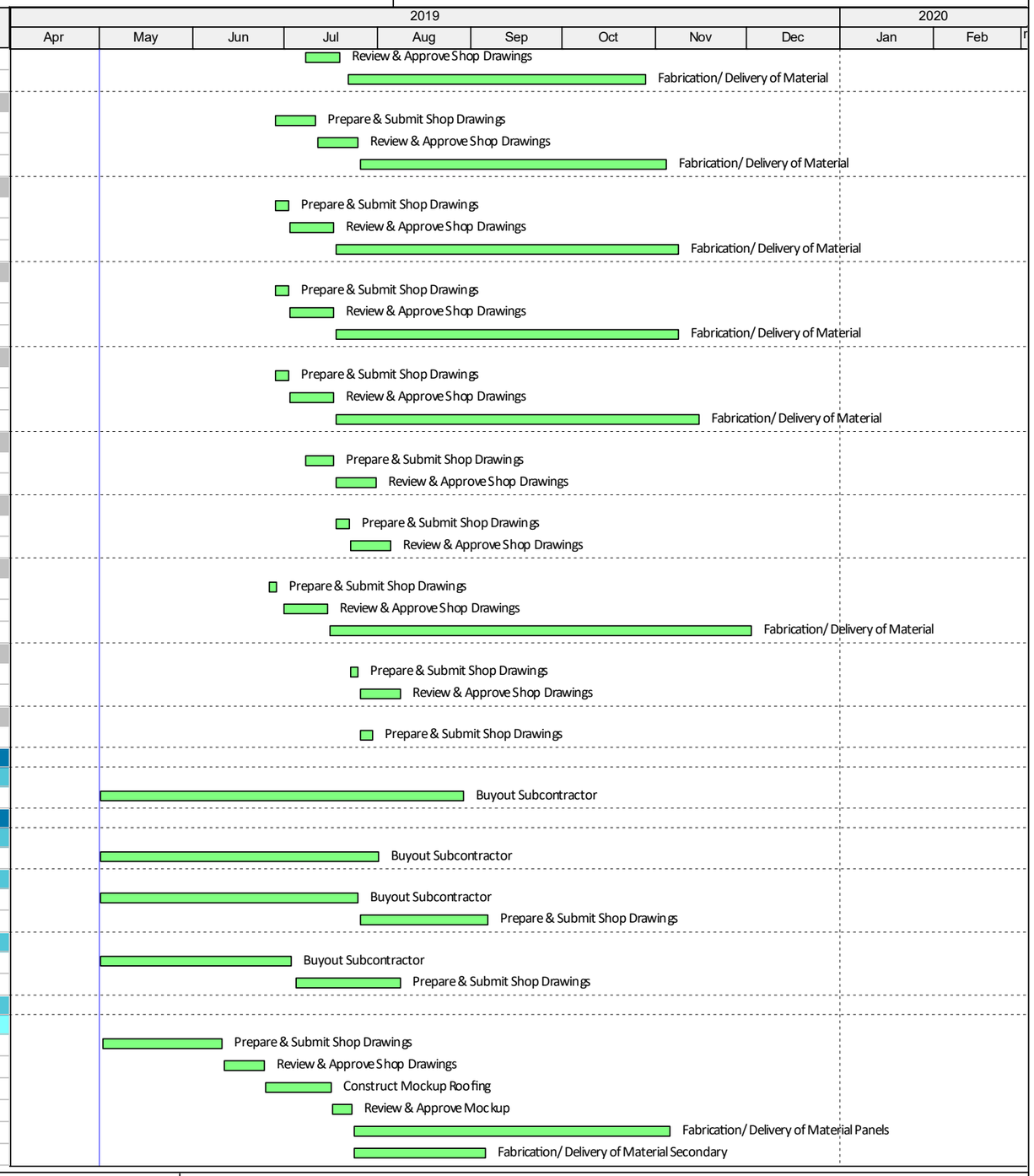
Summary Remaining Work

#	Activity ID	Activity Name	Duration	Start	Finish
52	**Sequence 03**		27d	5/16/2019	6/24/2019
53	PROC-1930	Prepare & Submit Shop Drawings	10d	5/16/2019	5/30/2019
54	PROC-1940	Review & Approve Shop Drawings	10d	5/31/2019	6/13/2019
55	PROC-1950	Fabrication/ Delivery of Material	7d	6/14/2019	6/24/2019
56	**Sequence 04**		32d	5/23/2019	7/9/2019
57	PROC-1960	Prepare & Submit Shop Drawings	10d	5/23/2019	6/6/2019
58	PROC-1970	Review & Approve Shop Drawings	10d	6/7/2019	6/20/2019
59	PROC-1980	Fabrication/ Delivery of Material	12d	6/21/2019	7/9/2019
60	**052100 - Primary & Secondary Structual Framing & Decking**		148d	5/2/2019	12/2/2019
61	**Raw Material Aquisition**		82d	5/2/2019	8/27/2019
62	**Primary**		82d	5/2/2019	8/27/2019
63	PROC-3330	Create Advanced Bill of Materials	2d	5/2/2019	5/3/2019
64	PROC-3340	Receipt of Mill Material	40d	5/6/2019	7/1/2019
65	PROC-3350	Majority of Mill Material On Hand	80d	5/6/2019	8/27/2019
66	**Secondary**		30d	5/6/2019	6/17/2019
67	PROC-3360	Place Coil Orders	10d	5/6/2019	5/17/2019
68	PROC-3370	Receipt of Coil Materials	20d	5/20/2019	6/17/2019
69	**Maintenance Support**		112d	5/2/2019	10/9/2019
70	**Sequence 01**		97d	5/2/2019	9/18/2019
71	PROC-2080	Prepare & Submit Shop Drawings	19d	5/2/2019	5/29/2019
72	PROC-2090	Review & Approve Shop Drawings	10d	5/30/2019	6/12/2019
73	PROC-2100	Fabrication/ Delivery of Material	65d	6/18/2019	9/18/2019
74	**Sequence 02**		92d	5/16/2019	9/25/2019
75	PROC-2050	Prepare & Submit Shop Drawings	14d	5/16/2019	6/5/2019
76	PROC-2060	Review & Approve Shop Drawings	10d	6/6/2019	6/19/2019
77	PROC-2070	Fabrication/ Delivery of Material	68d	6/20/2019	9/25/2019
78	**Sequence 03**		92d	5/23/2019	10/2/2019
79	PROC-2020	Prepare & Submit Shop Drawings	13d	5/23/2019	6/11/2019
80	PROC-2030	Review & Approve Shop Drawings	10d	6/12/2019	6/25/2019
81	PROC-2040	Fabrication/ Delivery of Material	69d	6/26/2019	10/2/2019
82	**Sequence 04**		92d	5/31/2019	10/9/2019
83	PROC-1990	Prepare & Submit Shop Drawings	12d	5/31/2019	6/17/2019
84	PROC-2000	Review & Approve Shop Drawings	10d	6/18/2019	7/1/2019
85	PROC-2010	Fabrication of Material	70d	7/2/2019	10/9/2019
86	**Sequence 05**		80d	6/18/2019	10/9/2019
87	PROC-3400	Prepare & Submit Shop Drawings	2d	6/18/2019	6/19/2019
88	PROC-3390	Review & Approve Shop Drawings	10d	6/20/2019	7/3/2019
89	PROC-3380	Fabrication of Material	68d	7/5/2019	10/9/2019
90	**Sequence 06 (Joist/Deck)**		83d	5/30/2019	9/25/2019
91	PROC-3430	Prepare & Submit Shop Drawings	2d	5/30/2019	5/31/2019
92	PROC-3420	Review & Approve Shop Drawings	10d	6/3/2019	6/14/2019
93	PROC-3410	Fabrication of Material	71d	6/17/2019	9/25/2019
94	**Hangar**		123d	6/7/2019	12/2/2019
95	**Sequence 01 (GL 11)**		90d	6/7/2019	10/14/2019
96	PROC-2200	Prepare & Submit Shop Drawings	13d	6/7/2019	6/25/2019
97	PROC-2210	Review & Approve Shop Drawings	10d	6/26/2019	7/10/2019
98	PROC-2220	Fabrication/ Delivery of Material	67d	7/11/2019	10/14/2019
99	**Sequence 02 (GL 01)**		90d	6/14/2019	10/21/2019
100	PROC-2170	Prepare & Submit Shop Drawings	10d	6/14/2019	6/27/2019
101	PROC-2180	Review & Approve Shop Drawings	10d	6/28/2019	7/12/2019
102	PROC-2190	Fabrication/ Delivery of Material	70d	7/15/2019	10/21/2019
103	**Sequence 03**		90d	6/21/2019	10/28/2019
104	PROC-2140	Prepare & Submit Shop Drawings	10d	6/21/2019	7/5/2019



◆ Milestone ◆ Critical Milestone ■ Critical Work
Summary Remaining Work

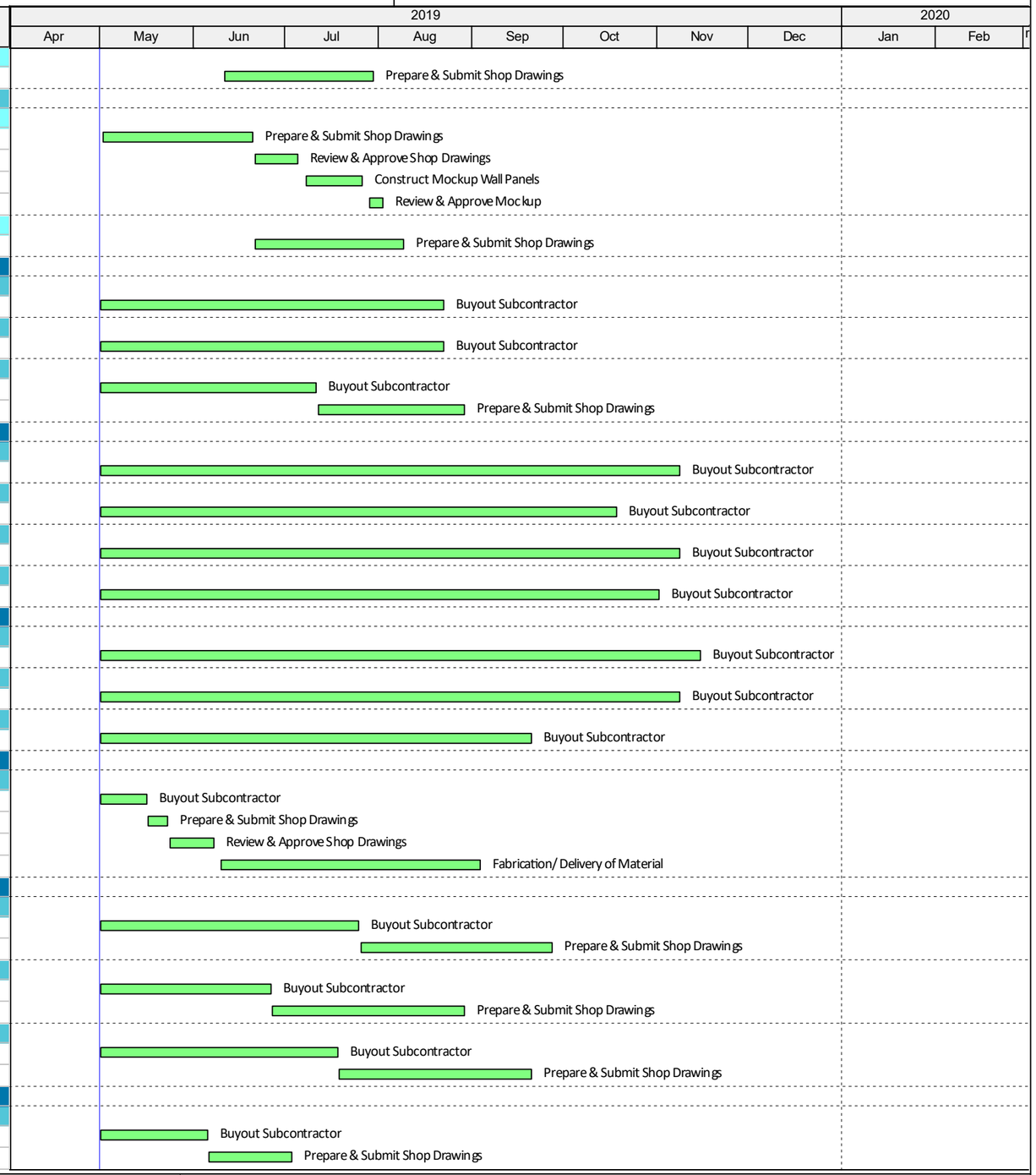
#	Activity ID	Activity Name	Duration	Start	Finish
105	PROC-2150	Review & Approve Shop Drawings	10d	7/8/2019	7/19/2019
106	PROC-2160	Fabrication/ Delivery of Material	70d	7/22/2019	10/28/2019
107	**Sequence 04**		90d	6/28/2019	11/4/2019
108	PROC-2110	Prepare & Submit Shop Drawings	9d	6/28/2019	7/11/2019
109	PROC-2120	Review & Approve Shop Drawings	10d	7/12/2019	7/25/2019
110	PROC-2130	Fabrication/ Delivery of Material	71d	7/26/2019	11/4/2019
111	**Sequence 05**		94d	6/28/2019	11/8/2019
112	PROC-2260	Prepare & Submit Shop Drawings	3d	6/28/2019	7/2/2019
113	PROC-2270	Review & Approve Shop Drawings	10d	7/3/2019	7/17/2019
114	PROC-2280	Fabrication/ Delivery of Material	81d	7/18/2019	11/8/2019
115	**Sequence 06**		94d	6/28/2019	11/8/2019
116	PROC-2230	Prepare & Submit Shop Drawings	3d	6/28/2019	7/2/2019
117	PROC-2240	Review & Approve Shop Drawings	10d	7/3/2019	7/17/2019
118	PROC-2250	Fabrication/ Delivery of Material	81d	7/18/2019	11/8/2019
119	**Sequence 07**		99d	6/28/2019	11/15/2019
120	PROC-3520	Prepare & Submit Shop Drawings	3d	6/28/2019	7/2/2019
121	PROC-3510	Review & Approve Shop Drawings	10d	7/3/2019	7/17/2019
122	PROC-3500	Fabrication/ Delivery of Material	86d	7/18/2019	11/15/2019
123	**Sequence 08**		18d	7/8/2019	7/31/2019
124	PROC-3460	Prepare & Submit Shop Drawings	8d	7/8/2019	7/17/2019
125	PROC-3450	Review & Approve Shop Drawings	10d	7/18/2019	7/31/2019
126	**Sequence 09**		13d	7/18/2019	8/5/2019
127	PROC-3490	Prepare & Submit Shop Drawings	3d	7/18/2019	7/22/2019
128	PROC-3480	Review & Approve Shop Drawings	10d	7/23/2019	8/5/2019
129	**Sequence Hangar Deck**		110d	6/26/2019	12/2/2019
130	PROC-3560	Prepare & Submit Shop Drawings	3d	6/26/2019	6/28/2019
131	PROC-3550	Review & Approve Shop Drawings	10d	7/1/2019	7/15/2019
132	PROC-3540	Fabrication/ Delivery of Material	97d	7/16/2019	12/2/2019
133	**Sequence 10**		13d	7/23/2019	8/8/2019
134	PROC-3590	Prepare & Submit Shop Drawings	3d	7/23/2019	7/25/2019
135	PROC-3580	Review & Approve Shop Drawings	10d	7/26/2019	8/8/2019
136	**Sequence 11**		3d	7/26/2019	7/30/2019
137	PROC-3690	Prepare & Submit Shop Drawings	3d	7/26/2019	7/30/2019
138	**Div. 6 - Wood, Plastics and Composites**		85d	5/1/2019	8/29/2019
139	**061600 - Sheathing**		85d	5/1/2019	8/29/2019
140	PROC-1680	Buyout Subcontractor	85d	5/1/2019	8/29/2019
141	**Div. 7 - Thermal and Moisture Prot.**		132d	5/1/2019	11/5/2019
142	**075419 - Polyvinyl - Chloride (PVC) Roofing**		65d	5/1/2019	8/1/2019
143	PROC-2920	Buyout Subcontractor	65d	5/1/2019	8/1/2019
144	**078100 - Applied Fireproofing**		90d	5/1/2019	9/6/2019
145	PROC-2880	Buyout Subcontractor	60d	5/1/2019	7/25/2019
146	PROC-2870	Prepare & Submit Shop Drawings	30d	7/26/2019	9/6/2019
147	**078123 - Intumescent Fireproofing**		70d	5/1/2019	8/8/2019
148	PROC-1760	Buyout Subcontractor	45d	5/1/2019	7/3/2019
149	PROC-1770	Prepare & Submit Shop Drawings	25d	7/5/2019	8/8/2019
150	**074113.16 - Standing-Seam Metal Roofing**		131d	5/2/2019	11/5/2019
151	**Maintenance Support**		131d	5/2/2019	11/5/2019
152	PROC-2840	Prepare & Submit Shop Drawings	27d	5/2/2019	6/10/2019
153	PROC-2830	Review & Approve Shop Drawings	10d	6/11/2019	6/24/2019
154	PROC-2970	Construct Mockup Roofing	15d	6/25/2019	7/16/2019
155	PROC-2980	Review & Approve Mockup	5d	7/17/2019	7/23/2019
156	PROC-2820	Fabrication/ Delivery of Material Panels	74d	7/24/2019	11/5/2019
157	PROC-3700	Fabrication/ Delivery of Material Secondary	31d	7/24/2019	9/5/2019



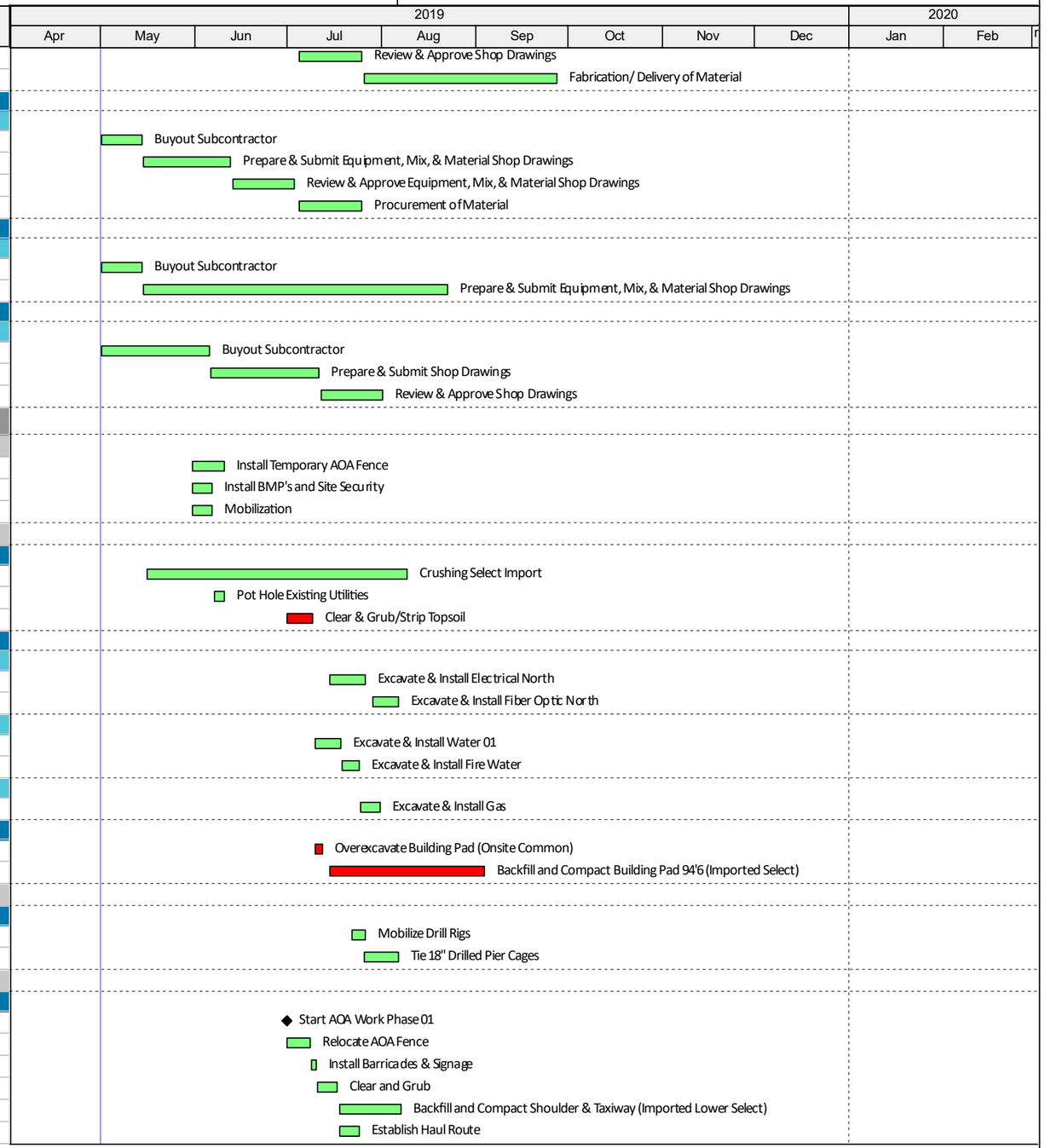
◆ Milestone ◆ Critical Milestone ■ Critical Work

Summary Remaining Work

#	Activity ID	Activity Name	Duration	Start	Finish
158		**Hangar**	35d	6/11/2019	7/30/2019
159	PROC-2810	Prepare & Submit Shop Drawings	35d	6/11/2019	7/30/2019
160		**074113 - Metal Wall Panels**	70d	5/2/2019	8/9/2019
161		**Maintenance Support**	65d	5/2/2019	8/2/2019
162	PROC-2780	Prepare & Submit Shop Drawings	35d	5/2/2019	6/20/2019
163	PROC-2770	Review & Approve Shop Drawings	10d	6/21/2019	7/5/2019
164	PROC-2990	Construct Mockup Wall Panels	15d	7/8/2019	7/26/2019
165	PROC-3000	Review & Approve Mockup	5d	7/29/2019	8/2/2019
166		**Hangar**	35d	6/21/2019	8/9/2019
167	PROC-2750	Prepare & Submit Shop Drawings	35d	6/21/2019	8/9/2019
168		**Div. 8 - Openings**	85d	5/1/2019	8/29/2019
169		**084113 - Aluminum-Framed Entrances and Storefronts**	80d	5/1/2019	8/22/2019
170	PROC-2960	Buyout Subcontractor	80d	5/1/2019	8/22/2019
171		**081113 - Hollow Metal Doors and Frames**	80d	5/1/2019	8/22/2019
172	PROC-1800	Buyout Subcontractor	80d	5/1/2019	8/22/2019
173		**083416.23 - Overhead Hoist-Up Fabric Door**	85d	5/1/2019	8/29/2019
174	PROC-1380	Buyout Subcontractor	50d	5/1/2019	7/11/2019
175	PROC-1390	Prepare & Submit Shop Drawings	35d	7/12/2019	8/29/2019
176		**Div. 9 - Finishes**	135d	5/1/2019	11/8/2019
177		**096536 - Walk-off Mats**	135d	5/1/2019	11/8/2019
178	PROC-3320	Buyout Subcontractor	135d	5/1/2019	11/8/2019
179		**093013 - Tiling**	120d	5/1/2019	10/18/2019
180	PROC-2350	Buyout Subcontractor	120d	5/1/2019	10/18/2019
181		**096536 - Static-Control Resilient Flooring**	135d	5/1/2019	11/8/2019
182	PROC-2430	Buyout Subcontractor	135d	5/1/2019	11/8/2019
183		**095113 - Acoustical Panel Ceilings**	130d	5/1/2019	11/1/2019
184	PROC-2390	Buyout Subcontractor	130d	5/1/2019	11/1/2019
185		**Div. 10 - Specialties**	140d	5/1/2019	11/15/2019
186		**102213.16 - Chain Link Security Partitions**	140d	5/1/2019	11/15/2019
187	PROC-2470	Buyout Subcontractor	140d	5/1/2019	11/15/2019
188		**105113 - Metal Lockers**	135d	5/1/2019	11/8/2019
189	PROC-2510	Buyout Subcontractor	135d	5/1/2019	11/8/2019
190		**108113 - Bird Control Devices**	100d	5/1/2019	9/20/2019
191	PROC-2550	Buyout Subcontractor	100d	5/1/2019	9/20/2019
192		**Div. 11 - Equipment**	87d	5/1/2019	9/3/2019
193		**111139 - In-Ground Aircraft Service Utility Pits**	87d	5/1/2019	9/3/2019
194	PROC-2590	Buyout Subcontractor	12d	5/1/2019	5/16/2019
195	PROC-2600	Prepare & Submit Shop Drawings	5d	5/17/2019	5/23/2019
196	PROC-2610	Review & Approve Shop Drawings	10d	5/24/2019	6/7/2019
197	PROC-2620	Fabrication/ Delivery of Material	60d	6/10/2019	9/3/2019
198		**Div. 21 - Fire Suppression**	105d	5/1/2019	9/27/2019
199		**211339 - AFFF System**	105d	5/1/2019	9/27/2019
200	PROC-1300	Buyout Subcontractor	60d	5/1/2019	7/25/2019
201	PROC-1310	Prepare & Submit Shop Drawings	45d	7/26/2019	9/27/2019
202		**211313 - Wet-Pipe Sprinkler Systems**	85d	5/1/2019	8/29/2019
203	PROC-3170	Buyout Subcontractor	40d	5/1/2019	6/26/2019
204	PROC-3180	Prepare & Submit Shop Drawings	45d	6/27/2019	8/29/2019
205		**214100 - Storage Tanks for Fire-Suppression Water**	100d	5/1/2019	9/20/2019
206	PROC-3210	Buyout Subcontractor	55d	5/1/2019	7/18/2019
207	PROC-3220	Prepare & Submit Shop Drawings	45d	7/19/2019	9/20/2019
208		**Div. 22 - Plumbing**	105d	5/1/2019	9/27/2019
209		**221116 - Plumbing Systems**	105d	5/1/2019	9/27/2019
210	PROC-3250	Buyout Subcontractor	25d	5/1/2019	6/5/2019
211	PROC-3260	Prepare & Submit Shop Drawings	20d	6/6/2019	7/3/2019



#	Activity ID	Activity Name	Duration	Start	Finish
212	PROC-3270	Review & Approve Shop Drawings	15d	7/5/2019	7/25/2019
213	PROC-3280	Fabrication/ Delivery of Material	45d	7/26/2019	9/27/2019
214	**Div. 31 - Earthwork**		60d	5/1/2019	7/25/2019
215	**316329 - Drilled Concrete Piers and Shafts**		60d	5/1/2019	7/25/2019
216	PROC-1000	Buyout Subcontractor	10d	5/1/2019	5/14/2019
217	PROC-1020	Prepare & Submit Equipment, Mix, & Material Shop Drawings	20d	5/15/2019	6/12/2019
218	PROC-1030	Review & Approve Equipment, Mix, & Material Shop Drawings	15d	6/13/2019	7/3/2019
219	PROC-1050	Procurement of Material	15d	7/5/2019	7/25/2019
220	**Div. 32 - Exterior Improvements**		80d	5/1/2019	8/22/2019
221	**P-501 - PCC Pavement**		80d	5/1/2019	8/22/2019
222	PROC-1010	Buyout Subcontractor	10d	5/1/2019	5/14/2019
223	PROC-1040	Prepare & Submit Equipment, Mix, & Material Shop Drawings	70d	5/15/2019	8/22/2019
224	**Div. 41 - Mat. Process & Handling Equip.**		65d	5/1/2019	8/1/2019
225	**412246 - Hoist and Crane**		65d	5/1/2019	8/1/2019
226	PROC-3050	Buyout Subcontractor	25d	5/1/2019	6/5/2019
227	PROC-3060	Prepare & Submit Shop Drawings	25d	6/6/2019	7/11/2019
228	PROC-3070	Review & Approve Shop Drawings	15d	7/12/2019	8/1/2019
229	**Construction**		76d	5/16/2019	9/3/2019
230	**General Requirements**		7d	5/31/2019	6/10/2019
231	CGR-1020	Install Temporary AOA Fence	7d	5/31/2019	6/10/2019
232	CGR-1010	Install BMP's and Site Security	5d	5/31/2019	6/6/2019
233	CGR-1000	Mobilization	5d	5/31/2019	6/6/2019
234	**Sitework**		76d	5/16/2019	9/3/2019
235	**Earthwork**		60d	5/16/2019	8/9/2019
236	SIT-1060	Crushing Select Import	60d	5/16/2019	8/9/2019
237	SIT-1050	Pot Hole Existing Utilities	2d	6/7/2019	6/10/2019
238	SIT-1000	Clear & Grub/Strip Topsoil	6d	7/1/2019	7/9/2019
239	**Site Utilities**		20d	7/10/2019	8/6/2019
240	**Electrical/ Fiber/ Telecomm**		17d	7/15/2019	8/6/2019
241	SUT-1000	Excavate & Install Electrical North	10d	7/15/2019	7/26/2019
242	SUT-1080	Excavate & Install Fiber Optic North	7d	7/29/2019	8/6/2019
243	**Water/ Fire Water**		11d	7/10/2019	7/24/2019
244	SUT-1030	Excavate & Install Water 01	7d	7/10/2019	7/18/2019
245	SUT-1040	Excavate & Install Fire Water	4d	7/19/2019	7/24/2019
246	**Gas**		5d	7/25/2019	7/31/2019
247	SUT-1050	Excavate & Install Gas	5d	7/25/2019	7/31/2019
248	**Building Pad**		39d	7/10/2019	9/3/2019
249	BLP-1000	Overexcavate Building Pad (Onsite Common)	3d	7/10/2019	7/12/2019
250	BLP-1010	Backfill and Compact Building Pad 94'6 (Imported Select)	36d	7/15/2019	9/3/2019
251	**Maintenance Support**		12d	7/22/2019	8/6/2019
252	**Deep Foundations**		12d	7/22/2019	8/6/2019
253	MDF-1000	Mobilize Drill Rigs	5d	7/22/2019	7/26/2019
254	MDF-1010	Tie 18" Drilled Pier Cages	8d	7/26/2019	8/6/2019
255	**Airfield Side**		27d	7/1/2019	8/7/2019
256	**Phase 01**		27d	7/1/2019	8/7/2019
257	APRN-1700	Start AOA Work Phase 01	0d	7/1/2019*	
258	APRN-1710	Relocate AOA Fence	5d	7/1/2019	7/8/2019
259	APRN-1670	Install Barricades & Signage	2d	7/9/2019	7/10/2019
260	APRN-1690	Clear and Grub	5d	7/11/2019	7/17/2019
261	APRN-1660	Backfill and Compact Shoulder & Taxiway (Imported Lower Se	15d	7/18/2019	8/7/2019
262	APRN-1680	Establish Haul Route	5d	7/18/2019	7/24/2019



◆ Milestone ◆ Critical Milestone ■ Critical Work

Summary Remaining Work

Swinerton Builders

APPENDIX E

JVIATION RESUMES

Andy Remstad, AIA

Architect / Project Manager

Years of Experience:

13

Education:

Master of Science, Architecture, University of Colorado at Denver, 2007

Bachelor of Arts, Philosophy, University of Colorado at Denver, 2001

Registrations/ Certifications:

Professional Architect, CO #402675, MO #2013036076, UT #8845747-0301, WI #12482-5, WY #C-2802

Andy is an architect for airport improvement projects. Since 2005, he has worked on aviation-related development projects that have included terminal/concourse additions, Aircraft Rescue and Fire Fighting facilities, space planning, TSA screening areas, rental car service facilities, and airside upgrades. His technical expertise includes generating 3D Models, cost estimating, project phasing, site design, building layout, construction documents, and quality control. His experience integrating architecture and various engineering disciplines on complex projects is a valuable asset for successful project delivery.

Relevant Experience:

Greeley-Weld County Airport, Terminal Expansion, Greeley, CO; Project Architect. Served as the Architect of Record and provided construction oversight services for this terminal expansion project at GXY. The project consisted of the construction of an addition to the existing Terminal Building to accommodate a larger conference room, optimize the administration office layout, and provide additional storage. The project included an approximately 1,600 square foot addition to the East side of the existing building. The addition was designed to match the materials and style of the existing building.

Casper-Natrona County International Airport, Terminal Departure Lounge Improvements, Casper, WY; Project Architect. Worked with CPR to improve the existing passenger departure lounge and provide a sense of place for the terminal. These improvements consisted of opening up the second floor of the terminal as a secure passenger departure lounge with the installation of new jet bridge access for larger aircraft, reconfiguration/construction of vertical circulation elements, and upgrades to the life safety and MEP (mechanical, electrical, plumbing) systems for a fully functional facility.

Eagle County Regional Airport (EGE), Snow Removal Equipment Building, Gypsum, CO; Project Architect. Jviation, in association with an architectural firm, worked in conjunction with the Airport from initial programming through construction design documents to design a SRE facility that will meet EGE's needs within the available budget. The SRE Facility project included civil/site design, architectural and interior design, structural, plumbing, fire protection, mechanical, electrical engineering.

Casper-Natrona County International Airport, New Snow Removal Equipment Building, Casper, WY; Project Manager/ Project Architect. This project includes the design and construction of the new 27,076-square-foot snow removal equipment (SRE) building, including associated site work, utility work, and other incidental items. The finished facility will include equipment storage space, maintenance bays, a large vehicle wash bay, mechanic and maintenance shops, and an office/administration area. The building has been designed to accommodate future expansion of the storage bays and administration area to the east. Jviation performed the overall project management and construction administration oversight for the civil design for this project.

Laramie Regional Airport, Terminal Building Design, Laramie, WY; Architect of Record. Jviation is working with LAR to expand the existing commercial passenger terminal at the Airport. The overall design includes renovation of the existing terminal and new construction of an addition for an approximately 15,500 square foot terminal building. The functional spaces will include areas for: ticketing and check-in, TSA passenger screening, TSA outbound baggage screening, hold room, baggage claim, rental car service counters, secure and non-secure restrooms, airline offices, mechanical room, electrical room, IT room, concessions/vending area, other required support spaces.

Yampa Valley Regional Airport, Construct SRE Storage Building, Hayden, CO; Architect. Yampa Valley Regional Airport has a dual-use Aircraft Rescue and Firefighting Facility (ARFF) and SRE facility that is located on the south side of the airport. The existing facility contains approximately 27,000 square feet of storage that is utilized for ARFF and SRE equipment. The facility contains four bays, two dedicated for ARFF equipment and two dedicated to SRE equipment. The ARFF bays are undersized to house the Index C ARFF vehicles, which results in displacing SRE equipment outside the building or in the adjacent cold storage facility. This project added a new 5,000 square feet SRE storage facility adjacent to the existing Airport Ops/ARFF Building.

Eagle County Regional Airport, Terminal Addition and Renovation, Gypsum, CO; Architectural Support. Preparing the civil and site design for the proposed terminal addition and renovation at Eagle County Regional Airport. The project includes demolition plans of the existing hold room space, erection of temporary hold room facilities, and construction of the new ground level and upper level hold room additions. This will include the generation of detailed phasing and safety plans to maintain an adequately operational airport during the project during both off-peak and peak seasons.

Durango-La Plata County Airport, Interior Remodel for Airline Ticketing Offices, Durango, CO; Architect. The existing baggage make-up area is located in a tight garage space behind the existing airline ticket offices. The existing spaces for both of these functions are well below industry standards for an airport processing as many passengers as DRO. This project will renovate the existing garage space to provide expanded airline ticket offices and storage space, with a typical office space-type finish. This will also relocate and increase the space dedicated for the TSA baggage screening in the area.

Durango-La Plata County Airport, New Covered Baggage Make-up Area, Durango, CO; Architect. A new covered baggage make-up area will be constructed to the Southwest of the existing Terminal to house the relocated Ground Service Equipment (GSE) garage space and baggage make-up area. Various construction types were considered to provide DRO with the ability to balance aesthetics, cost, and function. The airport board directed the project to move forward with a conventional construction addition to the existing building.

Gunnison-Crested Butte Regional Airport, Terminal Building Life Safety Improvements, Gunnison, CO; Architect. Analyzed the code provisions and life

safety improvements that would be required for the remodeling of the terminal building to include airside restaurant services. As a result, two life safety improvements were designed to support the terminal building. These included installing an exit staircase for the passenger waiting area and fire sprinklers throughout the building.

Brigham City Regional Airport, New Snow Removal Equipment Facility, Brigham City, UT; Architect. Designed and oversaw the construction of the new 3,600-square-foot SRE facility and 664 square feet of interior storage rooms with a mezzanine for storage. The design included the haul routes, staging areas, and access control to the project site. The project included architectural, structural, plumbing, mechanical, electrical, and site civil plans.

Kennett Memorial Airport, Four-Unit Box Hangar and Taxilane Widening, Kennett, MO; Architect. Assisted the Kennett Memorial Airport with the construction of new T-hangar taxilanes and hangar facilities. A three unit rectangular hangar was constructed at a size of 126' x 33' and a fourth hangar was constructed at a size of 48' x 41'.

Washington County Airport, New Terminal Building, Washington County, MO; Architect. Assisted the Washington County Airport with the construction of a new terminal building. A unique aspect of this project was that funding for the terminal was provided by a grant from the Delta Regional Authority and from MoDOT's non-primary entitlement program.

Rolla National Airport, New Terminal Building, Rolla, MO; Architect. Assisted VIH with the construction of a new terminal building. The building was completed in 2017 and contains facilities for general aviation, corporate, and administrative activities. The new terminal building also houses equipment and facilities for the National Weather Service and the FAA.

Aspen-Pltkin County Airport, Commercial Terminal Renovations, Aspen, CO; Architect. Renovations to this 45,000-square-foot building include the fire suppression system, electrical upgrades and back-up generator. Jviation performed a thermal imaging scan of the electrical system and replaced aging electrical components, installed a backup generator for the critical life safety components, brought the life safety and fire suppression systems up to code, renovated restrooms, the hold room and airline counters, installed a new curbside check-in kiosk.

Laramie Regional Airport, New FBO Terminal, Laramie, WY; Architect. The new 4,125-square-foot FBO building includes a hold room, conference room, FBO office, pilot lounge, and associated site work. Services provided included civil/site design (the addition of a parking lot and access gate), an overall terminal area concept which incorporated the future renovation of the existing terminal building and surrounding hangars, architectural and interior design, structural, plumbing, mechanical and electrical engineering, as required for the complete design, bidding, and construction administration phases.

San Luis Valley Regional Airport, New Terminal Building, Alamosa, CO; Project Manager/ Project Architect. Provided overall project management and

architectural programming and schematic design for the construction of a new 8,800-square-foot building to replace the aging terminal. Functional space includes areas for ticketing and check-in (two airline capacity), TSA screening, TSA offices, outbound baggage screening, hold room, baggage claim, rental car service counters (two vendor capacity), secure and non-secure restrooms, airline offices, mechanical room, electrical room, concessions/vending area, and other required support spaces.

Wendover Airport, New ARFF/Snow Removal Equipment Facility, Wendover, UT; Architect. Provided civil, site, and utility engineering, and architecture services for the construction of an ARFF and Snow Removal Facility at Wendover Airport. The ARFF/SRE building is approximately 3,600 square feet, and incorporates two vehicle bays and a maintenance area. Services include civil/site design, architectural and interior design, structural, plumbing, fire protection, mechanical, and electrical engineering to complete the design of the ARFF/SRE building.

Central Colorado Regional Airport, Construct New Snow Removal Equipment Building, Buena Vista, CO; Architect. This project consisted of the design and construction of a new 63' x 50' Snow Removal Equipment storage building. The building includes three bays, each approximately 20' x 50' with minimal support and storage areas.

Eagle County Regional Airport, Design Guidelines, Eagle, CO; Architect. Developed design guidelines for the Airport. The design guidelines will ensure that future development and redevelopment at EGE reflect the high standards for architectural quality, environmental sensitivity, neighborhood compatibility, and sustainability.

Lamar Municipal Airport, Apron Reconstruction/Rehabilitation, Lamar, CO; Project Manager. This project includes the construction of two new concrete hardstands by the FBO terminal building as well as rehabilitating the existing asphalt GA apron.

Grand Junction Regional Airport, Rental Car Service Facility, Grand Junction, CO; Designer. Prepared the site plans for the proposed rental car service facility (six maintenance bays), employee staging building, fueling area, and outlying parking lots. Assisted in coordinating plans between architects, mechanical, electrical, plumbing, and structural and civil engineers.

Aspen-Pitkin County Airport, Terminal Area Plan, Aspen, CO; Architect. Prepared the existing facilities analysis to audit the status of the code compliance, life safety, mechanical/electrical, and general condition of the existing terminal building.

Gillette-Campbell County Airport, Terminal Parking Lot Addition, Gillette, WY; Designer. Prepared the site plans, grading and drainage plans, and details for the 200-parking-stall addition at the terminal parking lot.

Aspen-Pitkin County Airport, Reconstruct General Aviation Ramp, Aspen, CO; Designer. Prepared complete set of construction plans for the general aviation ramp reconstruction. This project completes safety improvements that have

been under Jviation staff direction since 2002. A large portion of the general aviation ramp was reconstructed to match grades. Grooving of asphalt pavement was added for non-slip characteristics for passengers using this ramp during icy winter conditions.

Eagle County Regional Airport, Runway 7/25 Extension and Reconstruction, Gypsum, CO; Designer. Prepared bid and construction documents including phasing, geotechnical, demolition, geometric, grading and drainage, plan and profiles, typical sections and electrical plans. This is the final part of a four-year, $50-million project that includes a new 1,000-foot runway extension and full-length runway reconstruction. Also included are multiple new drainage items, electrical items, and placement of approximately 90,000 tons of new asphalt concrete pavement.

Springfield-Branson National Airport, Construct Parallel Taxiway W, Springfield, MO; Designer. Prepared phasing, demolition, geometric, grading and drainage, concrete joint, plan and profile, typical sections, utility adjustment, painting, signage and marking, and electrical plans. The construction of Taxiway W is a concrete parallel taxiway to Runway 14/32. Design included reviewing the Airport Layout Plan, establishing the proposed geometry, updating necessary items, revising certain items for transition design, and preparing all documents for the bidding and construction phases. Project includes grading, drainage, Portland cement concrete paving, edge and centerline striping, and airfield lighting and signage.

Springfield-Branson National Airport, Runway 14/32 Reconstruction, Springfield, MO; Designer. Designed the reconstruction of an approximately 5,500-foot asphalt section of the runway.

Denver International Airport, Design Analysis Report – Aircraft Design Group (ADG) V Upgrades, Denver, CO; Designer. Analyzed the existing conditions of the airfield and documented the required improvements to the runway shoulders and taxiway safety area embankments to satisfy the FAA requirements for ADG V.

Wendover Airfield, Parallel Taxiway A Construction, Wendover, UT; Designer. Prepared plans for constructing a new parallel taxiway along the primary Runway 8/26.

Wendover Airfield, Runway Surface Painted Markings and Enhanced Taxiway Centerline Markings, Wendover, UT; Designer. Prepared plans for upgrading the existing airfield markings to meet the new FAA standards. This project consisted of installing surface painted holding position signs and taxiway enhanced centerline striping at all existing taxiway/runway intersections.

Aspen-Pitkin County Airport, Runway 33 Extension, CO; Designer. Jviation has completed the design, bidding, negotiation, and construction administration phase services for a project to extend Runway 33 by 1,000 feet. The runway extension was opened in the fall of 2011. This extension will allow aircraft to operate with greater load factors from this high altitude mountain airport. Additional elements addressed include Navaids, wetlands, recreational facility relocation, and extensive utility modifications.

Gillette-Campbell County Airport, North General Aviation Apron Expansion, WY; Project Designer. The existing apron design was expanded to allow for several large hangars to be constructed. The apron was designed for ultimate build-out with the plan of breaking out bidding documents based on funding levels over the next five years. In addition to the apron expansion, the existing roads were realigned to include the associated utilities. The existing airfield is constructed out of concrete and an additional schedule was provided for crack and panel repair of the entire airport.

Aspen-Pitkin County Airport, Reconstruct General Aviation Ramp, Aspen, CO; Designer. Prepared complete set of construction plans for the General Aviation ramp reconstruction. This project completes safety improvements that have been ongoing under Jviation staff direction since 2002. A large portion of the General Aviation ramp will be reconstructed to match grades. Grooving of asphalt pavement has been added for non-slip characteristics for passengers using this ramp during icy winter conditions.

Seth Kurtz, PE

Project Engineer

Years of Experience:

12

Education:

Master of Science, Engineering and Technology Management, Colorado School of Mines, 2006

Bachelor of Science, Geological Engineering, Colorado School of Mines, 2005

Registrations/ Certifications:

Professional Engineer, CO, UT

Seth has been working in the fields of civil engineering, geotechnical engineering, and materials testing since 2006. Prior to joining Jviation, Seth spent three years in the geotechnical and materials testing field and was involved with various construction projects throughout Colorado, including construction administration on several airports. Over the past several years, he has been involved with airport design and construction management on a variety of aviation projects. His expertise includes construction management, coordination of plans and specifications, authoring engineer's reports, calculation of quantities, preparation of cost estimates, and authoring of final construction reports. Additionally, Seth has been involved with runway and taxiway extensions, complete runway rehabilitation and reconstruction, construction of a new parallel taxiway, and various maintenance projects.

Relevant Experience:

Salt Lake City International Airport, Runway 14/32 Pavement Rehabilitation; Project Engineer. Responsible for the rehabilitation of the entire length and width of Runway 14-32, including the intersections of Taxiways M, N, P and Q up to the runway hold short lines of these taxiways.

Salt Lake City International Airport, Runway 17/35 Rehabilitation (Design and Construction Management), Salt Lake City, UT; Project Engineer. Jviation rehabilitated SLC's Runway 17/35 and Taxiways P and R. Runway 17/35 is approximately 9,600 feet long with paved shoulders. The rehabilitation consists of profile milling two inches of existing asphalt and replacing it with three inches of hot mix asphalt (HMA). The shoulders received a one-inch overlay. Hours of construction varied as it became apparent for production that paving in the daylight would be more effective than the originally planned night work.

Casper/Natrona County International Airport, Rehabilitate Taxiways A, B1, and C, Casper, WY; Project Engineer. The taxiway was nearing the end of its useful life, and was seal coated with an asphalt rejuvenator in 2011 to help maintain the pavement until funding was available for a full rehabilitation/reconstruction. The rehabilitation/reconstruction was the continuation of a phased project, and ensures a safe environment for aircraft taxiing to Runways 03/21 and 8/26. This project included milling and overlaying portions of Taxiways A and B1. The asphalt on Taxiway C was oxidized and required rejuvenation. Fog sealing the airfield pavements contributes to extending their life, and will improve the visibility of the markings on the taxiway. Following the application of the fog seal, restriping was required, and both temporary and permanent markings were applied. The surface painted signs were repainted.

Wendover Airport, Runway 8/26 Extension Design & Construction, Wendover, UT: Project / Resident Engineer. Jviation provided design and construction services for the 2,000-foot extension of Runway 8/26 to the east from the approach end of Runway 26, and the 2,000-foot extension of Parallel Taxiway A to the east. The project included the design and coordination of runway pavement, inlets, lighting, signage, striping, construction traffic control, airfield access, phasing, and the design of a new

regulator and vault extension for the Runway 8/26 circuit. During the closure of Runway 8/26, the existing pavement received a fog seal, and a section of the runway between Taxiway B and Runway 12/30 was rehabilitated with an asphalt grade correction to correct smoothness issues that had developed.

Yampa Valley Regional Airport, Runway Rehabilitation, Hayden, CO; Project Engineer. Jviation designed the rehabilitation the 10,000-foot by 150-foot Runway 10/28 in its entirety, including all seven connector taxiways and transition paving required for construction, rehabilitation of gates 1 and 2 of the commercial apron, construction of the runway shoulder, and construction of the vehicle service road around the east end of the runway. Seth helped prepare the contract documents, specifications, and engineer's report.

Salt Lake City International Airport, Runway 16L/34R Rehabilitation, Salt Lake City, UT; Resident Engineer. This project consisted of design and rehabilitation of Runway 16L/34R including connector Taxiways H3 through H12. Rehabilitation included repairing pavement distress as well as minor corrections in grading. Responsible for design of runway and taxiway pavement section, geometry, lighting, signage, striping, construction traffic control, airfield access and phasing. Construction documents were prepared with the assistance of Seth that included Construction Plans, Contract Documents, Specifications, Engineer's Report and Construction Estimate, Modifications to the Specifications, and a Construction Safety and Operational Plan. During construction, Seth performed construction management items associated with the project.

Wendover Airport, Construct Taxiways B and B1, Wendover, UT; Resident Engineer. This project consisted of design and construction of Taxiway B along Runway 12/30 from the GA Apron to Taxiway A, including Taxiway connector B1 from the existing apron to Runway 12/30. Responsible for design of Taxiway pavement section, geometry, lighting, signage, striping, construction traffic control, airfield access and phasing. Construction documents were prepared with the assistance of Seth that included Construction Plans, Contract Documents, Specifications, Engineer's Report and Construction Estimate, Modifications to the Specifications, and a Construction Safety and Operational Plan. During construction, Seth performed construction management items associated with the project.

Wendover Airport, Construct Parallel Taxiway A, Wendover, UT; Resident Engineer. This project consisted of designing Taxiway A along the entire length of Runway 8/26, including three taxiway connectors and Taxiway B2 from the existing apron to Runway 12. Responsible for design of Taxiway pavement section, geometry, lighting, signage, striping, construction traffic control, airfield access and phasing. Construction documents were prepared with my assistance that included Construction Plans, Contract Documents, Specifications, Engineer's Report and Estimate, Modifications to the Specifications, and a Construction Safety and Operational Plan. During construction, Seth was onsite for construction oversight.

Gunnison-Crested Butte Regional Airport, Taxiway A Rehabilitation (TW A1 to A3), Surface Painted Guidance Sign Application, and Runway 6/24 Striping, Gunnison, CO; Resident Engineer. Performed construction management duties associated with this project. This project consisted rehabilitation of Taxiway A from A1 to A3 by means of application of crack sealant, partial milling and asphalt placement of severely distressed areas, and application of a fog sealant. Also included in this project was the placement of the surface painted guidance signs on all the connector taxiways to Runway 6/24, and also striping Runway 6/24 in its entirety.

Aspen-Pitkin County Airport, Runway 33 Extension, CO; Associate Designer. This project consisted of designing a 1,000-foot extension of Runway 33, including associated taxiway connectors and parallel Taxiway A extension. Responsible for design of Runway and Taxiway pavement sections. Construction documents were prepared with my assistance that included Construction Plans, Contract Documents, Specifications, Engineer's Report and Estimate, Modifications to the Specifications, and a Construction Safety and Operational Plan. During construction, Jviation personnel will be onsite for construction oversight and the office staff will support with submittal review and technical assistance for questions about the Construction Documents and Plans.

Aspen-Pitkin County Airport, GA Ramp Reconstruction, CO; Resident Engineer. Assisted in construction management items associated with the project. This project consisted of complete reconstruction of 22,000 square yards of pavement associated with the GA Ramp. Included in this project were placement of approximately 6400 cubic yards of P-154 material, placement of approximately 9,000 tons of asphalt, and multiple drainage items.

Eagle County Regional Airport, Runway 7/25 Extension and Reconstruction, CO; Resident Engineer. Assisted in various construction management items associated with the project. This project will complete four years, and approximately $50 million worth of work on a new 1,000-foot Runway extension and full-length runway reconstruction at the Eagle County Regional Airport. Included in this project are multiple new drainage items, electrical items, and placement of approximately 90,000 tons of new asphalt pavement.

Joel Wiechmann, PE

Electrical Engineer

Years of Experience:

13

Education:

Bachelor of Science, Electrical Engineering, University of Colorado

Registrations/ Certifications:

Registered Professional Engineer, CO, MO, UT, WI, WY

Joel Wiechmann is an electrical engineer whose experience includes runway and taxiway lighting, airfield electrical vault design, and runway approach lighting systems. He also has experience with design of navigational aids, including power supply and control systems, utility coordination, and field inspection and contractor coordination on several projects.

Durango-La Plata County Airport, Rehabilitation of Taxiway A and All Connectors, Durango, CO; Electrical Engineer. Jviation provided design and construction services for the rehabilitation of Taxiway A and all connectors. Jviation is also collaborating with the Sponsor, the FAA, and other key stakeholders to develop a Construction Safety Phasing Plan to ensure that safety is maintained throughout the construction phases of the project, and to minimize interruptions to airport operations.

Provo Airport, Runway 13/31 Rehabilitation, Provo, UT; Electrical Engineer. Jviation provided design and construction services for the rehabilitation of Runway 13/31. In order to maintain the Airport and Runway 13/31 operations to the maximum extent possible, a complex construction phasing plan was developed to mitigate the overall effect of construction activities to the Airport. The project included demolition, asphalt paving, striping, and electrical work of the entire runway, and was completed in five phases.

Spirit of St Louis Airport, North Airfield Lighting Signage Replacement, St Louis, MO; Electrical Engineer. The Spirit of St. Louis Airport was able to leverage non-primary entitlement funds to complete a North Airfield Lighted Sign Replacement program in 2015. NPE funds were used on this project while the airport received SATF funds to complete the Taxiway C & D project. Jviation was selected to replace the north airfield complex non-lighted sign with new lighted signs including new edge light circuitry necessary to add the new signs to the appropriate existing lighting circuits.

Spirit of St Louis Airport, Runway 8L/26R Rehabilitation, St Louis, MO; Electrical Engineer. Jviation provided design and construction administration services for the rehabilitation of Runway 8L/26R and the associated runway edge lighting. The project consisted of variable depth milling and crack filling prior to a bituminous overlay of the existing 5,000 x 75' runway. The project also consisted of the replacement of the existing runway edge lighting including lights, edge light cable, electrical home run and a new constant current regulator. The project was completed in nine months from consultant selection to completion of construction.

Riverton Regional Airport, Runway 10 Reconstruction, Riverton, WY; Electrical Engineer. Jviation provided design and construction oversight services for this $12 million Runway Reconstruction. Jviation prepared construction plans, contract documents, technical specifications, a construction safety and phasing plan and the engineer's design report. The project included designing the reconstruction of Runway 10 in its entirety including the parallel taxiway, one connector taxiway and transition paving required for construction, asphalt rehabilitation of the remainder of the runway, and construction of the vehicle service roads within the vicinity of the runway. The project also

included an update to Runway 10/28 and Parallel Taxiway A lighting and signage and NAVAID adjustment.

Denver International Airport, Taxiways F, G, and H Complex Pavement, Lighting and Safety Areas Rehabilitation, Denver, CO; Electrical Engineer. This project included the rehabilitation of the Taxiway lighting systems as well as selective replacement of concrete panels which are in poor condition.

Rosecrans Memorial Airport, Pilot Controlled Lighting (PCL) Rehabilitation and Taxiway Edge Light Installation, St Joseph, MO; Electrical Engineer. Because of the age and condition of the existing system, it was recommended to remove and replace most of the existing lighting control system. The pilot controlled lighting rehabilitation consisted of updating the PCL system in the Tower Cab and electrical vault.

Aspen-Pitkin County Airport, Construct South De-ice Pad/Apron, Construct Connector Taxiway A3, and Runway Safety Area Improvements, Aspen, CO; Electrical Engineer. This project involved the design and construction of a de-icing apron along with all associated facilities and drainage on the north side of the existing holding apron at Taxiways A7 and A8. This area was originally planned and developed to be completed when the East Side Infrastructure Development (ESID) project was constructed but was removed from the project due to funding. The design and construction of connector Taxiway A3, between the existing Taxiways A2 and A4; and the completion of the west side safety area improvements including subsurface drainage for Runway 15/33 were also included in this project.

Eagle County Regional Airport, Apron Reconstruction, Gypsum, CO; Electrical Engineer. The construction that was completed in 2018 was the final phase (Phase IV) of the Apron Reconstruction project at the Eagle County Regional Airport, completing approximately $25 million dollars of improvements. This phase of work included the reconstruction of approximately 32,000 square yards of commercial apron, consisting of both 16.5-inch thick and 12-inch thick Portland Cement Concrete Pavement (PCCP) sections. The Phase IV improvements completed the rehabilitation of over 112,333 square yards of PCCP on the apron.

Yampa Valley Regional Airport, Runway 10/28 Rehabilitation, Hayden, CO; Electrical Engineer. Jviation designed the rehabilitation of the 10,000-foot by 150-foot Runway 10/28 in its entirety including all seven connector taxiways and transition paving required for construction, rehabilitation of Gates 1 and 2 of the commercial apron, construction of the runway shoulder, and construction of the vehicle service road around the east end of the runway. The existing pavement consists of numerous pavement sections and was last rehabilitated in 2003. The pavement surface course has reached the end of its useful life and has developed significant surface cracks. The widening and realigning of the connectors will bring them up to the Taxiway Design Group V level corresponding with the remainder of the Taxiway system. The construction phasing to minimize operational impacts is a significant effort for this project.

Denver International Airport, Hotel and Transit Center, Denver, CO; Electrical Engineer. Jviation was a subconsultant to the program manager, and was responsible for the overall site civil aspects of the project. Jviation staff directed survey, geotechnical analysis, and other efforts in order to determine the existing conditions at the site. This information was combined with existing data to develop a comprehensive data set for all design efforts.

Denver International Airport, Concourse A East Apron Expansion, Denver, CO; Electrical Engineer. Designed taxiway centerline and edge lighting for the new Taxiway K and designed apron lighting and ground power unit receptacles for a new RON pad. Also included was the design of lighting and power systems for a new snow equipment staging area, coordination with the electrical utility company, and the adjustment of existing electrical utilities, including the jet fuel distribution emergency fuel shutoff system.

Denver International Airport, Concourse C East Apron Expansion, Denver, CO; Electrical Engineer. Designed taxiway centerline lighting, apron flood lighting, and ground power unit receptacles for the expansion of the Concourse C east apron at DIA.

First Amendment to Ground Lease Agreement
Exhibit D –Airline Construction Safety and Phasing Plan

CONSTRUCTION SAFETY AND PHASING PLAN

WN-RON MAINTENANCE HANGAR

DEN Tenant Project Number: swa_1901.SWA.RON.Hangar

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April 22, 2019

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1. COORDINATION

During construction, airport operational safety is of paramount importance. Coordination of project information to all individuals involved with the project is essential for ensuring safe operations are maintained at all times. In order to minimize potential for incidents during construction, it is imperative that all individuals involved with the project and/or airport users be kept informed of any and all changes to operations. Discussions of operational safety will need to take place throughout the entire life of the project, including design, pre-construction, and construction. Meetings between the Owner, DEN (Airport), the Contractor, sub-contractors, and the Owner's Representative will be required to discuss specific project related impacts to operations. The Airport staff is ultimately responsible for the safety at the airport. Notice to users of operational changes due to construction will be issued via NOTAM's by the airport. No closures will be permitted without the pertinent NOTAM in place for each specific closure. Emergency access for both airport (ARFF) and off-airport (Police, Fire, and EMT) based emergency service shall be maintained at all times. Routing for such traffic shall be determined and made known to all supervisor personnel involved in the construction project. Coordination of this access will be proposed by the Contractor and approved by the Owner's Representative and Airport Operations.

A pre-work meeting will be held prior to the Contractor beginning work for any airside construction operations. The Airport, the Owner, the Contractor's on-site supervisory staff, and the Owner's Representative shall be present. Safety and this document will be a significant topic on the agenda. Operational safety during construction will be a main topic of discussion at the pre-work meeting.

A. CONTRACTOR PROGRESS MEETINGS

The Contractor is required to have weekly construction progress meetings to discuss all relevant construction topics including safety reminders, scheduling, and general construction issues. Attendance of the Contractor, Owner's Representative, Airport, and any other pertinent personnel are required at these meetings. Operational safety will be a standing agenda item for discussion during these progress meetings. A review of the Contractor's adherence to the project's Construction Safety and Phasing Plan (CSPP) and Safety Plan Compliance Document (SPCD) will be made at each meeting. Immediate correction of any deficiencies or violations will be required. The location and time of the weekly meetings will be determined during the pre-construction meeting. Where operational safety is concerned, the Contractor shall update the Resident Engineer overseeing construction on daily basis or more frequently if needed, of any changes or Contractor concerns.

B. SCOPE OR SCHEDULE CHANGES

In the event of a scope or schedule change, the Contractor shall notify the Owner's Representative and DEN Operations immediately. All parties involved will need to evaluate the impact(s) of the change and will determine what measures will need to be taken to maintain a safe construction site. Change in the scope or duration of the project may necessitate revisions to the Construction Safety and Phase Plan (CSPP).

C. FAA ATO COORDINATION

The FAA ATO will need to be notified immediately of any changes that affect aircraft movement within the airport which include airway facility shutdowns and restarts. The Airport will be responsible for coordinating any changes including NOTAM's to the FAA ATO. It is

not anticipated that any shutdown to FAA facilities will be required for this project. All project limits are outside the critical area of any navigational aid (NAVAID).

2. PHASING

In order to minimize disruptions to airport operations during construction, construction will be broken up by areas to limit the amount of aircraft operational areas affected at any given time. Maintaining continual access to Runway 16L-34R is mandatory during all phases of construction to allow the airlines to operate during construction. The phasing plan proposed was developed with help from the Airport and is considered to be the most effective way of maintaining the required aircraft access, while imposing the least amount of impact on construction operations, and without sacrificing safety. The phasing for this project is presented below and is visually depicted in the phasing sheets attached at the back of this document.

This project will be completed in two separate phases. Each of the phases is discussed in further detail in the sheets included at the end of this document.

A. PHASE ELEMENTS

I. Phase 1 – Tie into Existing Taxiway F Pavement

Areas Closed to Aircraft Operations
Work completed for this phase consists of airfield pavement demolition, construction of taxilane pavement and shoulders, reconstruction of snow road, grading operations, storm drain installation, electrical relocation and other miscellaneous work.

Construction activities will occur east of Taxiway F, and just north of the intersection of Taxiway F and F9. Construction activities will require the closure of Taxiway F between Taxiways F9 and F10, and the north radius of Taxiway F9. The snow road in this location will also be closed for the duration of this phase.

The Contractor has proposed a duration of 107 days to complete the work for Phase 1. Construction will occur between July 01, 2019 and October 15, 2019. The Contractor will be allowed to work 7 days a week with 24-hour access to the project site. During all construction hours, the Contractor will have unlimited access to all project areas within the boundaries established on the attached construction phasing plan sheets. Work hours as detailed in this report may be altered at the Airport's discretion.

Prior to the commencement of construction operations for Phase 1, the Contractor shall coordinate with DEN Operations and the Owner's Representative to ensure that all parties are aware of the pending construction operations and snow road traffic redirection. NOTAMs will be required for this phase to detail the closures of Taxiways F and F9. Upon confirmation of closures, the Contractor will be required to place all traffic cones and traffic guidance signs as detailed on the Phase 1 sheet attached at the end of this document.

Duration of Closures
The impacted section of the snow road will be closed for the full 107 calendar day duration of the phase. It is anticipated that construction will take place between July 1, 2019 and October 15, 2019.

Taxi Routes
During Phase 1A Taxiway F will be closed between Taxiways F9 and F10. The southern radius of Taxiway F9 will remain open at all times, as well as the intersection of Taxiway F and F10. Aircraft landing on Runway 34R will travel north on Runway 16L-34R and will turn east on Taxiway F9 to Taxiway F, where they will head south to the Concourses. In the event that utilizing Taxiway F9 is not an option, Taxiways F10, WE, and F12 can be utilized as a turnaround to back taxi on Runway 16L-24R, or Taxiway WE to the west to Taxiway D to the south is another possible route. Aircraft departing Runway 34R are not anticipated to be impacted, with the exception of an aborted takeoff, in which case the routes above can be utilized.

For aircraft 16L from the concourses, Taxiway WB west to Taxiway D5 to the northwest to Taxiway D to the north and Taxiway WE to the east will remain open if utilizing Taxiway F to Taxiway F9 does not leave acceptable distance for takeoff. Aircraft landing on Runway 16L should not be impacted.

For the Taxiway F closure, the barricades will be placed outside of the TOFA for the southern radius of Taxiway F9 on the south and outside the TOFA at the intersection Taxiways F and F10 on the north.

After the completion of Phase 1A, all Taxiway pavement will be open to aircraft for the duration of Phase 1.

ARFF Access Routes
In the event of an emergency, ARFF access to the project will be via Newbern St., the snow road, or Taxiway F. Barricades placed at the entrance of the work area will be spaced to allow for the passage of ARFF equipment. Any hazard areas will be delineated for vehicular and ARFF access.

Construction Access and Haul Routes
The construction access and haul route to and from the Contractor staging area to the project site will be on a pre-determined route shown on the attached Contractor Access Plan sheet at the end of this document.

Section 5 of this document describes in detail how the Contractor will access the project work area.

Impacts to NAVAIDS
There will be no NAVAIDS impacted by this phase of work.

Lighting and Marking Changes
The closure of Taxiways F and F9 within the Phase 1 limits will require that all airfield lighting and signs impacted will need to be shutdown or covered for the duration of the Phase 1A. This includes all lighting and signs that may lead an aircraft into the closed area.

In addition to the lights and signs that will be to be shutdown or covered, additional electrical impacts will occur due to the relocation of the duct bank to the east of Taxiway F. In order to relocate the duct bank, the contractor will have to access electrical manholes EMH-02047 and EMH-02048. This duct bank includes the following circuits that will

require a coordinated shutdown to relocate: TFSB2, TFWW, 16LRDR(1), TFC7, TFE3, TFS3, AND 34RCP.

Available Runway Length
This section is not applicable for this project.

Declared Distances
This section is not applicable for this project.

Required Hazard marking and Lighting
Low profile lighted barricades will be used to delineate closed AOA pavements and flasher barricades will be used to delineate closed pavements and limits of construction or hazardous areas. All barricades will be placed outside of active taxiway object free areas and will be spaced according to AC 150/5370-2G to prevent unauthorized access.

Contractor shall use traffic cones to delineate individual areas of construction within the project site. This will notify vehicles and persons of hazards areas on the project site.

Lead Times for Required Notifications
Coordination between the Contractor, the Owner's Representative, and DEN Operations must be maintained to ensure for the timely notifications for all construction activities and phasing, taxiway closures or other potential impacts to aircraft operations. Notifications shall be a regular discussion item for all preconstruction and construction meetings.

II. Phase 1A – Tie into Existing Taxiway F Pavement (Inside TOFA)

Areas Closed to Aircraft Operations
Work completed for this phase consists of airfield pavement demolition, construction of taxilane pavement and shoulders, grading operations, storm drain installation, electrical relocation and other miscellaneous work.

Construction activities will occur east of Taxiway F, and just north of the intersection of Taxiway F and F9. Construction activities will require the closure of Taxiway F between Taxiways F9 and F10, and the north radius of Taxiway F9. The snow road in this location will also be closed for the duration of this phase.

The Contractor has proposed a duration of 93 days to complete the work for Phase 1A. Construction will occur between July 01, 2019 and October 1, 2019. This work will be completed concurrently with Phase 1 and will hold priority over any other Phase 1 work. The Contractor will be allowed to work 7 days a week with 24-hour access to the project site. During all construction hours, the Contractor will have unlimited access to all project areas within the boundaries established on the attached construction phasing plan sheets. Work hours as detailed in this report may be altered at the Airport's discretion.

Prior to the commencement of construction operations for Phase 1A, the Contractor shall coordinate with DEN Operations and the Owner's Representative to ensure that all parties are aware of the pending construction operations and snow road traffic redirection. NOTAMs will be required for this phase to detail the closures of Taxiways F and F9. Upon confirmation of closures, the Contractor will be required to place all traffic cones

and traffic guidance signs as detailed on the Phase 1 sheet attached at the end of this document.

Duration of Closures
The impacted section of the snow road will be closed for the full 107 calendar day duration of Phase 1. It is anticipated that construction will take place between July 1, 2019 and October 15, 2019.

Taxi Routes
During Phase 1A Taxiway F will be closed between Taxiways F9 and F10. The southern radius of Taxiway F9 will remain open at all times, as well as the intersection of Taxiway F and F10. Aircraft landing on Runway 34R will travel north on Runway 16L-34R and will turn east on Taxiway F9 to Taxiway F, where they will head south to the Concourses. In the event that utilizing Taxiway F9 is not an option, Taxiways F10, WE, and F12 can be utilized as a turnaround to back taxi on Runway 16L-24R, or Taxiway WE to the west to Taxiway D to the south is another possible route. Aircraft departing Runway 34R are not anticipated to be impacted, with the exception of an aborted takeoff, in which case the routes above can be utilized.

For aircraft 16L from the concourses, Taxiway WB west to Taxiway D5 to the northwest to Taxiway D to the north and Taxiway WE to the east will remain open if utilizing Taxiway F to Taxiway F9 does not leave acceptable distance for takeoff. Aircraft landing on Runway 16L should not be impacted.

For the Taxiway F closure, the barricades will be placed outside of the TOFA for the southern radius of Taxiway F9 on the south and outside the TOFA at the intersection Taxiways F and F10 on the north.

ARFF Access Routes
In the event of an emergency, ARFF access to the project will be via Newbern St., the snow road, or Taxiway F. Barricades placed at the entrance of the work area will be spaced to allow for the passage of ARFF equipment. Any hazard areas will be delineated for vehicular and ARFF access.

Construction Access and Haul Routes
The construction access and haul route to and from the Contractor staging area to the project site will be on a pre-determined route shown on the attached Contractor Access Plan sheet at the end of this document.

Section 5 of this document describes in detail how the Contractor will access the project work area.

Impacts to NAVAIDS
There will be no NAVAIDS impacted by this phase of work.

Lighting and Marking Changes
The closure of Taxiways F and F9 within the Phase 1 limits will require that all airfield lighting and signs impacted will need to be shutdown or covered for the duration of the phase. This includes all lighting and signs that may lead an aircraft into the closed area.

In addition to the lights and signs that will be to be shutdown or covered, additional electrical impacts will occur due to the relocation of the duct bank to the east of Taxiway F. In order to relocate the duct bank, the contractor will have to access electrical manholes EMH-02047 and EMH-02048. This duct bank includes the following circuits that will require a coordinated shutdown to relocate: TFSB2, TFWW, 16LRDR(1), TFC7, TFE3, TFS3, AND 34RCP.

Available Runway Length
This section is not applicable for this project.

Declared Distances
This section is not applicable for this project.

Required Hazard marking and Lighting
Low profile lighted barricades will be used to delineate closed AOA pavements and flasher barricades will be used to delineate closed pavements and limits of construction or hazardous areas. All barricades will be placed outside of active taxiway object free areas and will be spaced according to AC 150/5370-2G to prevent unauthorized access.

Contractor shall use traffic cones to delineate individual areas of construction within the project site. This will notify vehicles and persons of hazards areas on the project site.

Lead Times for Required Notifications
Coordination between the Contractor, the Owner's Representative, and DEN Operations must be maintained to ensure for the timely notifications for all construction activities and phasing, taxiway closures or other potential impacts to aircraft operations. Notifications shall be a regular discussion item for all preconstruction and construction meetings.

III. Phase 2 – Construct New Concrete and Asphalt Pavement

Areas Closed to Aircraft Operations
Work completed for this phase consists of relocating the AOA fence, construction of taxilane pavement and shoulders, construction of an access road to Newbern St., grading operations, utility connections, and other miscellaneous work.

Construction activities will occur east of Taxiway F, outside the TOFA, and just north of the intersection of Taxiway F and F9. Construction activities will not impact Taxiway F traffic. No airfield pavement will be closed with this phase. Traffic that would normally utilize Newbern St will be redirected to the snow road for the duration of this phase.

The Contractor has proposed a total of 92 calendar days to complete the work for Phase 2. Construction will occur between October 1, 2019 and December 21, 2019. The Contractor will be allowed to work 7 days a week with 24-hour access to the project site. During all construction hours, the Contractor will have unlimited access to all project areas within the boundaries established on the attached construction phasing plan sheets. Work hours as detailed in this report may be altered at the Airport's discretion.

Prior to the commencement of construction operations for Phase 2, the Contractor shall coordinate with DEN Operations and the Owner's Representative to ensure that all

parties are aware of the pending construction operations and Newbern St. traffic redirection. No NOTAMs will be required for this phase. Upon confirmation of closures, the Contractor will be required to place all traffic cones and traffic guidance signs as detailed on the Phase 1 sheet attached at the end of this document.

Duration of Closures
The impacted section of Newbern St. will be closed for the full 107 calendar day duration of the phase. It is anticipated that construction will take place in the spring/summer of 2019.

Taxi Routes
No taxi routes will be impacted during this phase.

ARFF Access Routes
In the event of an emergency, ARFF access to the project will be via Newbern St. or the snow road. Barricades placed at the entrance of the work area will be spaced to allow for the passage of ARFF equipment. Any hazard areas will be delineated for vehicular and ARFF access.

Construction Access and Haul Routes
The construction access and haul route to and from the Contractor staging area to the project site will be on a pre-determined route entirely outside of the temporarily relocated AOA fence. The only work inside the AOA fence for this phase will be install the temporary AOA fencing.

Section 5 of this document describes in detail how the Contractor will access the project work area.

Impacts to NAVAIDS
There will be no NAVAIDS impacted by this phase of work.

Lighting and Marking Changes
There will be no effect on airfield lighting during this phase.

Available Runway Length
This section is not applicable for this project.

Declared Distances
This section is not applicable for this project.

Required Hazard marking and Lighting
Flasher barricades will be used to delineate closed pavements and limits of construction or hazardous areas. All barricades will be placed outside of active taxiway safety areas and will be spaced according to AC 150/5370-2G to prevent unauthorized access.

Contractor shall use traffic cones to delineate individual areas of construction within the project site. This will notify vehicles and persons of hazards areas on the project site.

Lead Times for Required Notifications
Coordination between the Contractor, the Owner's Representative, and DEN Operations must be maintained to ensure for the timely notifications for all construction activities and phasing, taxiway closures or other potential impacts to aircraft operations. Notifications shall be a regular discussion item for all preconstruction and construction meetings.

IV. Phase 3 – Construct New Asphalt Pavement for Newbern Street

Areas Closed to Aircraft Operations
Work completed for this phase consists of construction of asphalt pavement on Newbern St., grading operations, and other miscellaneous work.

Construction activities will occur east of Taxiway F, outside the TOFA, on Newbern Street between the proposed WN vehicle access road on the north side and taxilane F7 on the south side. Construction activities will not impact Taxiway F traffic. No airfield pavement will be closed with this phase. Traffic that would normally utilize Newbern St will be redirected to the snow road for the duration of this phase.

The Contractor has proposed a total of 61 calendar days to complete the work for Phase 3. Construction will occur between March 1, 2020 and April 30, 2020. The Contractor will be allowed to work 7 days a week with 24-hour access to the project site. During all construction hours, the Contractor will have unlimited access to all project areas within the boundaries established on the attached construction phasing plan sheets. Work hours as detailed in this report may be altered at the Airport's discretion.

Prior to the commencement of construction operations for Phase 3, the Contractor shall coordinate with DEN Operations and the Owner's Representative to ensure that all parties are aware of the pending construction operations and Newbern St. traffic redirection. No NOTAMs will be required for this phase. Upon confirmation of closures, the Contractor will be required to place all traffic cones and traffic guidance signs as detailed on the Phase 1 sheet attached at the end of this document.

Duration of Closures
The impacted section of Newbern St. will be closed for the full 61 calendar day duration of the phase. It is anticipated that construction will take place between March 1, 2020 and April 30, 2020.

Taxi Routes
No taxi routes will be impacted during this phase.

ARFF Access Routes
In the event of an emergency, ARFF access to the project will be via Newbern St. or the snow road. Barricades placed at the entrance of the work area will be spaced to allow for the passage of ARFF equipment. Any hazard areas will be delineated for vehicular and ARFF access.

Construction Access and Haul Routes
The construction access and haul route to and from the Contractor staging area to the project site will be on a pre-determined route entirely outside of the temporarily relocated

AOA fence. The only work inside the AOA fence for this phase will be install the temporary AOA fencing.

Section 5 of this document describes in detail how the Contractor will access the project work area.

Impacts to NAVAIDS
There will be no NAVAIDS impacted by this phase of work.

Lighting and Marking Changes
There will be no effect on airfield lighting during this phase.

Available Runway Length
This section is not applicable for this project.

Declared Distances
This section is not applicable for this project.

Required Hazard marking and Lighting
Flasher barricades will be used to delineate closed pavements and limits of construction or hazardous areas. All barricades will be placed outside of active taxiway safety areas and will be spaced according to AC 150/5370-2G to prevent unauthorized access.

Contractor shall use traffic cones to delineate individual areas of construction within the project site. This will notify vehicles and persons of hazards areas on the project site.

Lead Times for Required Notifications
Coordination between the Contractor, the Owner's Representative, and DEN Operations must be maintained to ensure for the timely notifications for all construction activities and phasing, taxiway closures or other potential impacts to aircraft operations. Notifications shall be a regular discussion item for all preconstruction and construction meetings.

B. CONSTRUCTION SAFETY DRAWINGS

The phasing drawings are attached at the back of this document to show the phasing requirements for this project. Along with the phasing information, those attached drawings also show aircraft access routes, ARFF access routes, pedestrian routes, ground service equipment routes and contractor operation limits to help assist with airport operations and maintaining safety during this project.

3. AREAS AND OPERATIONS AFFECTED BY THE CONSTRUCTION ACTIVITY

All work within the Airport Operations Area shall be accomplished in conformance to Advisory Circular 150/5370-2G, Operational Safety on Airports During Construction. The contract drawings include information regarding requirements for operational safety on the airport during construction.

The Contractor shall prepare a detailed Safety Plan Compliance Document (SPDC) as stated in the Advisory Circular 150-5370-2G. The Contractor's SPDC shall identify specific methods, sequencing, phasing that he/she intends to use in order to accomplish the project work. The SPCD shall be

submitted by the Contractor to the Design Team and the Owner's Representative for approval prior to the pre-work conference for the airfield work. The Design Team will review the SPCD with the Owner and Airport and supply any changes or revisions to the Contractor for incorporation into the plan. The final SPCD shall be the result of a coordinated effort between the Owner, Airport, Design Team, Owner's Representative, and the Contractor.

The Contractor shall adhere to the approved CSPP and SPCD as agreed upon by Airport, Design Team, Owner's Representative, and Contractor. Modifications or deviations from the approved safety plan shall be submitted to the Design Team and Owner's Representative for review and approval prior to implementation.

A. IDENTIFICATION OF AFFECTED AREAS

Areas affected by construction activities associated with this project are identified on the Construction Safety Drawings. Construction activities associated with Phase 1 will primarily take place east of Taxiway F and just north of the intersection of Taxiways F and F9. During construction activities associated with Phase 1A, operations on Taxiway F between Taxiways F9 and F10 will be affected, as described in greater detail in section 2 of this document. Several NOTAM's will be required to be issued during this project to close and/or modify specific sections of Taxiway F including connectors from Taxiway F9 to F10, to maintain safety during this project. Construction activities associated with Phase 2 will primarily take place to the east of Taxiway F and the snow Road and just north of the intersection of Taxiways F and F9 outside of the TOFA. Construction activities associated with Phase 3 will occur completely on the gravel road to the east of Taxiway F and north of Taxilane F7. Section 2 of this document and the attached phasing drawings describe in detail which areas are affected and for what durations.

B. MITIGATION OF EFFECTS

To mitigate the effects of the construction activities associated with the project; alternative routes have been established for emergency and ARFF vehicles, aircraft taxiway movements have been considered and phasing plans have been created. Because the phasing for this project is critical to maintaining safety and operations at the airport during construction, adhering to the requirements as laid out in the attached phasing sheets is imperative. To help assist all individuals with this process, it is important that all airport personnel, air traffic operation personnel, contractor personnel, and engineering personnel discuss current and upcoming phases during the required weekly construction progress meetings as mentioned in Section 1 of this document.

Additional mitigation efforts will include, but not limited to, the following:

Limiting the amount of vehicles and equipment within the AOA to only essential equipment and vehicles required for Contractor operations. Contractor's equipment not scheduled to be used within seven days will be required to be stored at the Contractor staging area and all employee parking will be outside of the AOA.

All essential equipment and material shall be placed in a designated location outside of all runway and taxiway object free areas when the Contractor is not working.

All Contractor employees shall be informed of all safety requirements and project limits.

Airport personnel, Contractor personnel, and Owner's Representative personnel shall discuss construction safety during the required weekly construction progress meetings as mentioned in Section 1 of this document.

4. PROTECTION OF NAVIGATION AIDS (NAVAID'S)

No NAVAIDs will be shut down with this project.

5. CONTRACTOR ACCESS

All individuals employed at the Airport, or working on DEN property, must obtain an Airport Identification (ID) Badge. Airport ID Badges will be issued by Airport Security 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 company, or changing employers, must obtain an Airport ID Badge for each company. Badge Color indicates general areas of authorization in relationship with direct support of an individual's job function. The respective classes of Airport ID Badges, indicated by badge color and associated driving privilege icon, describe driving privileges in direct correlation with their job function.

The individual must complete a Denver International Airport Fingerprinting and Badge Application, on a form prepared and currently approved by Airport Security. Two valid forms of identification must be presented with the application, one of which must be 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 each individual requesting an Airport Identification Badge. Denver International Airport Fingerprinting and Badge Application are available from the Airport Security Offices.

The individual must view a training video 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.

During the course of the construction operations, the Contractor will be allowed to utilize one (1) airport access "Security Gate" as entrance to the airfield and construction site. Only vehicular access is permitted through the access gates into the SIDA area, pedestrian access through the access gates is not allowed. The gate utilized shall be Gate P-23 and the associated haul road shall be as shown in the Contractor Access Plan attached at the back of this document.

A. LOCATION OF STOCKPILED CONSTRUCTION MATERIALS

The location of the Contractor's stockpile for construction materials will be at the designated staging area or at an on-site location approved by DEN, the Owner, The Design Team, and the Owner's Representative as discussed in the pre-work meeting

B. VEHICLE AND PEDESTRIAN OPERATIONS

I. Construction Site Parking

Construction site parking will be outside of the AOA and within the contractors staging area as shown on the phasing sheets attached at the back of this document.

II. Construction Equipment Parking

Construction equipment parking will be allowed at the approved locations as discussed in the pre-construction meeting. If the equipment must be parked in an Airport Operations Area (AOA), the equipment must be lighted with a beacon per AC 150/5370-2F. No equipment or material shall be parked or stored in any runway or taxiway safety area or object free area.

III. Access and Haul Roads

The Contractor shall obtain approval from DEN Operations and the Owner's Representative prior to utilizing any haul roads within the airport property. The haul roads shall be utilized for all equipment traffic, and the equipment shall not be allowed to stray or wander away from the established routes. The haul roads shall be the responsibility of the Contractor and shall be maintained and kept in good order at all times. Since construction operations will be within active airport operation areas, the airport will require additional dust control measures be used on haul roads and the work area in order not to interfere with airport operations. The Contractor must use a vacuum truck that does not create airborne dust to clean paved surfaces. Haul roads that cross any active taxiway or movement areas shall be kept clean and in good order at all times. The Contractor shall be prepared at all times to repair any damage caused by the movement of equipment on any of the haul roads at the direction of DEN Operations or the Owner's Representative, whether in designated or undesignated areas. Establishment of haul roads off Airport property shall be the sole responsibility of the Contractor.

Contractor movement shall be restricted to the pre-determined access route as described below:

From the Contractor's Staging Area, the haul route will head east out of the Contractor's Staging Area to Queensburg St. then north to Trussville St. On Trussville St. the haul route turns west to Gate P-23, which will serve as access to the AOA. Once inside the AOA, the haul route goes south on Newbern St. to the project site.

IV. Marking and Lighting of Vehicles

All vehicles operating within the AOA and in the movement/non-movement areas must clearly identify themselves for control purposes. The identification symbols should be a minimum 8-inch block-type characters of a contrasting color and easy to read. They may be applied either by using tape or a water-soluble paint to facilitate removal. Magnetic signs are also acceptable. Solid black or solid white painted vehicles are not allowed within the AOA.

To operate within the AOA during daylight hours, the vehicle must have a flag (day only) or yellow flashing light (day or night) attached to it. Any vehicle operation on the movement areas during hours of darkness or reduced visibility must be equipped with a flashing dome-type light. Marking and lighting shall be in conformance with FAA Advisory Circular 150/5210-5D, *Painting, Marking, and Lighting of Vehicles Used on an Airport.*

V. Description of Proper Vehicle Operations

Proper vehicle operations is described as confirming to all rules and regulation for driving as directed by the Denver International Airport.

VI. Required Escorts

When any vehicle, other than one that has prior approval from the airport operator, must travel over any portion of an aircraft movement area or limited access routes, the vehicle will be escorted and properly identified. To operate in those area during daylight hours, the vehicle must have a flag (day only) or beacon (day or night) attached to it. Any vehicle operation on the movement areas during hours of darkness or reduced visibility must be equipped with a flashing dome-type light.

It is not anticipated that this project will require traveling on active taxiways and/or runways.

VII. Training Requirements of Vehicle Drivers

If an individual requests Driver Authorization, a valid driver's license must be presented and the individual must view a training video on Denver Municipal Airport System Rules and Regulations, as they pertain to overall Movement of Vehicles in the Restricted Area, and pass a corresponding test to assure understanding of the Rules and Regulations.

VIII. Situational Awareness

Vehicle drivers must confirm by personal observation that no aircraft is approaching their position (either in the air or on the ground) when given clearance to cross a runway, taxiway, or any other area open to airport operations. In addition, it is the responsibility of the escort vehicle driver to verify movement/position of all escorted vehicles at any given time.

IX. Two-way Radio Communication Procedures

The Contractor's superintendent and haul route monitors shall be required to monitor transceiver radios tuned to the established frequencies as discussed in the pre-construction meeting at all times. The Contractor shall supply radios. Such radios shall be used to obtain proper clearance regarding the movement of equipment, trucks, etc., within the movement area. 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.

X. Maintenance of the Secured Area of the Airport

Airport operators and contractors must take care to maintain security during construction when access points are created in the security fencing to permit the passage of construction vehicles or personnel.

In addition, all personnel must either be badged or escorted while working in the AOA. Badgeholders are responsible for escorted personnel at all times to ensure that security of the airport is maintained.

Because the Airport is subject to 49 CFR Part 1542, Airport Security, even during construction, the Airport must meet standards for access control, movement of ground vehicles, and identification of construction contractor and tenant personnel.

XI. Construction Site Safety

All personnel working on the construction site, including gate guards, are recommended to have personal protective equipment on at all times. This includes but is not limited to vests, hard hats, hearing protection, eye protection, and radios.

6. WILDLIFE MANAGEMENT

All wildlife management within the Airport Operations Area shall be accomplished in conformance to Advisory Circular 150/5200-33, *Hazardous Wildlife Attractants On or Near Airports*, and Certalert 98-05*, Grasses Attractive to Hazardous Wildlife*. In general, the Contractor must carefully control and continuously remove waste or loose material that might attract wildlife.

A. TRASH

The Contractor is responsible to complete a daily inspection of the construction site for any trash or objects that might attract wildlife.

B. STANDING WATER

Because standing water can attract wildlife, the Contractor is responsible to complete a daily inspection of the construction site for any standing water. With the discretion of DEN Operations, the Owner, the Design Team, and/or the Owner's Representative, the Contractor shall remove this hazard.

C. TALL GRASS AND SEEDS

The Contractor will install seeding and hydromulch as specified in the T-901 Seeding and T-908 Mulching specifications for this project or as directed by the Owner, DEN Operations, the Design Team, or the Owner's Representative.

D. POORLY MAINTAINED FENCING AND GATES

The Contractor shall be required to maintain all fences and gates throughout the duration of the project, to the satisfaction of the Airport.

E. DISRUPTION OF EXISTING WILDLIFE HABITAT

The Contractor shall contact Airport Emergency Dispatch at 303-342-4211 when a wildlife sighting has occurred on the project site to mitigate any disruption to the existing wildlife habitat.

7. FOREIGN OBJECT DEBRIS (FOD) MANAGEMENT

The presence of FOD on the apron, taxiways, and runway is a significant safety concern, as debris can be ingested into an aircraft's engine causing extensive damage or can be launched across the area by jet blast, potentially causing bodily injury or damaging other aircraft. Materials capable of creating FOD must be continuously removed during the construction project. The Contractor is required to keep all areas outside of the project area, open to aircraft and free from FOD at all times. The Contractor is required to maintain FOD several times a day and to the satisfaction of the Owner, DEN Operations, the Design Team, and the Owner's Representative. Prior to opening any pavement to aircraft, the Contractor shall conduct a sweep of the pavement to verify that it is FOD free.

8. HAZARDOUS MATERIAL (HAZMAT) MANAGEMENT

Although hazardous material is not anticipated to be present on this project, if hazardous material is encountered, the Contractor shall inform the Owner, DEN Operations, the Design Team, and the Owner's Representative immediately.

9. NOTIFICATION OF CONSTRUCTION ACTIVITIES

Prior to commencing any construction activities as well as prior to beginning a new construction phase the Contractor shall notify the Owner's Representative and Airport Operations 72 hours in advance. During construction activities the Contractor shall immediately notify the Owner's Representative and Airport Operations of any conditions that may adversely affect the operational safety of the Airport.

A. LIST OF RESPONSIBLE REPRESENTATIVES/POINTS OF CONTACT

Agency Name	Telephone No.
Fire, Rescue	(303) 342-4200
Denver Police Department	(303) 342-4211
Project Manager	To Be Determined
ID Badging	(303) 342-4300
Airport Security	(303) 342-4307
Vehicle Permits	(303) 342-4308
Driver Qualification	(303) 342-4310

B. NOTICES TO AIRMEN (NOTAM)

Only the DEN Operations Manager may initiate or cancel NOTAMs on airport conditions, and is the only entity that can close or open a runway. The DEN Operations Manager must coordinate the issuance, maintenance, and cancellation of NOTAMs about airport conditions resulting from construction activities and must provide information on closed or hazardous conditions on airport movement areas to the FAA Flight Service Station (FSS) so it can issue a NOTAM. The Contractor must notify the Owner, the DEN Operations Manager, the Design Team, and the Owner's Representative when scheduling/scoping for the project has changed that would require a modification the NOTAMs.

C. EMERGENCY NOTIFICATION PROCEDURES

In an event of an emergency, the Contractor shall notify the DEN Operations Manager and the Owner's Representative. If necessary, the Contractor shall contact Airport Emergency at 303-342-4211.

D. COORDINATION WITH ARFF PERSONNEL

In an event that the Contractor must coordinate construction activities with ARFF Personnel, the Contractor will notify the Airport Operations Manager or DEN Project Manager. The Airport Operations Manager or DEN Project Manager will be responsible to notify the event to ARFF Personnel.

E. NOTIFICATION TO THE FAA

Any person proposing construction or alteration of objects that affect navigable airspace, as defined in Part 77, must notify the FAA through DEN Airport Planning. This includes construction equipment and proposed parking areas for this equipment.

In regards to NAVAID's damage, the Airport shall contact 1-866-432-2622.

No shutdowns of NAVAID's are anticipated for the duration of this project.

10. INSPECTION REQUIREMENTS

A. DAILY (OR MORE FREQUENT) INSPECTIONS

Inspections shall be conducted daily and more frequently if necessary by the Resident Engineer to ensure conformance with this document. The checklist provided at the end of this report was copied from FAA AC 150/5370-2G Appendix 4, *Construction Project Daily Safety Inspection Checklist*. This checklist shall be completed by the Contractor to the Owner and Owner's Representative's satisfaction and the Contractor shall submit a copy of all the completed checklists to the Owner's Representative and DEN Operations. The Contractor should fill out this checklist everyday construction operations occur on this project.

B. FINAL INSPECTIONS

Final inspections shall be conducted after every construction phase is complete as detailed in Section 2 of this document. The final inspection should be completed with the Contractor, the Owner, the Design Team, the Owner's Representative, and DEN Operations.

11. UNDERGROUND UTILITIES

The Contractor shall attempt to locate all underground cables and other sub-surface utilities prior to construction. Coordination among the Contractor, DEN Operations, FAA, National Weather Service, utility companies, the Design Team, the Owner's Representative, and any other appropriate entity or organization must be complete prior to construction. NAVAIDS, Weather Service facilities, electric cables, and other utilities must be fully protected during the entire construction time.

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 for the information of the Contractor before any work in their general vicinity is started. Thereafter, through the entire duration of construction, they shall be protected from any possible damage, including crossing with unauthorized equipment.

Damage to the underground cables, whether FAA's or Sponsor's, through negligence on the part of the Contractor will require replacement by the Contractor at no cost to the Owner or DEN. Any splicing or replacing of damaged cable shall meet current FAA specifications. Damage to other underground utilities through Contractor's negligence shall be repaired according to the relevant utility's standards and at no cost to the Owner or DEN.

12. PENALTIES

Any employer not regulated under 49 C.F.R. Part 1544, Aircraft Operator, will be responsible for payment or reimbursement to the City & County of Denver of any Civil Penalties imposed by the Transportation Security Administration (TSA) for individual security violations by their employees for violations under 49 C.F.R. Part 1542.

An employee may be personally subject to Civil Penalties imposed by the Transportation Security Administration (TSA) for individual security violations they commit under 49 C.F.R Part 1542. Each individual who is issued an Airport ID Badge shall comply with all Security Directives, Denver Municipal Airport System Rules and Regulations, and DEN Standard Policies and Procedures regarding Airport Safety, Security, and Operations. The failure of any individual to comply with such Security Directives and/or rules and regulations 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 Airport ID Badges.

No individual to whom an Airport ID Badge or Security Key(s) (including Intellikey(s)) has been issued shall intentionally perform any of the following acts as described in Denver Municipal Airport System Rules and Regulations Part 20.04-10 and 20.04-12. The intentional commission of any such acts, due to their critical negative effect on the safety and security of Airport employees and the traveling public, is reason for immediate confiscation and suspension (and possible permanent revocation) of the Airport ID Badge, issuance of a Violation Notice, and a Violation Notice Hearing in accordance with Section 20.04-8.

13. SPECIAL CONDITIONS

During Phases 1 and 1A, Taxiway F between Taxiways F9 and F10 will be closed. The north radius of Taxiway F9 will also be closed to traffic. In addition to the airfield pavement closures, the snow road will be closed at the project site. No equipment or vehicles should be using this road during the construction time frame so minimal impact is expected. After Phase 1A is completed, Taxiway F between Taxiways F9 and F10 will be reopened for remaining duration of Phase 1.

During Phase 2, all traffic using Newbern St. at the project site location will be routed onto the snow road and around the project location.

During Phase 3, all traffic using Newbern St. from south of Taxilane F7 to the north of Taxilane WN will be redirected onto the snow road.

14. RUNWAY AND TAXIWAY VISUAL AIDS

A. EQUIPMENT AND METHODS FOR COVERING SIGNAGE AND AIRFIELD LIGHTS

Since this project will close portions of Taxiways F and F9, various guidance signs and lights will be required to be covered so not to confuse taxiing pilots. Signs and sign panels that provide guidance to closed pavements will be covered as directed by the Airport. Taxiway lights on closed taxiways that cannot be turned off because it shares common circuits with lights to remain operational shall be covered and secured per direction of the Airport. All coverings shall be properly installed to protect against jet blast or high winds.

B. EQUIPMENT AND METHODS FOR TEMPORARY CLOSURE MARKINGS (PAINT, FABRIC, OTHER)

Temporary Closed Runway

This is not applicable to this project.

Temporary Closed Taxiways

Both low profile lighted barricades and tubular flasher barricades will be used to delineate closed AOA pavements and limits of construction or hazardous areas. All barricades will be placed outside of active taxiway safety areas and will be spaced according to AC 150/5370-2G to prevent unauthorized access. In addition, a temporary taxiway closure X will be placed on Taxiway F during temporary closures of the taxiway within Phase 1 work.

Locations of planned barricades are as shown in the phasing documents attached at the back of this document.

Signs and sign panels that provide guidance to closed pavements will be covered as directed by the Airport to prevent misdirecting pilots to closed taxiways.

15. MARKING AND SIGNS FOR ACCESS ROUTES

All required signs and markings shall conform to either Advisory Circular 150/5340-18F, Standard for Airport Sign Systems, CDOT S-627-1 Pavement Markings or the Federal Highway Administration Manual on Uniform Traffic Control Devices (MUTCD). Signs adjacent to areas used by aircraft must comply with the frangible requirements as stated in Advisory Circular 150/5220-23 Frangible Connections. These signs will be directed by the Airport and/or the Owner's Representative and provided by the Contractor.

16. HAZARD MARKINGS AND LIGHTINGS

A. PURPOSE

The hazard marking and lighting prevent pilots from entering areas closed to aircraft, and prevents construction personnel from entering areas open to aircraft. Prior to construction on or adjacent to any taxiway, the Contractor shall, upon approval by the Airport, close the taxiway and begin work. The Contractor shall be responsible for clearly marking and defining the closed taxiways by use of warning lights, barricades, flags and closed taxiway or runway markings in conformance with Advisory Circular 150/5370-2G. The Contractor shall be responsible for maintaining these barricades and keeping them clearly visible at all times as detailed on the construction sheets.

B. EQUIPMENT

Approved low-profile barricades are to identify and define the limits of construction and hazardous areas on airports as detailed on the phasing sheets attached at the back of this document. Barricade spacing will be per Advisory Circular 150/5370-2G and as such that all aircraft are physically prevented from taxiing through the gaps in the barricades. The barricades must be weighted down per the manufacturer's recommendations to prevent the barricades from moving due to wind or jet blast.

The flashing lights on the approved barricades must meet the luminance requirement of the CDOT. The flashing lights must be red or an approved equal.

The Contractor may also utilize approved tubular flasher barricades as approved by the Airport. The location of the tubular flasher barricades is specified on the Construction Safety Drawings.

All barricades will be placed outside of all active taxiway safety areas.

17. PROTECTION OF RUNWAY AND TAXIWAY AREAS

A. RUNWAY SAFETY AREA (RSA)

The limits of this project will be outside the runway safety area of all Runways. Therefore, no runway safety areas will require protection.

B. RUNWAY OBJECT FREE AREA (ROFA)

The limits of this project will be outside the runway object free area of all Runways. Therefore, no runway object free areas will require protection.

C. TAXIWAY SAFETY AREA (TSA)

Portions of Taxiways F and F9 will be closed during Phase 1A of the project. When these taxiways are closed, they will be shutdown for the entire duration of the phase. Barricades will be placed delineating the closed taxiway areas during the current phase. During these closures, TSA grading will occur to accommodate the new pavement being constructed and to ensure drainage is maintained in affected areas. No contractor employees or equipment will be allowed to enter adjacent safety areas of taxiways that are still open for aircraft operations.

D. TAXIWAY OBJECT FREE AREA (TOFA)

Portions of Taxiways F and F9 will be closed during specific phases of the project. When these taxiways are closed, they will be shutdown for the entire duration of the phase. Barricades will be placed delineating the closed taxiway areas during the current phase. There will be work performed within the TOFA of Taxiway F during Phase 1A while it is shutdown. At all other times during the project, no work, equipment, or material stockpiles will be allowed in the TOFA of any active taxiways.

E. OBSTACLE FREE ZONE (OFZ)

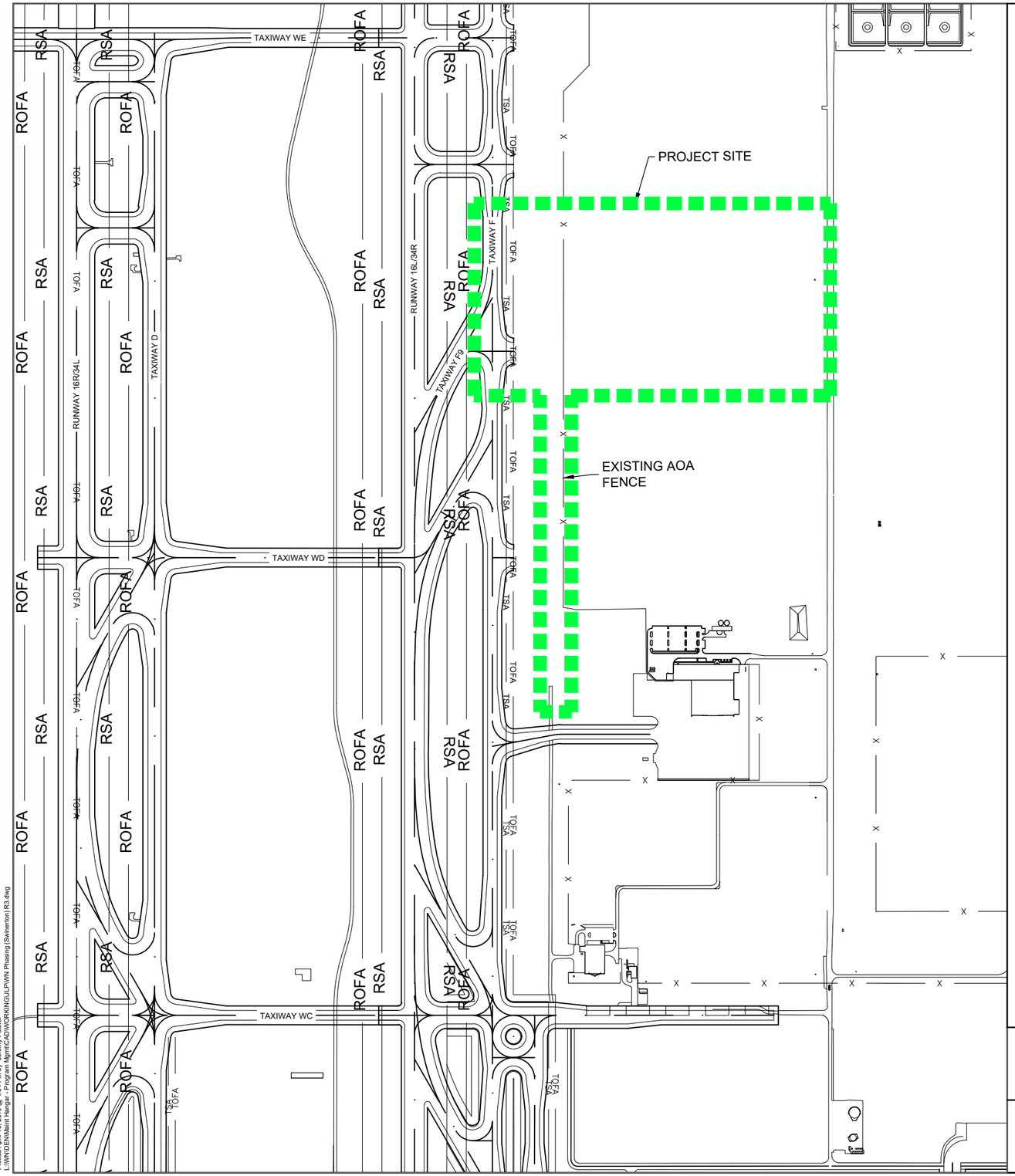
This is not applicable to this project.

F. RUNWAY APPROACH/DEPARTURE SURFACES

This is not applicable to this project.

18. OTHER LIMITATIONS ON CONSTRUCTION

This is not applicable to this project.



LEGEND	DURATION	0 — 130 — 260
PHASE 1	107 CALENDAR DAYS	(07/01/2019 TO 10/15/2019)
PHASE 1A	93 CALENDAR DAYS	(07/01/2019 TO 10/01/2019)
PHASE 2	92 CALENDAR DAYS	(10/01/2019 TO 12/31/2019)
PHASE 3	61 CALENDAR DAYS	(03/01/2020 TO 04/30/2020)
TOTAL CONSTRUCTION DURATION		260 CALENDAR DAYS

PROJECT NOTES:

WORK INVOLVING THE AOA SHALL BEGIN ON 07/01/2019 AND ALL WORK SHALL BE COMPLETED ON 04/30/2020 FOR A TOTAL OF 260 CALENDAR DAYS.

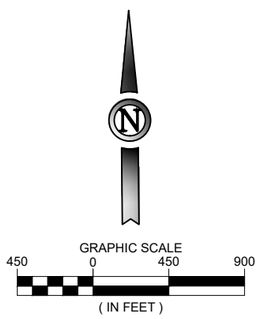
1. PHASE 1 WORK INCLUDES, BUT IS NOT LIMITED TO RELOCATION OF THE AOA FENCE, GRADING AND EARTHWORK OPERATIONS, AND ASPHALT AND CONCRETE PAVING. PHASE 1A WORK WILL BE COMPLETED CONCURRENTLY WITH PHASE 1, AND WILL INCLUDE THE WORK IN PHASE 1 THAT IS INSIDE THE TAXIWAY F TOFA.
2. PHASE 2 WORK INCLUDES, BUT IS NOT LIMITED TO RELOCATION OF THE AOA FENCE, GRADING AND EARTHWORK OPERATIONS, AND ASPHALT AND CONCRETE PAVING. AIRCRAFT MOVEMENT WILL BE IMPACTED DURING THIS PHASE.
3. PHASE 3 WORK INCLUDES, BUT IS NOT LIMITED TO EARTHWORK OPERATIONS, AND ASPHALT PAVING OF NEWBERN STREET.
4. THE CONTRACTOR'S ACCESS GATE MUST BE LOCKED AT ALL TIMES UNLESS MANNED BY A MINIMUM OF TWO (2) GATE GUARDS. GATE GUARDS WILL BE SUPPLIED BY HSS AND PAID FOR BY THE CONTRACTOR WHENEVER THE CONTRACTOR USES THE CONSTRUCTION ACCESS INTO THE AIRPORT OPERATIONS AREA (AOA). THE AOA IS GENERALLY DEFINED AS THE AREA INSIDE THE AIRPORT SECURITY FENCE. THE CONTRACTOR SHALL CONTACT HSS SECURITY DIRECTLY TO SCHEDULE GATE GUARD, AND THE CONTRACTOR MUST COMPLY WITH ALL OTHER ACCESS CONTROL REQUIREMENTS.
5. THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING ANY DAMAGE TO ANY PAVED ROADWAY DUE TO HAULING ACTIVITIES AT NO COST TO THE OWNER.
6. ALL CONSTRUCTION SIGNS ARE TYPICAL CDOT ROAD CONSTRUCTION SIGNS WITH ORANGE BACKGROUND AND BLACK LETTERS.

DETAIL 1
N.T.S.

NOTE:

1. SIGN TO BE INSTALLED FACING EAST WITH ARROW POINTING SOUTH.

DETAIL 2
N.T.S.



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OVERALL SITE

DATE: APRIL, 2019

SHEET: 1 OF 7

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GENERAL CONSTRUCTION SAFETY NOTES:

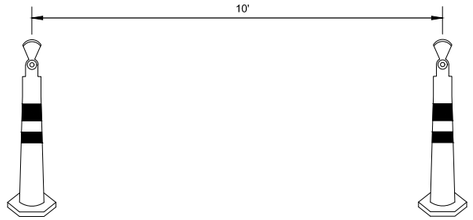
1. THE CONTRACTOR SHALL COMPLY WITH ALL LOCAL, STATE, AND FEDERAL LAWS AND REGULATIONS AND CONSTRUCTION PERMITS THAT ARE PERTINENT TO THIS WORK.
2. THE CONTRACTOR SHALL FIELD VERIFY THE LOCATION AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL REPAIR ANY DAMAGES TO UTILITIES OR EQUIPMENT, AS DIRECTED BY THE OWNERS REPRESENTATIVE, IMMEDIATELY AND AT THE CONTRACTORS EXPENSE. IN THE EVENT OF DAMAGE TO EXISTING UTILITIES AND CABLES THAT ARE TO REMAIN, THE OWNERS REPRESENTATIVE AND AIRPORT OPERATIONS ARE TO BE NOTIFIED IMMEDIATELY.
3. THE CONTRACTOR SHALL CONTROL DUST FROM THE OPERATIONS TO A LEVEL ACCEPTABLE TO THE OWNERS REPRESENTATIVE AND IN ACCORDANCE WITH ALL APPLICABLE PERMITS AT ALL TIMES. THE CONTRACTOR SHALL HAVE AVAILABLE VACUUM BROOMS, WATERING TRUCKS AND OTHER EQUIPMENT NECESSARY TO CONTROL DUST AND DEBRIS AT ALL TIMES. ALL METHODS FOR CONTROLLING DUST AND DEBRIS SHALL BE SUBJECT TO THE OWNERS REPRESENTATIVE'S APPROVAL. DUST AND DEBRIS CONTROL SHALL BE STRICTLY MONITORED DUE TO IT'S IMPACT ON AIRCRAFT SAFETY. FAILURE TO PROPERLY CONTROL DUST AND DEBRIS OR TO RESPOND TO ANY REQUESTS TO DO SO WILL RESULT IN CONSTRUCTION ACTIVITIES BEING STOPPED BY THE OWNERS REPRESENTATIVE UNTIL DUST AND DEBRIS CAN BE PROPERLY CONTROLLED. ALL LOST TIME WILL COUNT AGAINST THE CONTRACTOR'S CONTRACT DURATION.
4. THE CONTRACTOR SHALL COOPERATE WITH EXISTING AND FUTURE CONTRACTORS WORKING IN THE AREA. AT ALL TIMES CONTRACTOR SHALL COORDINATE THEIR EFFORTS TO MAINTAIN THE NECESSARY CONSTRUCTION ACCESS ROUTES AND TO ASSURE ALL CONTRACTS CONTINUE ON A TIMELY BASIS.
5. WEEKLY MEETINGS SHALL BE HELD BY THE CONTRACTOR WITH THE OWNERS REPRESENTATIVE AND OTHER INTERESTED PARTIES TO COORDINATE THE CLOSURES, WORK AREAS AND CONSTRUCTION SCHEDULES. ADDITIONAL MEETINGS SHALL BE HELD AS NECESSARY.
6. CONTRACTOR TO PLACE CONES AROUND ALL TRENCHES AND PAVEMENT REMOVAL AREAS. CONES ARE TO BE PLACED AROUND PAVEMENT REMOVAL AREAS PRIOR TO DEMOLITION AND SHALL REMAIN IN-PLACE UNTIL CONCRETE HAS CURED OR ASPHALT IS PAVED AND ROLLED.

SAFETY NOTES:

1. THE CONTRACTOR, SUBCONTRACTORS, AND OTHER PERSONNEL SHALL BE REQUIRED TO STAY WITHIN THE DEFINED WORK AREA LIMITS.
2. THE AIRPORT WILL REMAIN IN OPERATION DURING CONSTRUCTION. AIRCRAFT WILL HAVE THE RIGHT OF WAY AT ALL TIMES. CONTRACTOR SHALL NOT TRAVEL ON ANY ACTIVE SURFACES.
3. BECAUSE THE CONSTRUCTION IS NEAR ACTIVE TAXIWAYS AND RUNWAYS, ALL CONSTRUCTION ACTIVITIES SHALL BE CONDUCTED IN A MANNER ACCEPTABLE TO THE OWNERS REPRESENTATIVE TO PROVIDE ACCEPTABLE LEVELS OF SAFETY FOR ALL AIRPORT OPERATIONS AND CONTRACTOR PERSONNEL.
4. THE CONTRACTOR SHALL COMPLY WITH ALL MARKING, LIGHTING, AND PRECAUTIONARY PROVISIONS ESTABLISHED BY FAA ADVISORY CIRCULAR AC 150/5370-2, CURRENT EDITION.
5. PRIOR TO DAILY OPENING ANY TAXIWAY OR TAXILANE THE CONTRACTOR SHALL REMOVE ALL MATERIALS AND FOREIGN OBJECT DEBRIS (FOD) FROM THE PAVEMENT SURFACES. ONCE THE PAVEMENTS ARE CLEARED FOR AIRCRAFT OPERATIONS BY THE AIRPORT OPERATIONS, THE CONTRACTOR SHALL REMOVE THE BARRICADES.
6. ALL ELEMENTS OF THE CONSTRUCTION SHALL BE DONE IN SUCH A MANNER THAT, AT THE END OF THE CLOSURE PERIOD, THE SAFETY AREA WILL BE IN A CONDITION SUITABLE TO AIRPORT OPERATIONS. THE SAFETY AREA CONDITION SHALL BE SUBJECT TO THE OWNERS REPRESENTATIVE AND AIRPORT OPERATIONS APPROVAL. THE CONTRACTOR SHALL SWEEP THE ACTIVE PAVEMENTS AT A FREQUENCY AS DETERMINED BY OWNERS REPRESENTATIVE.
7. CONTRACTOR SHALL PREPARE A DETAILED CONSTRUCTION SCHEDULE FOR EACH CONSTRUCTION PHASE. THE CONSTRUCTION SCHEDULE SHALL BE COMPLETED AND SUBMITTED TO THE OWNERS REPRESENTATIVE FOR REVIEW A MINIMUM OF TEN (10) WORKING DAYS PRIOR TO THE SCHEDULED PRE-CONSTRUCTION CONFERENCE. SUBSEQUENT REVISIONS TO THE SCHEDULE SHALL BE SUBMITTED AT WEEKLY CONSTRUCTION MEETINGS.
8. DEN RESERVES THE RIGHT TO POTENTIALLY OPEN AND USE AIRFIELD PAVEMENTS NECESSARY TO SMGCS OPERATIONS AND ROUTES AND/OR DEICING OPERATIONS AT THE DISCRETION OF THE AIRPORT. THE CONTRACTOR SHALL COMPLY WITH THE AIRPORT'S DIRECTIONS AT NO ADDITIONAL COST TO THE OWNER.

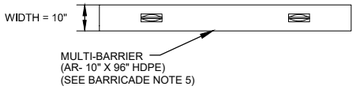
BARRICADE NOTES:

1. BARRICADES SHALL BE PROVIDED BY THE CONTRACTOR. THE CONTRACTOR WILL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF ALL BARRICADES.
2. FLASHERS TO BE SOLAR POWERED. LENS TO BE RED AND BE ABLE TO ROTATE 90°.
3. FACING OF LOW-PROFILE FLASHER AND TUBULAR FLASHER BARRICADE(S) TO BE COVERED WITH REFLECTIVE MATERIAL.
4. LOW-PROFILE BARRICADES TO BE INTERLOCKED ALONG OPERATIONAL PAVEMENT, ADJACENT TO CONSTRUCTION, AS DIRECTED BY THE OWNERS REPRESENTATIVE.
5. TUBULAR FLASHER BARRICADES TO BE PLACED AT CORNERS OF EXCAVATED AREA.
6. FLASHERS SHALL BE SECURED TO THE BARRICADES, AS APPROVED BY AIRPORT OPERATIONS. ALTERNATE FLASHER LENSES SO THAT EVERY OTHER LENS IS ROTATED 90°.
7. LOW-PROFILE BARRICADES SHALL BE OF LOW MASS, EASILY COLLAPSIBLE UPON CONTACT WITH AN AIRCRAFT OR ANY OF ITS COMPONENTS, AND WEIGHTED.
8. TUBULAR FLASHER BARRICADES SHALL BE 42" GRABBER TUBE WITH 16 LB RUBBER BASE, OR APPROVED EQUAL.
9. THE CONTRACTOR SHALL MAINTAIN ALL BARRICADES DURING DAYLIGHT HOURS. CONTRACTORS SHALL ALSO PROVIDE THE AIRPORT SPARE BATTERIES AND LIGHTBULBS (IF NECESSARY) FOR MAINTENANCE DURING NIGHTTIME HOURS.
10. ALL BARRICADES SHALL HAVE FUNCTIONAL FLASHERS AT ALL TIMES DURING CONSTRUCTION.

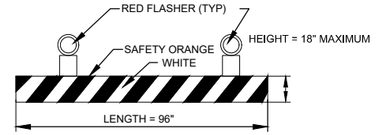


TUBULAR FLASHER BARRICADE

N.T.S.



PLAN



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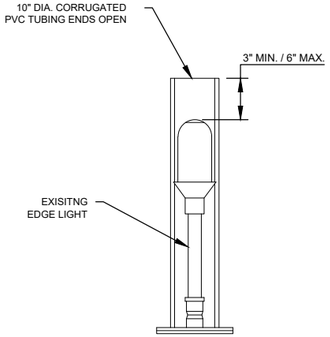


NOTES:

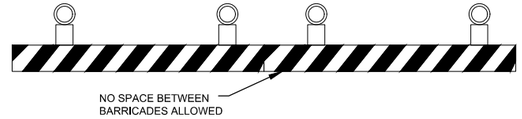
1. CONTRACTOR TO ENSURE NO DAMAGE WHEN PLACING AND REMOVING 10" DIAMETER CORRUGATED PVC TUBING.
2. ANY DAMAGE TO TAXIWAY EDGE LIGHTS WILL REQUIRE REPLACEMENT OF TAXIWAY EDGE LIGHTS AT CONTRACTOR'S EXPENSE.

TEMPORARY COVERED TAXIWAY EDGE LIGHT DETAIL

N.T.S.

LOW PROFILE FLASHER BARRICADE DETAIL

NO SCALE



TYPICAL BARRICADE PLACEMENT DETAIL

NO SCALE

NOTE:

1. FLASHER BARRICADES WILL BE REQUIRED ALONG THE EDGE OF ANY VERTICAL DROP OFF GREATER THAN 3". DEN OPERATIONS WILL ISSUE NOTAM TO ADVISE AIRCRAFT OF THIS CONDITION.

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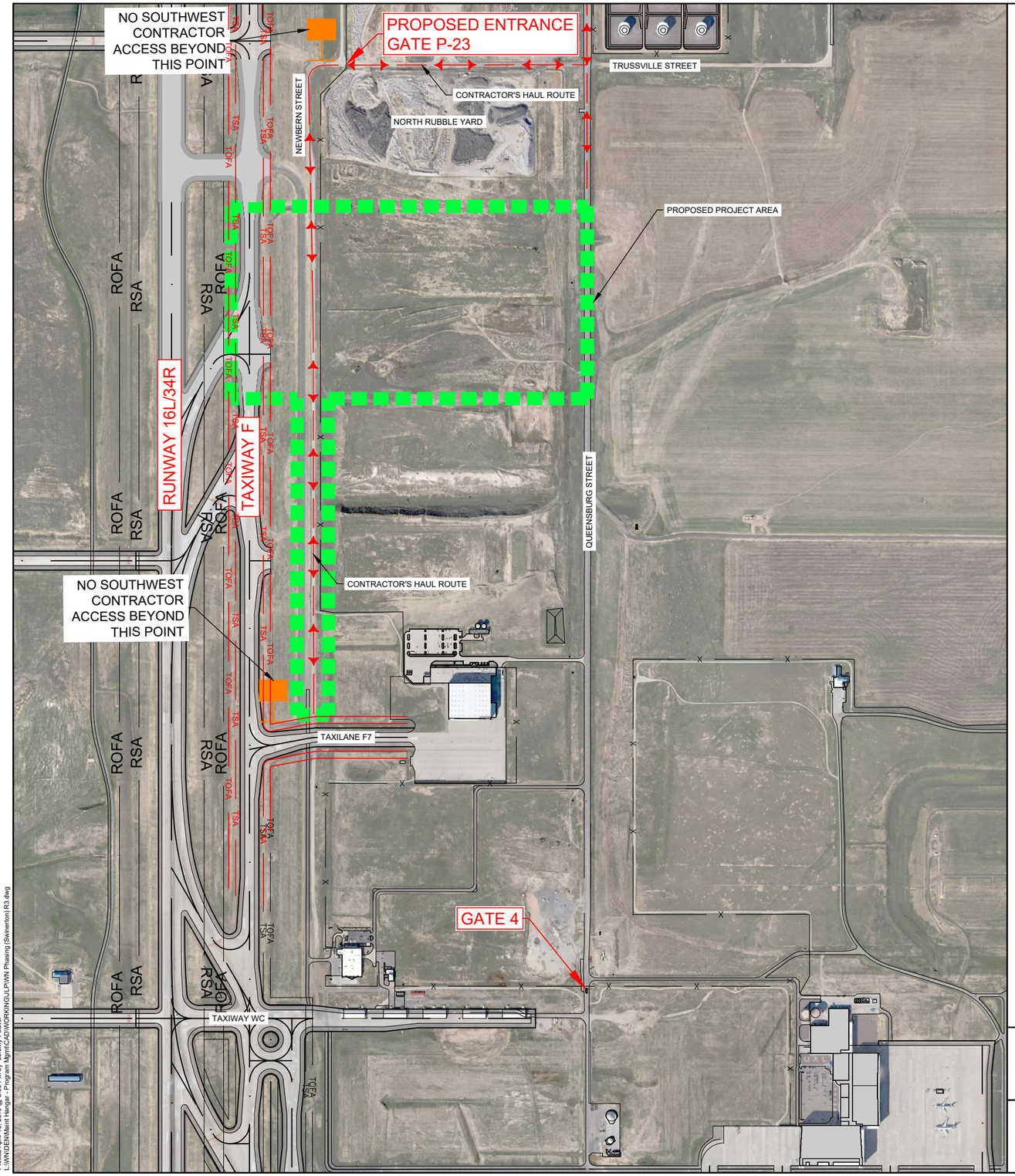
SAFETY NOTES AND DETAILS

DATE: APRIL, 2019 SHEET: 2 OF 7



LEGEND

- PROJECT LIMITS
- HAUL ROUTE
- CONTRACTOR TRAFFIC GUIDANCE SIGN

ACCESS NOTES:

1. SIGNS SHALL BE POSTED AT ALL AREAS ALONG NEWBERN STREET THAT WILL NOT BE ACCESSIBLE TO THE CONTRACTOR FOR THIS PROJECT.
2. CONTRACTOR SHALL FOLLOW ALL DEN REQUIREMENTS ACCESSING THE AIRFIELD.
3. ALL LOADS TO BE HAULED IN THE AOA SHALL BE COVERED.

GRAPHIC SCALE
450 0 450 900
(IN FEET)

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CONTRACTOR ACCESS PLAN

DATE: APRIL, 2019 SHEET: 3 OF 7

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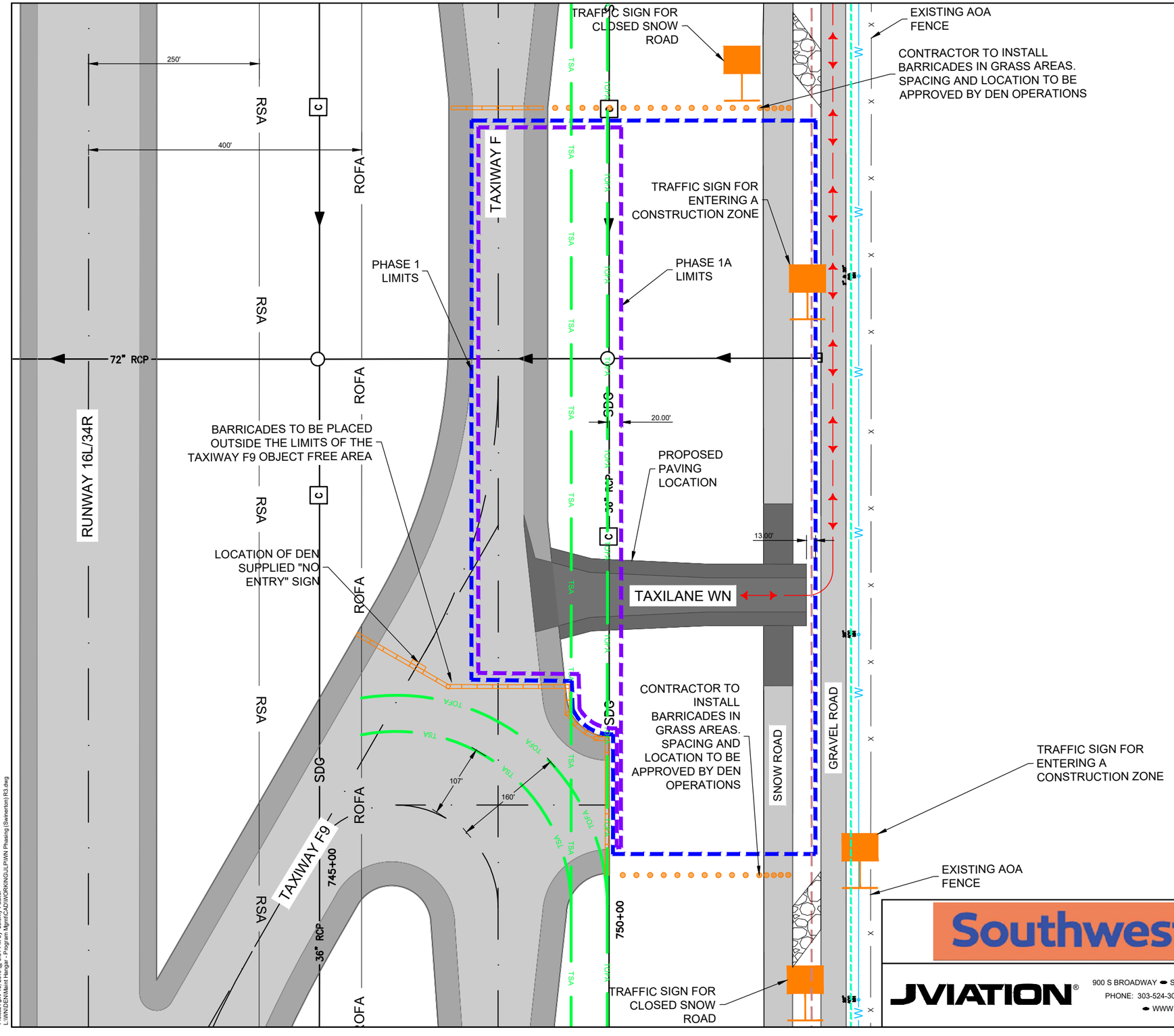

LEGEND

- PHASE 1 LIMIT
- PHASE 1A LIMIT
- HAUL ROUTE
- LOW PROFILE BARRICADES
- TAXIWAY SAFETY AREA (ADG V)
- TAXIWAY OBJECT FREE AREA (ADG V)
- XCEL DUCTBANK
- PWCS COMMUNICATION LINE
- CONTRACTOR TRAFFIC GUIDANCE SIGN
- TUBULAR FLASHER BARRICADE
- PROPOSED CONCRETE PAVEMENT
- PROPOSED ASPHALT PAVEMENT
- EXISTING CONCRETE PAVEMENT
- EXISTING ASPHALT PAVEMENT
- TEMPORARY CROSSOVER

PHASING NOTES:

1. WORK ON PHASE 1 SHALL BEGIN ON 07/01/2019 AND ALL WORK WITHIN PHASE 1 SHALL BE COMPLETED ON 10/15/2019 FOR A TOTAL OF 107 CALENDAR DAYS.
2. ON PHASE 1A SHALL BEGIN ON 07/01/2019 AND ALL WORK WITHIN PHASE 1A SHALL BE COMPLETED ON 10/01/2019 FOR A TOTAL OF 93 CALENDAR DAYS. PHASE 1A WORK SHALL BE CONCURRENT WITH PHASE 1. THE WORK TO BE COMPLETED IN PHASE 1A INCLUDES ALL WORK FROM TAXIWAY F TO A LINE 20-FEET EAST OF THE TAXIWAY F TOFA.
3. PHASE 1 WORK INCLUDES, BUT IS NOT LIMITED TO RELOCATION OF THE AOA FENCE, GRADING AND EARTHWORK OPERATIONS, AND ASPHALT AND CONCRETE PAVING
4. TEMPORARY AOA FENCE SHALL HAVE A MINIMUM 3 FOOT CLEAR ZONE ON BOTH SIDES.
5. THE CONTRACTOR SHALL PLACE A "NO ENTRY" SIGN ON THE CENTERLINE OF THE NORTH RADIUS OF TAXIWAY F9, BEHIND THE PROPOSED BARRICADES. THE "NO ENTRY" SIGN SHALL BE SUPPLIED BY DEN.
6. A TRAFFIC CONTROL PLAN SHALL BE SUBMITTED BY THE CONTRACTOR FOR REVIEW. TRAFFIC CONTROL IN ADDITION TO WHAT HAS BEEN SHOW MAY BE REQUIRED.
7. DURING PHASE 1, TAXIWAY F WILL BE CLOSED BETWEEN TAXIWAY F9 AND F10. THE SOUTHERN RADIUS OF TAXIWAY F9 SHALL BE KEPT OPERATIONAL AT ALL TIMES.
8. CONTRACTOR TO VERIFY TRAFFIC ON SNOW ROAD DURING CONSTRUCTION PERIOD. IF NECESSARY, TRAFFIC FROM THE SNOW ROAD WILL BE REDIRECTED TO THE GRAVEL ROAD DURING THIS PHASE.
9. ALL HAULING OPERATIONS IN THE AOA SHALL BE BY COVERED TRUCKS.
10. THE CONTRACTOR SHALL CONTROL DUST FROM THE OPERATIONS TO A LEVEL ACCEPTABLE TO THE OWNERS REPRESENTATIVE AND IN ACCORDANCE WITH ALL APPLICABLE PERMITS AT ALL TIMES. THE CONTRACTOR SHALL HAVE AVAILABLE VACUUM BROOMS, WATERING TRUCKS AND OTHER EQUIPMENT NECESSARY TO CONTROL DUST AND DEBRIS AT ALL TIMES. ALL METHODS FOR CONTROLLING DUST AND DEBRIS SHALL BE SUBJECT TO THE OWNERS REPRESENTATIVE'S APPROVAL. DUST AND DEBRIS CONTROL SHALL BE STRICTLY MONITORED DUE TO IT'S IMPACT ON AIRCRAFT SAFETY. FAILURE TO PROPERLY CONTROL DUST AND DEBRIS OR TO RESPOND TO ANY REQUESTS TO DO SO WILL RESULT IN CONSTRUCTION ACTIVITIES BEING STOPPED BY THE OWNERS REPRESENTATIVE UNTIL DUST AND DEBRIS CAN BE PROPERLY CONTROLLED. ALL LOST TIME WILL COUNT AGAINST THE CONTRACTOR'S CONTRACT DURATION.

GRAPHIC SCALE
75 0 75 150
(IN FEET)

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PHASE 1

DATE: APRIL, 2019 SHEET: 4 OF 7

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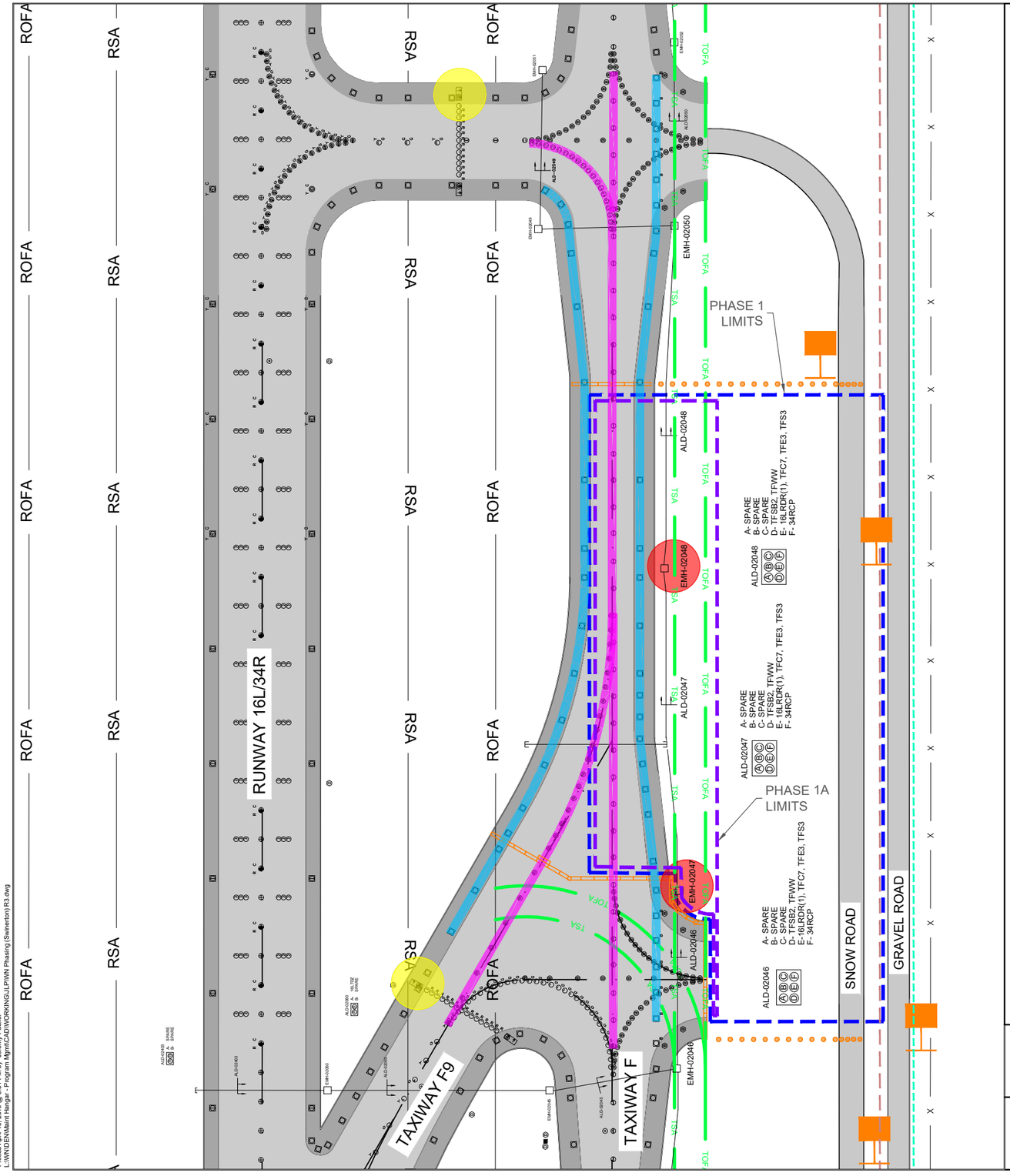

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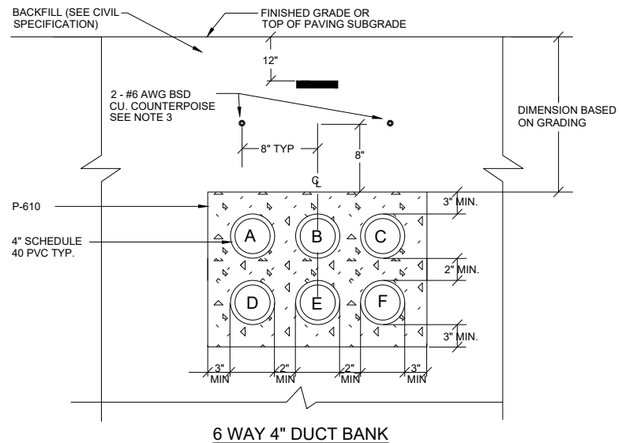
ELECTRICAL NOTES:

1) IN ORDER TO ENTER ANY ELECTRICAL MANHOLE, ALL CIRCUITS CONTAINED WITHIN MUST BE DE-ENERGIZED.

2) CIRCUITING FOR THE DUCT BANK RUN BETWEEN ELECTRICAL MANHOLES ALD-02047 AND ALD-02048 IS SHOWN IN THE DRAWINGS. THIS INFORMATION IS PROVIDED FOR A REFERENCE ONLY AND MAY NOT REPRESENT THE CURRENT IN-PLACE CONDITIONS. THE CONTRACTOR SHALL VERIFY THE CURRENT CIRCUIT LAYOUT PRIOR TO DE-ENERGIZING ANY CIRCUITS.

LEGEND

- PHASE 2 LIMIT
- EDGE LIGHTS TO BE COVERED
- CENTERLINE LIGHTS TO BE TAPED
- LOW PROFILE BARRICADES
- TSA — TAXIWAY SAFETY AREA (ADG V)
- TOFA — TAXIWAY OBJECT FREE AREA (ADG V)
- XCEL DUCTBANK
- PWCS COMMUNICATION LINE
- GUIDANCE SIGN TO BE PARTIALLY COVERED
- MANHOLES TO BE ACCESSED FOR THE PROJECT
- CONTRACTOR TRAFFIC GUIDANCE SIGN
- TUBULAR FLASHER BARRICADE
- EXISTING CONCRETE PAVEMENT
- EXISTING ASPHALT PAVEMENT



6 WAY 4" DUCT BANK
CONCRETE ENCASED
N.T.S.

DUCTBANK NOTES:

1) INSTALL AN APPROVED RED PLASTIC, DETECTABLE, MAGNETIC, 4" WIDE TAPE 12" BELOW FINISHED GRADE ABOVE ALL PORTIONS OF DUCT BANKS AND CONDUITS NOT INSTALLED UNDER AIRFIELD PAVEMENTS.

2) SEE BASE CAN INSTALLATION DETAILS FOR 2" SCHED. 40 PVC INSTALLATION DETAILS UNDER AIRFIELD PAVEMENTS.

3) THE COUNTERPOISE SHALL BE POSITIONED ACCORDINGLY: SEE DETAILS

a) 8"/10" ABOVE THE DUCT/DUCT BANK (INCLUDING CONCRETE) CENTERLINE WHEN INSTALLED AT RIGHT ANGLES TO OR UNDER PAVEMENT OR IN GRASSY AREAS.

b) 8"/10" ABOVE THE DUCT BANK (INCLUDING CONCRETE) ON THE SIDE OF THE DUCT BANK RUNNING PARALLEL WITH THE PAVEMENT AND THE DUCT BANK IS WITHIN 20' OF THE PAVEMENT EDGE.

c) EXCEPTIONS MAY HAVE TO BE MADE TO (A) AND (B) ABOVE UNDER FULL STRENGTH PAVEMENT, THE 8" WILL VARY, DEPENDANT ON BASE AND PAVEMENT THICKNESS.

d) TWO COUNTERPOISE CONDUCTORS MAY BE REQUIRED, SEE DUCTBANK DETAILS.

4) THE DEPTH OF THE BURIAL TO THE TOP OF THE DUCT BANK MUST BE A MINIMUM OF 36" BELOW UNPAVED AREAS AND A MINIMUM OF 24" BELOW THE SUBGRADE AT THE CROWN OF ANY PAVEMENT. ALSO SEE SPECIFICATIONS AND AIRFIELD DUCT PLANS.

5) ALL BACKFILL SHALL COMPLY WITH THE CIVIL SPECIFICATIONS.

Southwest

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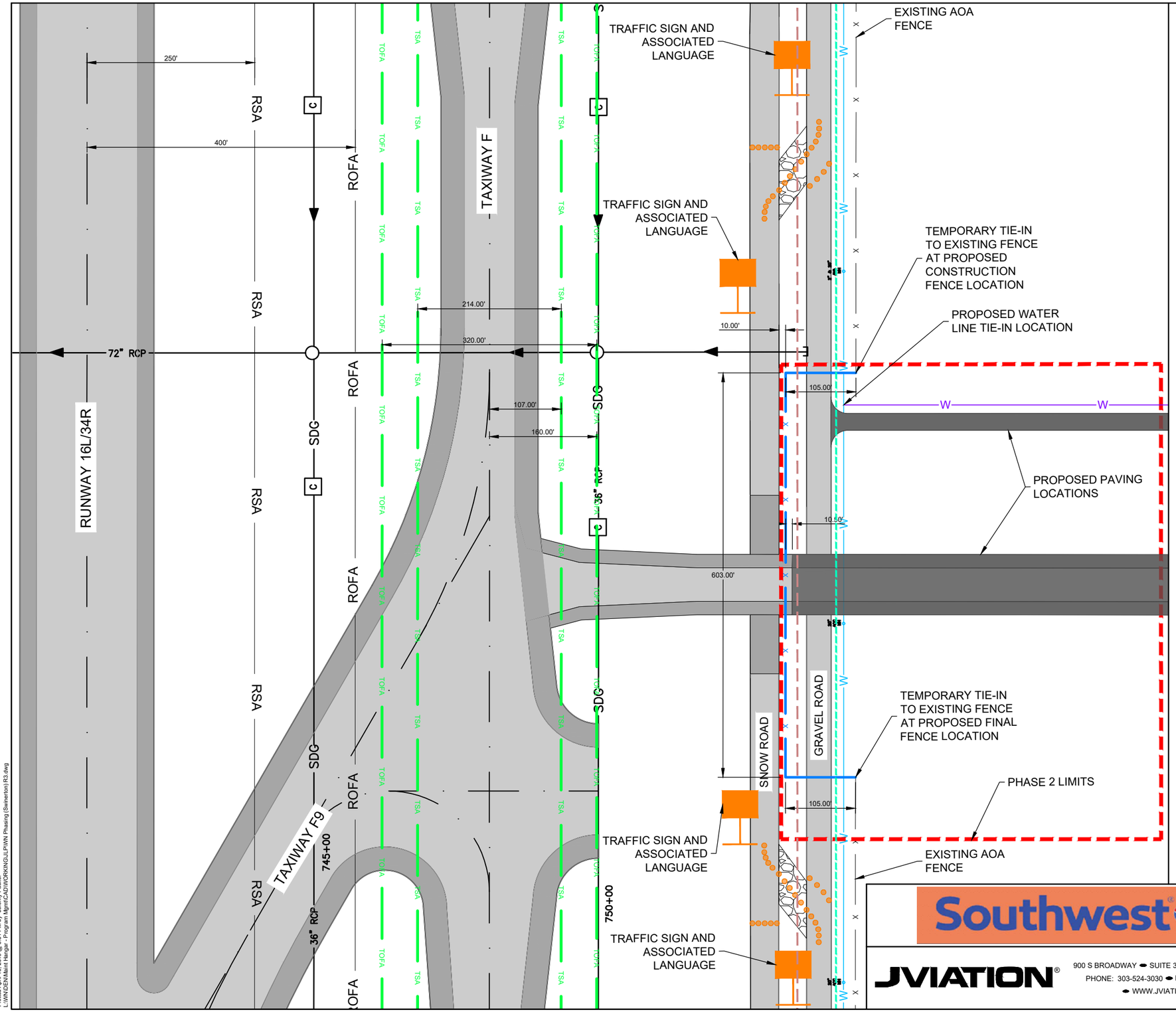
900 S BROADWAY ⬬ SUITE 350 ⬬ DENVER, CO 80209
PHONE: 303-524-3030 ⬬ FAX: 303-524-3031
⬬ WWW.JVIATION.COM ⬬

PHASE 1 ELECTRICAL

DATE: APRIL, 2019



LEGEND

- PHASE 2 LIMITS
- HAUL ROUTE
- LOW PROFILE BARRICADES
- TAXIWAY SAFETY AREA (ADG V)
- TAXIWAY OBJECT FREE AREA (ADG V)
- XCEL DUCTBANK
- PWCS COMMUNICATION LINE
- CONTRACTOR TRAFFIC GUIDANCE SIGN
- TUBULAR FLASHER BARRICADES
- PROPOSED CONCRETE PAVEMENT
- PROPOSED ASPHALT PAVEMENT
- EXISTING CONCRETE PAVEMENT
- EXISTING ASPHALT PAVEMENT
- TEMPORARY CROSSOVER

PHASING NOTES:

WORK ON PHASE 2 SHALL BEGIN ON 10/01/2019 AND ALL WORK WITHIN PHASE 1 SHALL BE COMPLETED ON 12/31/2019 FOR A TOTAL OF 92 CALENDAR DAYS.

1. PHASE 2 WORK INCLUDES, BUT IS NOT LIMITED TO RELOCATION OF THE AOA FENCE, GRADING AND EARTHWORK OPERATIONS, AND ASPHALT AND CONCRETE PAVING.
2. TEMPORARY AOA FENCE SHALL HAVE A MINIMUM 3 FOOT CLEAR ZONE ON BOTH SIDES.
3. TRAFFIC FROM THE GRAVEL ROAD WILL BE REDIRECTED OVER A TEMPORARY CROSSING TO THE SNOW ROAD DURING CONSTRUCTION OPERATIONS.
4. A TRAFFIC CONTROL PLAN SHALL BE SUBMITTED BY THE CONTRACTOR FOR REVIEW. TRAFFIC CONTROL IN ADDITION TO WHAT HAS BEEN SHOWN MAY BE REQUIRED.
5. NO ACTIVE AIRFIELD PAVEMENT WILL BE IMPACTED DURING THIS PHASE.

GRAPHIC SCALE
75 0 75 150
(IN FEET)

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PHASE 2

DATE: APRIL, 2019 SHEET: 6 OF 7

Plotted April 16, 2019 @ 3:41 PM by Jeremy Parker
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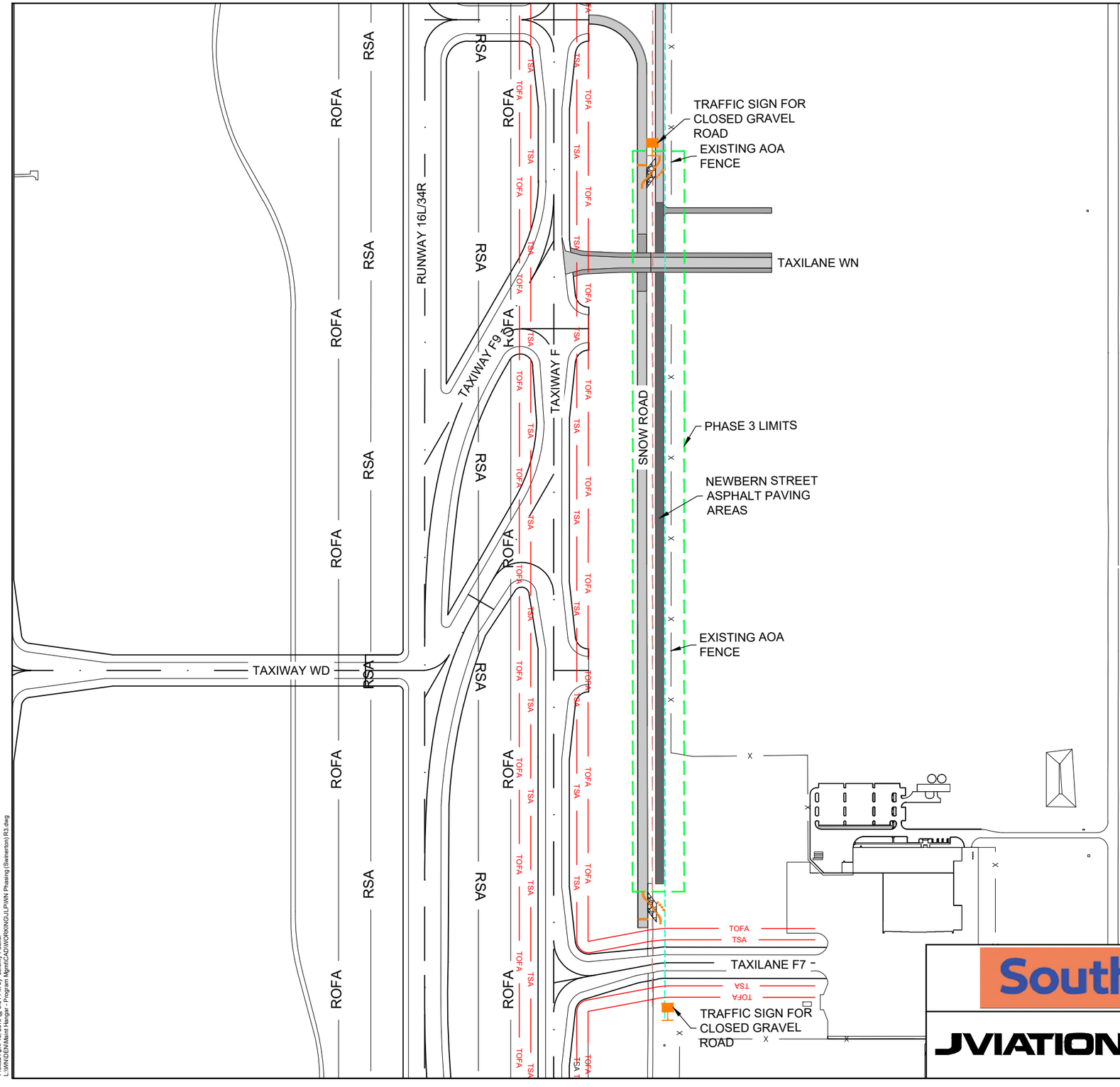

LEGEND

- PHASE 3 LIMITS
- HAUL ROUTE
- LOW PROFILE BARRICADES
- TSA — TAXIWAY SAFETY AREA (ADG V)
- TOFA — TAXIWAY OBJECT FREE AREA (ADG V)
- XCEL DUCTBANK
- PWCS COMMUNICATION LINE
- CONTRACTOR TRAFFIC GUIDANCE SIGN
- TUBULAR FLASHER BARRICADES
- PROPOSED CONCRETE PAVEMENT
- PROPOSED ASPHALT PAVEMENT
- EXISTING CONCRETE PAVEMENT
- EXISTING ASPHALT PAVEMENT
- TEMPORARY CROSSOVER

PHASING NOTES:

WORK ON PHASE 3 SHALL BEGIN ON 03/01/2020 AND ALL WORK WITHIN PHASE 3 SHALL BE COMPLETED ON 04/30/2020 FOR A TOTAL OF 61 CALENDAR DAYS.

1. PHASE 3 WORK INCLUDES, BUT IS NOT LIMITED TO EARTHWORK OPERATIONS, AND ASPHALT PAVING OF NEWBERN STREET.
2. TEMPORARY AOA FENCE SHALL HAVE A MINIMUM 3 FOOT CLEAR ZONE ON BOTH SIDES.
3. TRAFFIC FROM THE GRAVEL ROAD WILL BE REDIRECTED OVER A TEMPORARY CROSSING TO THE SNOW ROAD DURING CONSTRUCTION OPERATIONS.
4. A TRAFFIC CONTROL PLAN SHALL BE SUBMITTED BY THE CONTRACTOR FOR REVIEW. TRAFFIC CONTROL IN ADDITION TO WHAT HAS BEEN SHOWN MAY BE REQUIRED.
5. NO ACTIVE AIRFIELD PAVEMENT WILL BE IMPACTED DURING THIS PHASE.

GRAPHIC SCALE
250 0 250 500
(IN FEET)

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PHASE 3

DATE: APRIL 2019

SHEET: 7 OF 7

Plotted April 16, 2019 @ 3:51 PM by Jeremy Parker
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FINAL AOA FENCE LOCATION

NORTH RECYCLING YARD

AOA FENCE

APPROX. LEASE LINE / AOA FENCE

AOA FENCE

APPROX. LEASE LINE

TAXIWAY F

FUTURE TAXIWAY G

FUTURE VSR

FAA AIRFIELD HOLDING MARKINGS, ADG VI DISTANCE FROM TAXIWAY F REFER TO FAA STANDARDS

NEW TAXILANE , SHOULDER AND THROAT, SEE CIVIL

NORTH JEWEBERN ST. (EXISTING SNOW ROAD)

EXISTING GRAVEL ROAD TO BE PAVED AND EXTEND FROM THE SOUTH, SEE CIVIL DWGS

DEN AIRPORT AIRFIELD HOLD MARKINGS FOR ADG III REFER TO DEN STANDARDS

FUTURE APRON EXPANSION

FUTURE APRON EXPANSION

FUTURE APRON EXPANSION

25'-0" CLEAR OPENING SWING GATE, PAD-LOCKED CONTROLLED BY DEN, CONTRACTOR TO COORD. WITH DEN SECURITY

TRANSFORMER & GENERATOR, REFER TO ELEC. DWGS

PROVIDE KNOX BOX

FUTURE FACILITY EXPANSION

EMPLOYEE PARKING (155 SPACES)

PROVIDE KNOX BOX

FIRE DEPARTMENT CONECTION

UTILITY YARD

FIRE LANE

HANGAR BUILDING

EQUIPMENT STAGING

LINED FOAM STORAGE POND, SEE CIVIL

AS1-00-01

FIRE PUMP BLDG AND WATER STORAGE TANK, SEE CIVIL AND PLUMBING

CHAINLINK FENCE WITH 10'-0" WIDE OPENING AND ACCESS GATE

ENTRANCE AND EXIT GATES, ACCESS CONTROL & SLIDING GATES, SEE CIVIL (ACCESS CONTROL AT ENTRY ONLY)

MONUMENTAL SIGNAGE, REFER TO DETAIL IN5-00-02

PAVED ROAD, SEE CIVIL

(2) 50'-0" FLAG POLES, SEE CIVIL AND ELEC.

ADMIN & VISITOR PARKING (21 SPACES)

LOADING DOCK GUARD RAIL w/CURB

25'-0" CLEAR OPENING SWING GATE, PAD-LOCKED CONTROLLED BY DEN, CONTRACTOR TO COORD. WITH DEN SECURITY

CHAINLINK FENCED AREA FOR ENGINE STORAGE WITH SLIDING GATE AND CANOPY

STORAGE CANOPY WITH ELEVATED CONTAINMENT SLAB, SEE CIVIL DRAWINGS

CHAINLINK FENCED AREA WITH CANOPY FOR PCA UNITS

QUEENSBURG ST.

APPROX. LEASE LINE

FUTURE QUEENSBURG REROUTE

APPROX. LEASE LINE AOA FENCE

FUTURE TAXIWAY U

SEE CIVIL FOR CONTINUATION

FINAL AOA FENCE LOCATION

LEASE AREA = 1,634,567 SF

SITE PLAN
SCALE: 1" = 60'-0"
NORTH

APPROX. AREA OF CONCRETE PAVEMENT FOR APRON AND TAXILANE AIRCRAFT PAVEMENT, SEE CIVIL DRAWINGS

CONCRETE PAVEMENT FOR GROUND SUPPORT EQUIPMENT STAGING AREAS, SEE CIVIL DRAWINGS

CONCRETE PAVEMENT FOR ROADS AND PARKING AREAS, SEE CIVIL DRAWINGS

NATIVE GRASSES

BUILDING AREA = 129,048 ft²
NATIVE GRASSES = 34,820 ft²
25% OF BUILDING AREA

APPROX. LEASE LINE

CHAIN LINK FENCE

ACCESS CONTROL

AIRCRAFT MAINTENANCE HANGAR DATUM: UNLESS NOTED OTHERWISE (UNO)

1ST FLOOR LEVEL DATUM = +100'-0" = 5351.54' (SHOPS AND HANGAR HIGH POINTS)

1/11/2019 8:37:53 AM

DENVER INTERNATIONAL AIRPORT
DEN

DEN Tenant Project No: swa_1901.SWA.RON.Hangar

Southwest

SOUTHWEST AIRLINES
26405 E 107th AVE
DENVER, CO

MAINTENANCE HANGAR

GHAFARI

GHAFARI ASSOCIATES
122 S.MICHIGAN AVE., SUITE 1500
CHICAGO, IL 60603-6152 USA
TEL +1.312.984.2300
www.ghafari.com

DESIGN CONSULTANTS:

FIRE PROTECTION: WJE ENGINEERS ARCHITECTS MATERIALS SCIENTISTS — Wiss, Janney, Elstner Associates, Inc.

CIVIL: HCL ENGINEERS+SURVEYORS

IT/SECURITY: 4B Technology

STRUCTURAL: HENDERSON ROGERS structural engineers

REGISTRATION SEAL

COLORADO LICENSED — JOHN PAUL HUMPHREY — 405726 — ARCHITECT

01/11/19

REVISION #	DATE	DOCUMENT RELEASE #

DATE	DOCUMENT RELEASE #
01/11/19	DOC REL 04 - PERMIT
11/09/18	DOC REL 03 - DESIGN DEVELOPMENT
09/14/18	DOC REL 02 - SCHEMATIC DESIGN

PROJECT #	187172
PROJECT MANAGER	J. JOBES
DESIGNED BY	J. NIMITY
DRAWN BY	C. MARUBAYASHI
QUALCHECK	D. TICHY

SHEET TITLE

ARCHITECTURAL SITE PLAN

SHEET NUMBER **AS1-00-00**

NOTE: This Appendix D. Construction Project Daily Safety Inspection Checklist was copied from FAA Advisory Circular 150/5370-2G (dated December 13, 2017) and formatted for use with individual projects.

Airport: **Denver International Airport**
DEN Tenant Project No.: **swa_1901.SWA.RON.Hangar**
Project Name: **WN-RON Maintenance Hangar**
Date: _____

Appendix D. Construction Project Daily Safety Inspection Checklist

The situations identified below are potentially hazardous conditions that may occur during airport construction projects. Safety area encroachments, unauthorized and improper ground vehicle operations, and unmarked or uncovered holes and trenches near aircraft operating surfaces pose the most prevalent threats to airport operational safety during airport construction projects. The list below is one tool that the airport operator or contractor may use to aid in identifying and correcting potentially hazardous conditions. It should be customized as appropriate for each project including information such as the date, time and name of the person conducting the inspection.

Table D-1. Potentially Hazardous Conditions

Item	Action Required (Describe)	No Action Required (Check)
Excavation adjacent to runways, taxiways, and aprons improperly backfilled.		☐
Mounds of earth, construction materials, temporary structures, and other obstacles near any open runway, taxiway, or taxi lane; in the related Object Free area and aircraft approach or departure areas/zones; or obstructing any sign or marking.		☐
Runway resurfacing projects resulting in lips exceeding 3 inch (7.6 cm) from pavement edges and ends.		☐
Heavy equipment (stationary or mobile) operating or idle near AOA, in runway approaches and departures areas, or in OFZ.		☐
Equipment or material near NAVAIDs that may degrade or impair radiated signals and/or the monitoring of navigation and visual aids. Unauthorized or improper vehicle operations in localizer or glide slope critical areas, resulting in electronic interference and/or facility shutdown.		☐
Tall and especially relatively low visibility units (that is, equipment with slim profiles) — cranes, drills, and similar objects — located in critical areas, such as OFZ and approach zones.		☐

Improperly positioned or malfunctioning lights or unlighted airport hazards, such as holes or excavations, on any apron, open taxiway, or open taxi lane or in a related safety, approach, or departure area.		☐
Obstacles, loose pavement, trash, and other debris on or near AOA. Construction debris (gravel, sand, mud, paving materials) on airport pavements may result in aircraft propeller, turbine engine, or tire damage. Also, loose materials may blow about, potentially causing personal injury or equipment damage.		☐
Inappropriate or poorly maintained fencing during construction intended to deter human and animal intrusions into the AOA. Fencing and other markings that are inadequate to separate construction areas from open AOA create aviation hazards.		☐
Improper or inadequate marking or lighting of runways (especially thresholds that have been displaced or runways that have been closed) and taxiways that could cause pilot confusion and provide a potential for a runway incursion. Inadequate or improper methods of marking, barricading, and lighting of temporarily closed portions of AOA create aviation hazards.		☐
Wildlife attractants — such as trash (food scraps not collected from construction personnel activity), grass seeds, tall grass, or standing water — on or near airports.		☐
Obliterated or faded temporary markings on active operational areas.		☐
Misleading or malfunctioning obstruction lights. Unlighted or unmarked obstructions in the approach to any open runway pose aviation hazards.		☐
Failure to issue, update, or cancel NOTAMs about airport or runway closures or other construction related airport conditions.		☐
Failure to mark and identify utilities or power cables. Damage to utilities and power cables during construction activity can result in the loss of runway / taxiway lighting; loss of navigation, visual, or approach aids; disruption of weather reporting services; and/or loss of communications.		☐
Restrictions on ARFF access from fire stations to the runway / taxiway system or airport buildings.		☐
Lack of radio communications with construction vehicles in airport movement areas.		☐

Objects, regardless of whether they are marked or flagged, or activities anywhere on or near an airport that could be distracting, confusing, or alarming to pilots during aircraft operations.		☐
Water, snow, dirt, debris, or other contaminants that temporarily obscure or derogate the visibility of runway/taxiway marking, lighting, and pavement edges. Any condition or factor that obscures or diminishes the visibility of areas under construction.		☐
Spillage from vehicles (gasoline, diesel fuel, oil) on active pavement areas, such as runways, taxiways, aprons, and airport roadways.		☐
Failure to maintain drainage system integrity during construction (for example, no temporary drainage provided when working on a drainage system).		☐
Failure to provide for proper electrical lockout and tagging procedures. At larger airports with multiple maintenance shifts/workers, construction contractors should make provisions for coordinating work on circuits.		☐
Failure to control dust. Consider limiting the amount of area from which the contractor is allowed to strip turf.		☐
Exposed wiring that creates an electrocution or fire ignition hazard. Identify and secure wiring, and place it in conduit or bury it.		☐
Site burning, which can cause possible obscuration.		☐
Construction work taking place outside of designated work areas and out of phase.		☐

U.S. Department
of Transportation
Federal Aviation
Administration

Advisory Circular

Subject: Operational Safety on Airports During Construction	**Date:** 12/13/2017 **Initiated By:** AAS-100	**AC No:** 150/5370-2G **Change:**

1 **Purpose.**

This AC sets forth guidelines for operational safety on airports during construction.

2 **Cancellation.**

This AC cancels AC 150/5370-2F, *Operational Safety on Airports during Construction*, dated September 29, 2011.

3 **Application.**

This AC assists airport operators in complying with Title 14 Code of Federal Regulations (CFR) Part 139, *Certification of Airports*. For those certificated airports, this AC provides one way, but not the only way, of meeting those requirements. The use of this AC is mandatory for those airport construction projects receiving funds under the Airport Improvement Program (AIP). See Grant Assurance No. 34, *Policies, Standards, and Specifications*. While we do not require non-certificated airports without grant agreements or airports using Passenger Facility Charge (PFC) Program funds for construction projects to adhere to these guidelines, we recommend that they do so to help these airports maintain operational safety during construction.

4 **Related Documents.**

ACs and Orders referenced in the text of this AC do not include a revision letter, as they refer to the latest version. Appendix A contains a list of reading material on airport construction, design, and potential safety hazards during construction, as well as instructions for obtaining these documents.

5 **Principal Changes.**

The AC incorporates the following principal changes:

1. Notification about impacts to both airport owned and FAA-owned NAVAIDs was added. See paragraph 2.13.5.3, NAVAIDs.

2. Guidance for the use of orange construction signs was added. See paragraph 2.18.4.2, Temporary Signs.
3. Open trenches or excavations may be permitted in the taxiway safety area while the taxiway is open to aircraft operations, subject to restrictions. See paragraph 2.22.3.4, Excavations.
4. Guidance for temporary shortened runways and displaced thresholds has been enhanced. See Figure 2-1 and Figure 2-2.
5. Figures have been improved and a new Appendix F on the placement of orange construction signs has been added.

Hyperlinks (allowing the reader to access documents located on the internet and to maneuver within this document) are provided throughout this document and are identified with underlined text. When navigating within this document, return to the previously viewed page by pressing the "ALT" and " ←" keys simultaneously.

Figures in this document are schematic representations and are not to scale.

6 **Use of Metrics.**

Throughout this AC, U.S. customary units are used followed with "soft" (rounded) conversion to metric units. The U.S. customary units govern.

7 **Where to Find this AC.**

You can view a list of all ACs at http://www.faa.gov/regulations_policies/advisory_circulars/. You can view the Federal Aviation Regulations at http://www.faa.gov/regulations_policies/faa_regulations/.

8 **Feedback on this AC.**

If you have suggestions for improving this AC, you may use the Advisory Circular Feedback form at the end of this AC.

John R. Dermody
Director of Airport Safety and Standards

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FIGURES

Number **Page**

TABLES

Number **Page**

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CHAPTER 1. PLANNING AN AIRFIELD CONSTRUCTION PROJECT

1.1 Overview.

Airports are complex environments, and procedures and conditions associated with construction activities often affect aircraft operations and can jeopardize operational safety. Safety considerations are paramount and may make operational impacts unavoidable. However, careful planning, scheduling, and coordination of construction activities can minimize disruption of normal aircraft operations and avoid situations that compromise the airport's operational safety. The airport operator must understand how construction activities and aircraft operations affect one another to be able to develop an effective plan to complete the project. While the guidance in this AC is primarily used for construction operations, the concepts, methods and procedures described may also enhance the day-to-day airport maintenance operations, such as lighting maintenance and snow removal operations.

1.2 Plan for Safety.

Safety, maintaining aircraft operations, and construction costs are all interrelated. Since safety must not be compromised, the airport operator must strike a balance between maintaining aircraft operations and construction costs. This balance will vary widely depending on the operational needs and resources of the airport and will require early coordination with airport users and the FAA. As the project design progresses, the necessary construction locations, activities, and associated costs will be identified and their impact to airport operations must be assessed. Adjustments are made to the proposed construction activities, often by phasing the project, and/or to airport operations to maintain operational safety. This planning effort will ultimately result in a project Construction Safety and Phasing Plan (CSPP). The development of the CSPP takes place through the following five steps:

1.2.1 Identify Affected Areas.

The airport operator must determine the geographic areas on the airport affected by the construction project. Some, such as a runway extension, will be defined by the project. Others may be variable, such as the location of haul routes and material stockpiles.

1.2.2 Describe Current Operations.

Identify the normal airport operations in each affected area for each phase of the project. This becomes the baseline from which the impact on operations by construction activities can be measured. This should include a narrative of the typical users and aircraft operating within the affected areas. It should also include information related to airport operations: the Aircraft Approach Category (AAC) and Airplane Design Group (ADG) of the airplanes that operate on each runway; the ADG and Taxiway Design Group (TDG)[1] for each affected taxiway; designated approach visibility minimums;

[1] Find Taxiway Design Group information in AC 150/5300-13, *Airport Design.*

available approach and departure procedures; most demanding aircraft; declared distances; available air traffic control services; airport Surface Movement Guidance and Control System (SMGCS) plan; and others. The applicable seasons, days and times for certain operations should also be identified as applicable.

1.2.3 Allow for Temporary Changes to Operations.

To the extent practical, current airport operations should be maintained during the construction. In consultation with airport users, Aircraft Rescue and Fire Fighting (ARFF) personnel, and FAA Air Traffic Organization (ATO) personnel, the airport operator should identify and prioritize the airport's most important operations. The construction activities should be planned, through project phasing if necessary, to safely accommodate these operations. When the construction activities cannot be adjusted to safely maintain current operations, regardless of their importance, then the operations must be revised accordingly. Allowable changes include temporary revisions to approach procedures, restricting certain aircraft to specific runways and taxiways, suspension of certain operations, decreased weights for some aircraft due to shortened runways, and other changes. An example of a table showing temporary operations versus current operations is shown in Appendix E.

1.2.4 Take Required Measures to Revise Operations.

Once the level and type of aircraft operations to be maintained are identified, the airport operator must determine the measures required to safely conduct the planned operations during the construction. These measures will result in associated costs, which can be broadly interpreted to include not only direct construction costs, but also loss of revenue from impacted operations. Analysis of costs may indicate a need to reevaluate allowable changes to operations. As aircraft operations and allowable changes will vary widely among airports, this AC presents general guidance on those subjects.

1.2.5 Manage Safety Risk.

The FAA is committed to incorporating proactive safety risk management (SRM) tools into its decision-making processes. FAA Order 5200.11, *FAA Airports (ARP) Safety Management System (SMS)*, requires the FAA to conduct a Safety Assessment for certain triggering actions. Certain airport projects may require the airport operator to provide a Project Proposal Summary to help the FAA determine whether a Safety Assessment is required prior to FAA approval of the CSPP. The airport operator must coordinate with the appropriate FAA Airports Regional or District Office early in the development of the CSPP to determine the need for a Safety Risk Assessment. If the FAA requires an assessment, the airport operator must at a minimum:

1. Notify the appropriate FAA Airports Regional or District Office during the project "scope development" phase of any project requiring a CSPP.
2. Provide documents identified by the FAA as necessary to conduct SRM.
3. Participate in the SRM process for airport projects.
4. Provide a representative to participate on the SRM panel.

5. Ensure that all applicable SRM identified risks elements are recorded and mitigated within the CSPP.

1.3 **Develop a Construction Safety and Phasing Plan (CSPP).**

Development of an effective CSPP will require familiarity with many other documents referenced throughout this AC. See Appendix A for a list of related reading material.

1.3.1 List Requirements.

A CSPP must be developed for each on-airfield construction project funded by the Airport Improvement Program (AIP) or located on an airport certificated under Part 139. For on-airfield construction projects at Part 139 airports funded without AIP funds, the preparation of a CSPP represents an acceptable method the certificate holder may use to meet Part 139 requirements during airfield construction activity. As per FAA Order 5200.11, projects that require Safety Assessments do not include construction, rehabilitation, or change of any facility that is entirely outside the air operations area, does not involve any expansion of the facility envelope and does not involve construction equipment, haul routes or placement of material in locations that require access to the air operations area, increase the facility envelope, or impact line-of-sight. Such facilities may include passenger terminals and parking or other structures. However, extraordinary circumstances may trigger the need for a Safety Assessment and a CSPP. The CSPP is subject to subsequent review and approval under the FAA's Safety Risk Management procedures (see paragraph 1.2.5).

1.3.2 Prepare a Safety Plan Compliance Document (SPCD).

The Safety Plan Compliance Document (SPCD) details how the contractor will comply with the CSPP. Also, it will not be possible to determine all safety plan details (for example specific hazard equipment and lighting, contractor's points of contact, construction equipment heights) during the development of the CSPP. The successful contractor must define such details by preparing an SPCD that the airport operator reviews for approval prior to issuance of a notice-to-proceed. The SPCD is a subset of the CSPP, similar to how a shop drawing review is a subset to the technical specifications.

1.3.3 Assume Responsibility for the CSPP.

The airport operator is responsible for establishing and enforcing the CSPP. The airport operator may use the services of an engineering consultant to help develop the CSPP. However, writing the CSPP cannot be delegated to the construction contractor. Only those details the airport operator determines cannot be addressed before contract award are developed by the contractor and submitted for approval as the SPCD. The SPCD does not restate nor propose differences to provisions already addressed in the CSPP.

1.4 Who Is Responsible for Safety During Construction?

1.4.1 Establish a Safety Culture.

Everyone has a role in operational safety on airports during construction: the airport operator, the airport's consultants, the construction contractor and subcontractors, airport users, airport tenants, ARFF personnel, Air Traffic personnel, including Technical Operations personnel, FAA Airports Division personnel, and others, such as military personnel at any airport supporting military operations (e.g. national guard or a joint use facility). Close communication and coordination between all affected parties is the key to maintaining safe operations. Such communication and coordination should start at the project scoping meeting and continue through the completion of the project. The airport operator and contractor should conduct onsite safety inspections throughout the project and immediately remedy any deficiencies, whether caused by negligence, oversight, or project scope change.

1.4.2 Assess Airport Operator's Responsibilities.

An airport operator has overall responsibility for all activities on an airport, including construction. This includes the predesign, design, preconstruction, construction, and inspection phases. Additional information on the responsibilities listed below can be found throughout this AC. The airport operator must:

1.4.2.1 Develop a CSPP that complies with the safety guidelines of Chapter 2, Construction Safety and Phasing Plans, and Chapter 3, Guidelines for Writing a CSPP. The airport operator may develop the CSPP internally or have a consultant develop the CSPP for approval by the airport operator. For tenant sponsored projects, approve a CSPP developed by the tenant or its consultant.

1.4.2.2 Require, review and approve the SPCD by the contractor that indicates how it will comply with the CSPP and provides details that cannot be determined before contract award.

1.4.2.3 Convene a preconstruction meeting with the construction contractor, consultant, airport employees and, if appropriate, tenant sponsor and other tenants to review and discuss project safety before beginning construction activity. The appropriate FAA representatives should be invited to attend the meeting. See AC 150/5370-12, *Quality Management for Federally Funded Airport Construction Projects.* (Note "FAA" refers to the Airports Regional or District Office, the Air Traffic Organization, Flight Standards Service, and other offices that support airport operations, flight regulations, and construction/environmental policies.)

1.4.2.4 Ensure contact information is accurate for each representative/point of contact identified in the CSPP and SPCD.

1.4.2.5 Hold weekly or, if necessary, daily safety meetings with all affected parties to coordinate activities.

1.4.2.6 Notify users, ARFF personnel, and FAA ATO personnel of construction and conditions that may adversely affect the operational safety of the airport via Notices to Airmen (NOTAM) and other methods, as appropriate. Convene a meeting for review and discussion if necessary.

1.4.2.7 Ensure construction personnel know applicable airport procedures and changes to those procedures that may affect their work.

1.4.2.8 Ensure that all temporary construction signs are located per the scheduled list for each phase of the project.

1.4.2.9 Ensure construction contractors and subcontractors undergo training required by the CSPP and SPCD.

1.4.2.10 Ensure vehicle and pedestrian operations addressed in the CSPP and SPCD are coordinated with airport tenants, the airport traffic control tower (ATCT), and construction contractors.

1.4.2.11 At certificated airports, ensure each CSPP and SPCD is consistent with Part 139.

1.4.2.12 Conduct inspections sufficiently frequently to ensure construction contractors and tenants comply with the CSPP and SPCD and that there are no altered construction activities that could create potential safety hazards.

1.4.2.13 Take immediate action to resolve safety deficiencies.

1.4.2.14 At airports subject to 49 CFR Part 1542, *Airport Security*, ensure construction access complies with the security requirements of that regulation.

1.4.2.15 Notify appropriate parties when conditions exist that invoke provisions of the CSPP and SPCD (for example, implementation of low-visibility operations).

1.4.2.16 Ensure prompt submittal of a Notice of Proposed Construction or Alteration (Form 7460-1) for conducting an aeronautical study of potential obstructions such as tall equipment (cranes, concrete pumps, other), stock piles, and haul routes. A separate form may be filed for each potential obstruction, or one form may be filed describing the entire construction area and maximum equipment height. In the latter case, a separate form must be filed for any object beyond or higher than the originally evaluated area/height. The FAA encourages online submittal of forms for expediency at https://oeaaa.faa.gov/oeaaa/external/portal.jsp. The appropriate FAA Airports Regional or District Office can provide assistance in determining which objects require an aeronautical study.

1.4.2.17 Ensure prompt transmission of the Airport Sponsor Strategic Event Submission, FAA Form 6000-26, located at https://oeaaa.faa.gov/oeaaa/external/content/AIRPORT_SPONSOR_STRATEGIC_EVENT_SUBMISSION_FORM.pdf, to assure proper coordination for NAS Strategic Interruption per Service Level Agreement with ATO.

1.4.2.18 Promptly notify the FAA Airports Regional or District Office of any proposed changes to the CSPP prior to implementation of the change. Changes to the CSPP require review and approval by the airport operator and the FAA. The FAA Airports Regional or District office will determine if further coordination within the FAA is needed. Coordinate with appropriate local and other federal government agencies, such as Environmental Protection Agency (EPA), Occupational Safety and Health Administration (OSHA), Transportation Security Administration (TSA), and the state environmental agency.

1.4.3 Define Construction Contractor's Responsibilities.

The contractor is responsible for complying with the CSPP and SPCD. The contractor must:

1.4.3.1 Submit a Safety Plan Compliance Document (SPCD) to the airport operator describing how it will comply with the requirements of the CSPP and supply any details that could not be determined before contract award. The SPCD must include a certification statement by the contractor, indicating an understanding of the operational safety requirements of the CSPP and the assertion of compliance with the approved CSPP and SPCD unless written approval is granted by the airport operator. Any construction practice proposed by the contractor that does not conform to the CSPP and SPCD may impact the airport's operational safety and will require a revision to the CSPP and SPCD and re-coordination with the airport operator and the FAA in advance.

1.4.3.2 Have available at all times copies of the CSPP and SPCD for reference by the airport operator and its representatives, and by subcontractors and contractor employees.

1.4.3.3 Ensure that construction personnel are familiar with safety procedures and regulations on the airport. Provide a point of contact who will coordinate an immediate response to correct any construction-related activity that may adversely affect the operational safety of the airport. Many projects will require 24-hour coverage.

1.4.3.4 Identify in the SPCD the contractor's on-site employees responsible for monitoring compliance with the CSPP and SPCD during construction. At least one of these employees must be on-site when active construction is taking place.

1.4.3.5 Conduct sufficient inspections to ensure construction personnel comply with the CSPP and SPCD and that there are no altered construction activities that could create potential safety hazards.

1.4.3.6 Restrict movement of construction vehicles and personnel to permitted construction areas by flagging, barricading, erecting temporary fencing, or providing escorts, as appropriate, and as specified in the CSPP and SPCD.

1.4.3.7 Ensure that no contractor employees, employees of subcontractors or suppliers, or other persons enter any part of the air operations area (AOA) from the construction site unless authorized.

1.4.3.8 Ensure prompt submittal through the airport operator of Form 7460-1 for the purpose of conducting an aeronautical study of contractor equipment such as tall equipment (cranes, concrete pumps, and other equipment), stock piles, and haul routes when different from cases previously filed by the airport operator. The FAA encourages online submittal of forms for expediency at https://oeaaa.faa.gov/oeaaa/external/portal.jsp.

1.4.3.9 Ensure that all necessary safety mitigations are understood by all parties involved, and any special requirements of each construction phase will be fulfilled per the approved timeframe.

1.4.3.10 Participate in pre-construction meetings to review construction limits, safety mitigations, NOTAMs, and understand all special airport operational needs during each phase of the project.

1.4.4 Define Tenant's Responsibilities.

If planning construction activities on leased property, Airport tenants, such as airline operators, fixed base operators, and FAA ATO/Technical Operations sponsoring construction are strongly encouraged to:

1. Develop, or have a consultant develop, a project specific CSPP and submit it to the airport operator. The airport operator may forgo a complete CSPP submittal and instead incorporate appropriate operational safety principles and measures addressed in the advisory circular within their tenant lease agreements.
2. In coordination with its contractor, develop an SPCD and submit it to the airport operator for approval issued prior to issuance of a Notice to Proceed.
3. Ensure that construction personnel are familiar with safety procedures and regulations on the airport during all phases of the construction.
4. Provide a point of contact of who will coordinate an immediate response to correct any construction-related activity that may adversely affect the operational safety of the airport.
5. Identify in the SPCD the contractor's on-site employees responsible for monitoring compliance with the CSPP and SPCD during construction. At least one of these employees must be on-site when active construction is taking place.
6. Ensure that no tenant or contractor employees, employees of subcontractors or suppliers, or any other persons enter any part of the AOA from the construction site unless authorized.
7. Restrict movement of construction vehicles to construction areas by flagging and barricading, erecting temporary fencing, or providing escorts, as appropriate, as specified in the CSPP and SPCD.
8. Ensure prompt submittal through the airport operator of Form 7460-1 for conducting an aeronautical study of contractor equipment such as tall equipment (cranes, concrete pumps, other), stock piles, and haul routes. The FAA encourages online submittal of forms for expediency at https://oeaaa.faa.gov/oeaaa/external/portal.jsp.
9. Participate in pre-construction meetings to review construction limits, safety mitigations, NOTAMs, and understand all special airport operational needs during each phase of the project.

CHAPTER 2. CONSTRUCTION SAFETY AND PHASING PLANS

2.1 Overview.

Aviation safety is the primary consideration at airports, especially during construction. The airport operator's CSPP and the contractor's Safety Plan Compliance Document (SPCD) are the primary tools to ensure safety compliance when coordinating construction activities with airport operations. These documents identify all aspects of the construction project that pose a potential safety hazard to airport operations and outline respective mitigation procedures for each hazard. They must provide information necessary for the Airport Operations department to conduct airfield inspections and expeditiously identify and correct unsafe conditions during construction. All aviation safety provisions included within the project drawings, contract specifications, and other related documents must also be reflected in the CSPP and SPCD.

2.2 Assume Responsibility.

Operational safety on the airport remains the airport operator's responsibility at all times. The airport operator must develop, certify, and submit for FAA approval each CSPP. It is the airport operator's responsibility to apply the requirements of the FAA approved CSPP. The airport operator must revise the CSPP when conditions warrant changes and must submit the revised CSPP to the FAA for approval. The airport operator must also require and approve a SPCD from the project contractor.

2.3 Submit the CSPP.

Construction Safety and Phasing Plans should be developed concurrently with the project design. Milestone versions of the CSPP should be submitted for review and approval as follows. While these milestones are not mandatory, early submission will help to avoid delays. Submittals are preferred in 8.5 × 11 inch or 11 × 17 inch format for compatibility with the FAA's Obstruction Evaluation / Airport Airspace Analysis (OE / AAA) process.

2.3.1 Submit an Outline/Draft.

By the time approximately 25% to 30% of the project design is completed, the principal elements of the CSPP should be established. Airport operators are encouraged to submit an outline or draft, detailing all CSPP provisions developed to date, to the FAA for review at this stage of the project design.

2.3.2 Submit a CSPP.

The CSPP should be formally submitted for FAA approval when the project design is 80 percent to 90 percent complete. Since provisions in the CSPP will influence contract costs, it is important to obtain FAA approval in time to include all such provisions in the procurement contract.

2.3.3 Submit an SPCD.

The contractor should submit the SPCD to the airport operator for approval to be issued prior to the Notice to Proceed.

2.3.4 Submit CSPP Revisions.

All revisions to a previously approved CSPP must be re-submitted to the FAA for review and approval/disapproval action.

2.4 Meet CSPP Requirements.

2.4.1 To the extent possible, the CSPP should address the following as outlined in Chapter 3, Guidelines for Writing a CSPP. Details that cannot be determined at this stage are to be included in the SPCD.

1. Coordination.
    a. Contractor progress meetings.
    b. Scope or schedule changes.
    c. FAA ATO coordination.
2. Phasing.
    a. Phase elements.
    b. Construction safety drawings.
3. Areas and operations affected by the construction activity.
    a. Identification of affected areas.
    b. Mitigation of effects.
4. Protection of navigation aids (NAVAIDs).
5. Contractor access.
    a. Location of stockpiled construction materials.
    b. Vehicle and pedestrian operations.
6. Wildlife management.
    a. Trash.
    b. Standing water.
    c. Tall grass and seeds.
    d. Poorly maintained fencing and gates.
    e. Disruption of existing wildlife habitat.
7. Foreign Object Debris (FOD) management.
8. Hazardous materials (HAZMAT) management.
9. Notification of construction activities.

a. Maintenance of a list of responsible representatives/ points of contact.

b. NOTAM.

c. Emergency notification procedures.

d. Coordination with ARFF Personnel.

e. Notification to the FAA.

10. Inspection requirements.

a. Daily (or more frequent) inspections.

b. Final inspections.

11. Underground utilities.

12. Penalties.

13. Special conditions.

14. Runway and taxiway visual aids. Marking, lighting, signs, and visual NAVAIDs.

a. General.

b. Markings.

c. Lighting and visual NAVAIDs.

d. Signs, temporary, including orange construction signs, and permanent signs.

15. Marking and signs for access routes.

16. Hazard marking and lighting.

a. Purpose.

b. Equipment.

17. Work zone lighting for nighttime construction (if applicable).

18. Protection of runway and taxiway safety areas, object free areas, obstacle free zones, and approach/departure surfaces.

a. Runway Safety Area (RSA).

b. Runway Object Free Area (ROFA).

c. Taxiway Safety Area (TSA). Provide details for any adjustments to Taxiway Safety Area width to allow continued operation of smaller aircraft. See paragraph 2.22.3.

d. Taxiway Object Free Area (TOFA). Provide details for any continued aircraft operations while construction occurs within the TOFA. See paragraph 2.22.4.

e. Obstacle Free Zone (OFZ).

f. Runway approach/departure surfaces.

19. Other limitations on construction.

a. Prohibitions.

b. Restrictions.

2.4.2 The Safety Plan Compliance Document (SPCD) should include a general statement by the construction contractor that he/she has read and will abide by the CSPP. In addition, the SPCD must include all supplemental information that could not be included in the CSPP prior to the contract award. The contractor statement should include the name of the contractor, the title of the project CSPP, the approval date of the CSPP, and a reference to any supplemental information (that is, "I, (Name of Contractor), have read the (Title of Project) CSPP, approved on (Date), and will abide by it as written and with the following additions as noted:"). The supplemental information in the SPCD should be written to match the format of the CSPP indicating each subject by corresponding CSPP subject number and title. If no supplemental information is necessary for any specific subject, the statement, "No supplemental information," should be written after the corresponding subject title. The SPCD should not duplicate information in the CSPP:

1. Coordination. Discuss details of proposed safety meetings with the airport operator and with contractor employees and subcontractors.
2. Phasing. Discuss proposed construction schedule elements, including:
   a. Duration of each phase.
   b. Daily start and finish of construction, including "night only" construction.
   c. Duration of construction activities during:
      i. Normal runway operations.
      ii. Closed runway operations.
      iii. Modified runway "Aircraft Reference Code" usage.
3. Areas and operations affected by the construction activity. These areas and operations should be identified in the CSPP and should not require an entry in the SPCD.
4. Protection of NAVAIDs. Discuss specific methods proposed to protect operating NAVAIDs.
5. Contractor access. Provide the following:
   a. Details on how the contractor will maintain the integrity of the airport security fence (gate guards, daily log of construction personnel, and other).
   b. Listing of individuals requiring driver training (for certificated airports and as requested).
   c. Radio communications.
      i. Types of radios and backup capabilities.
      ii. Who will be monitoring radios.
      iii. Who to contact if the ATCT cannot reach the contractor's designated person by radio.

d. Details on how the contractor will escort material delivery vehicles.

6. Wildlife management. Discuss the following:
   a. Methods and procedures to prevent wildlife attraction.
   b. Wildlife reporting procedures.
7. Foreign Object Debris (FOD) management. Discuss equipment and methods for control of FOD, including construction debris and dust.
8. Hazardous Materials (HAZMAT) management. Discuss equipment and methods for responding to hazardous spills.
9. Notification of construction activities. Provide the following:
   a. Contractor points of contact.
   b. Contractor emergency contact.
   c. Listing of tall or other requested equipment proposed for use on the airport and the timeframe for submitting 7460-1 forms not previously submitted by the airport operator.
   d. Batch plant details, including 7460-1 submittal.
10. Inspection requirements. Discuss daily (or more frequent) inspections and special inspection procedures.
11. Underground utilities. Discuss proposed methods of identifying and protecting underground utilities.
12. Penalties. Penalties should be identified in the CSPP and should not require an entry in the SPCD.
13. Special conditions. Discuss proposed actions for each special condition identified in the CSPP.
14. Runway and taxiway visual aids. Including marking, lighting, signs, and visual NAVAIDs. Discuss proposed visual aids including the following:
   a. Equipment and methods for covering signage and airfield lights.
   b. Equipment and methods for temporary closure markings (paint, fabric, other).
   c. Temporary orange construction signs.
   d. Types of temporary Visual Guidance Slope Indicators (VGSI).
15. Marking and signs for access routes. Discuss proposed methods of demarcating access routes for vehicle drivers.
16. Hazard marking and lighting. Discuss proposed equipment and methods for identifying excavation areas.
17. Work zone lighting for nighttime construction (if applicable). Discuss proposed equipment, locations, aiming, and shielding to prevent interference with air traffic control and aircraft operations.

18. Protection of runway and taxiway safety areas, object free areas, obstacle free zones, and approach/departure surfaces. Discuss proposed methods of identifying, demarcating, and protecting airport surfaces including:
    a. Equipment and methods for maintaining Taxiway Safety Area standards.
    b. Equipment and methods to ensure the safe passage of aircraft where Taxiway Safety Area or Taxiway Object Free Area standards cannot be maintained.
    c. Equipment and methods for separation of construction operations from aircraft operations, including details of barricades.
19. Other limitations on construction should be identified in the CSPP and should not require an entry in the SPCD.

2.5 **Coordination.**

Airport operators, or tenants responsible for design, bidding and conducting construction on their leased properties, should ensure at all project developmental stages, such as predesign, prebid, and preconstruction conferences, they capture the subject of airport operational safety during construction (see AC 150/5370-12, *Quality Management for Federally Funded Airport Construction Projects*). In addition, the following should be coordinated as required:

2.5.1 Progress Meetings.

Operational safety should be a standing agenda item for discussion during progress meetings throughout the project developmental stages.

2.5.2 Scope or Schedule Changes.

Changes in the scope or duration at any of the project stages may require revisions to the CSPP and review and approval by the airport operator and the FAA (see paragraph 1.4.2.17).

2.5.3 FAA ATO Coordination.

Early coordination with FAA ATO is highly recommended during the design phase and is required for scheduling Technical Operations shutdowns prior to construction. Coordination is critical to restarts of NAVAID services and to the establishment of any special procedures for the movement of aircraft. Formal agreements between the airport operator and appropriate FAA offices are recommended. All relocation or adjustments to NAVAIDs, or changes to final grades in critical areas, should be coordinated with FAA ATO and may require an FAA flight inspection prior to restarting the facility. Flight inspections must be coordinated and scheduled well in advance of the intended facility restart. Flight inspections may require a reimbursable agreement between the airport operator and FAA ATO. Reimbursable agreements should be coordinated a minimum of 12 months prior to the start of construction. (See paragraph 2.13.5.3.2 for required FAA notification regarding FAA-owned NAVAIDs.)

2.6 **Phasing.**

Once it has been determined what types and levels of airport operations will be maintained, the most efficient sequence of construction may not be feasible. In this case, the sequence of construction may be phased to gain maximum efficiency while allowing for the required operations. The development of the resulting construction phases should be coordinated with local Air Traffic personnel and airport users. The sequenced construction phases established in the CSPP must be incorporated into the project design and must be reflected in the contract drawings and specifications.

2.6.1 Phase Elements.

For each phase the CSPP should detail:

- Areas closed to aircraft operations.
- Duration of closures.
- Taxi routes and/or areas of reduced TSA and TOFA to reflect reduced ADG use.
- ARFF access routes.
- Construction staging, disposal, and cleanout areas.
- Construction access and haul routes.
- Impacts to NAVAIDs.
- Lighting, marking, and signing changes.
- Available runway length and/or reduced RSA and ROFA to reflect reduced ADG use.
- Declared distances (if applicable).
- Required hazard marking, lighting, and signing.
- Work zone lighting for nighttime construction (if applicable).
- Lead times for required notifications.

2.6.2 Construction Safety Drawings.

Drawings specifically indicating operational safety procedures and methods in affected areas (i.e., construction safety drawings) should be developed for each construction phase. Such drawings should be included in the CSPP as referenced attachments and should also be included in the contract drawing package.

2.7 **Areas and Operations Affected by Construction Activity.**

Runways and taxiways should remain in use by aircraft to the maximum extent possible without compromising safety. Pre-meetings with the FAA ATO will support operational simulations. See Appendix E for an example of a table showing temporary operations versus current operations. The tables in Appendix E can be useful for coordination among all interested parties, including FAA Lines of Business.

2.7.1 Identification of Affected Areas.

Identifying areas and operations affected by the construction helps to determine possible safety problems. The affected areas should be identified in the construction safety drawings for each construction phase. (See paragraph 2.6.2.) Of particular concern are:

2.7.1.1 **Closing, or Partial Closing, of Runways, Taxiways and Aprons, and Displaced Thresholds.**

When a runway is partially closed, a portion of the pavement is unavailable for any aircraft operation, meaning taxiing, landing, or takeoff in either direction on that pavement is prohibited. A displaced threshold, by contrast, is established to ensure obstacle clearance and adequate safety area for landing aircraft. The pavement prior to the displaced threshold is normally available for take-off in the direction of the displacement and for landing and takeoff in the opposite direction. Misunderstanding this difference, may result in issuance of an inaccurate NOTAM, and can lead to a hazardous condition.

2.7.1.1.1 Partially Closed Runways.

The temporarily closed portion of a partially closed runway will generally extend from the threshold to a taxiway that may be used for entering and exiting the runway. If the closed portion extends to a point between taxiways, pilots will have to back-taxi on the runway, which is an undesirable operation. See Figure 2-1 for a desirable configuration.

2.7.1.1.2 Displaced Thresholds.

Since the portion of the runway pavement between the permanent threshold and a standard displaced threshold is available for takeoff and for landing in the opposite direction, the temporary displaced threshold need not be located at an entrance/exit taxiway. See Figure 2-2.

2.7.1.2 Closing of aircraft rescue and fire fighting access routes.

2.7.1.3 Closing of access routes used by airport and airline support vehicles.

2.7.1.4 Interruption of utilities, including water supplies for fire fighting.

2.7.1.5 Approach/departure surfaces affected by heights of objects.

2.7.1.6 Construction areas, storage areas, and access routes near runways, taxiways, aprons, or helipads.

Figure 2-1. Temporary Partially Closed Runway

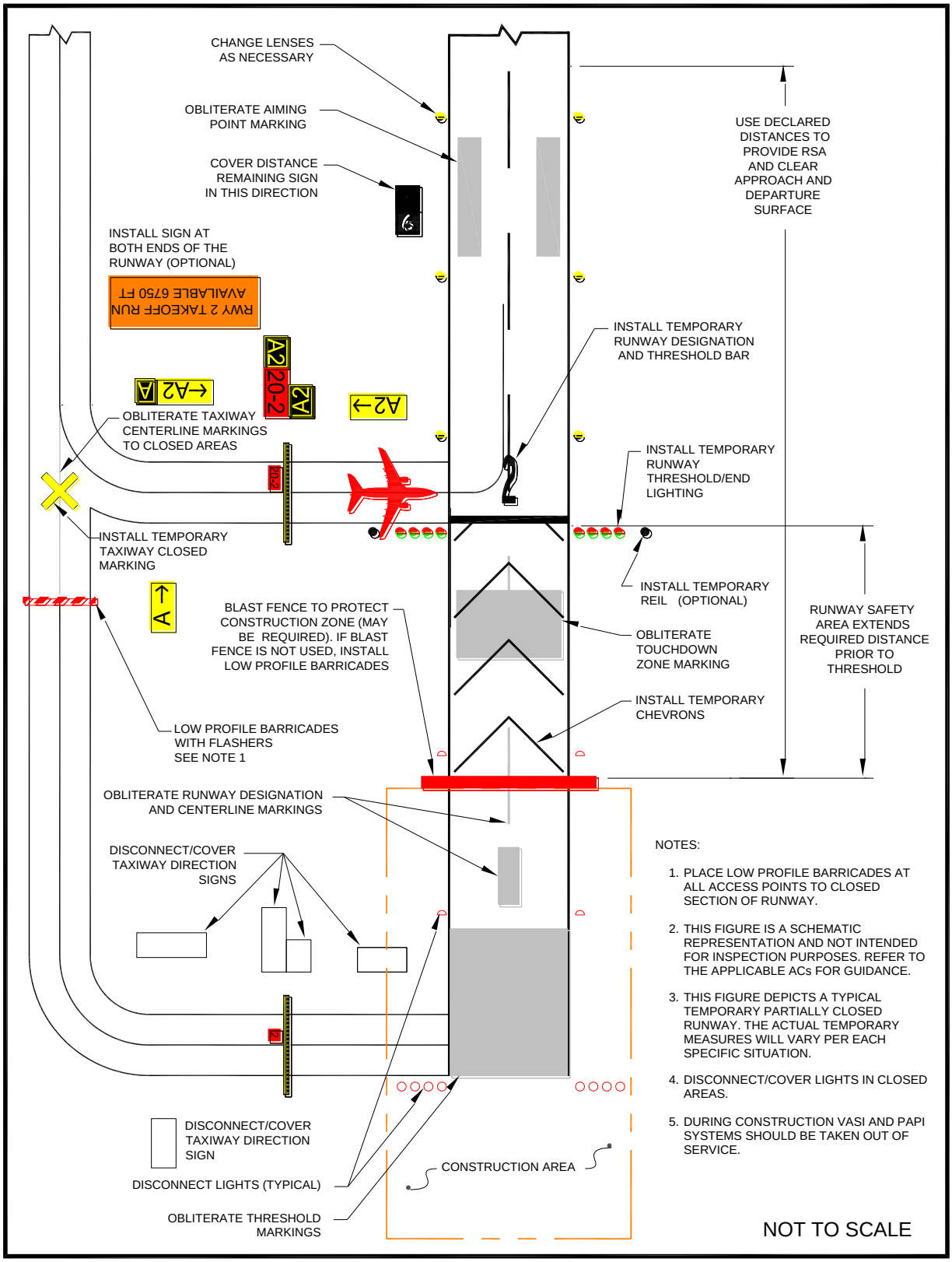
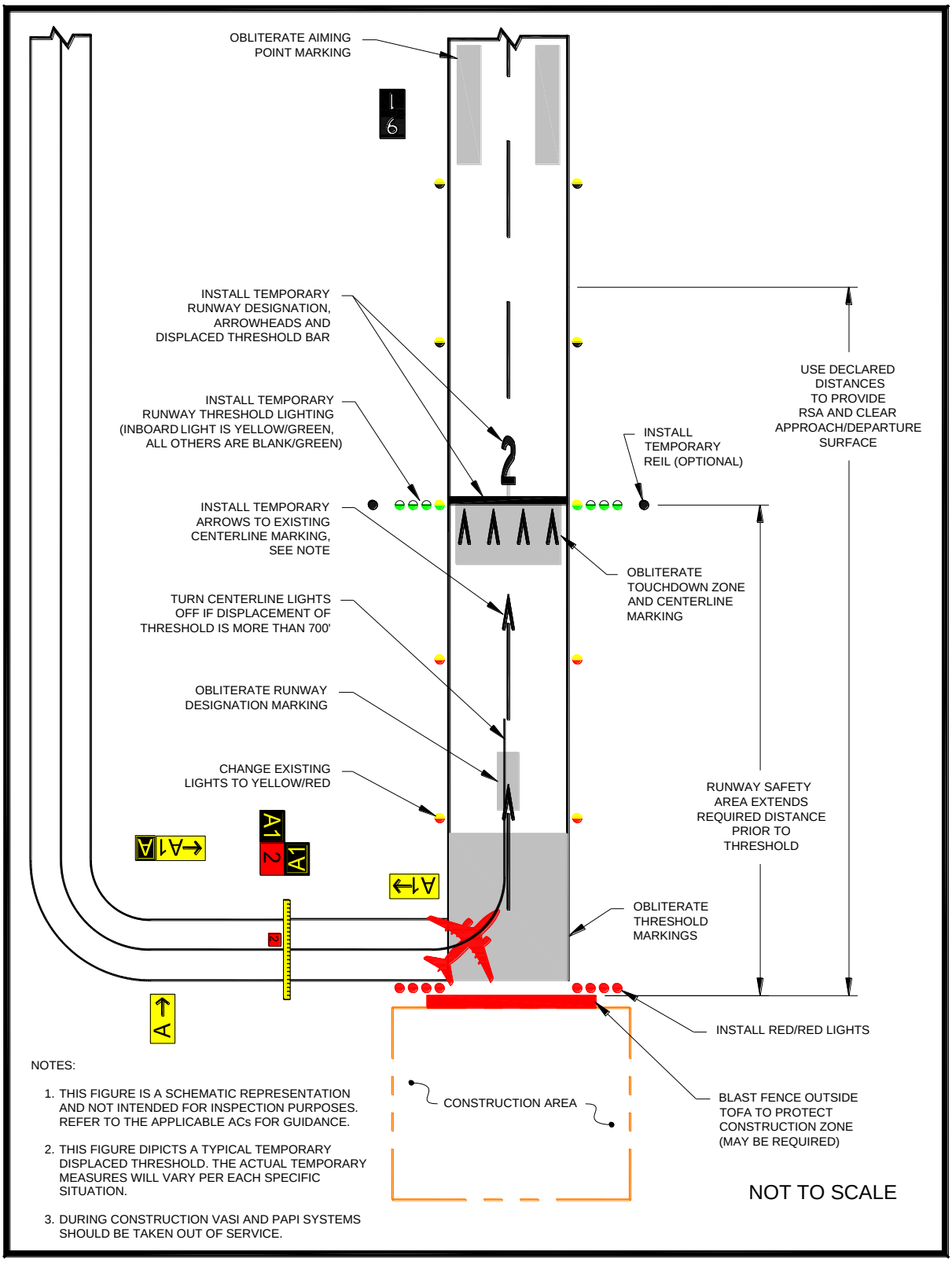


Figure 2-2. Temporary Displaced Threshold



Note: See paragraph 2.18.2.5.

2.7.2 Mitigation of Effects.

Establishment of specific procedures is necessary to maintain the safety and efficiency of airport operations. The CSPP must address:

2.7.2.1 Temporary changes to runway and/or taxi operations.

2.7.2.2 Detours for ARFF and other airport vehicles.

2.7.2.3 Maintenance of essential utilities.

2.7.2.4 Temporary changes to air traffic control procedures. Such changes must be coordinated with the ATO.

2.8 Navigation Aid (NAVAID) Protection.

Before commencing construction activity, parking vehicles, or storing construction equipment and materials near a NAVAID, coordinate with the appropriate FAA ATO/Technical Operations office to evaluate the effect of construction activity and the required distance and direction from the NAVAID. (See paragraph 2.13.5.3.) Construction activities, materials/equipment storage, and vehicle parking near electronic NAVAIDs require special consideration since they may interfere with signals essential to air navigation. If any NAVAID may be affected, the CSPP and SPCD must show an understanding of the "critical area" associated with each NAVAID and describe how it will be protected. Where applicable, the operational critical areas of NAVAIDs should be graphically delineated on the project drawings. Pay particular attention to stockpiling material, as well as to movement and parking of equipment that may interfere with line of sight from the ATCT or with electronic emissions. Interference from construction equipment and activities may require NAVAID shutdown or adjustment of instrument approach minimums for low visibility operations. This condition requires that a NOTAM be filed (see paragraph 2.13.2). Construction activities and materials/equipment storage near a NAVAID must not obstruct access to the equipment and instruments for maintenance. Submittal of a 7460-1 form is required for construction vehicles operating near FAA NAVAIDs. (See paragraph 2.13.5.3.)

2.9 Contractor Access.

The CSPP must detail the areas to which the contractor must have access, and explain how contractor personnel will access those areas. Specifically address:

2.9.1 Location of Stockpiled Construction Materials.

Stockpiled materials and equipment storage are not permitted within the RSA and OFZ, and if possible should not be permitted within the Object Free Area (OFA) of an operational runway. Stockpiling material in the OFA requires submittal of a 7460-1 form and justification provided to the appropriate FAA Airports Regional or District Office for approval. The airport operator must ensure that stockpiled materials and equipment adjacent to these areas are prominently marked and lighted during hours of restricted visibility or darkness. (See paragraph 2.18.2.) This includes determining and

verifying that materials are stabilized and stored at an approved location so as not to be a hazard to aircraft operations and to prevent attraction of wildlife and foreign object damage from blowing or tracked material. See paragraphs 2.10 and 2.11.

2.9.2 Vehicle and Pedestrian Operations.

The CSPP should include specific vehicle and pedestrian requirements. Vehicle and pedestrian access routes for airport construction projects must be controlled to prevent inadvertent or unauthorized entry of persons, vehicles, or animals onto the AOA. The airport operator should coordinate requirements for vehicle operations with airport tenants, contractors, and the FAA air traffic manager. In regard to vehicle and pedestrian operations, the CSPP should include the following, with associated training requirements:

2.9.2.1 **Construction Site Parking.**

Designate in advance vehicle parking areas for contractor employees to prevent any unauthorized entry of persons or vehicles onto the AOA. These areas should provide reasonable contractor employee access to the job site.

2.9.2.2 **Construction Equipment Parking.**

Contractor employees must park and service all construction vehicles in an area designated by the airport operator outside the OFZ and never in the safety area of an active runway or taxiway. Unless a complex setup procedure makes movement of specialized equipment infeasible, inactive equipment must not be parked on a closed taxiway or runway. If it is necessary to leave specialized equipment on a closed taxiway or runway at night, the equipment must be well lighted. Employees should also park construction vehicles outside the OFA when not in use by construction personnel (for example, overnight, on weekends, or during other periods when construction is not active). Parking areas must not obstruct the clear line of sight by the ATCT to any taxiways or runways under air traffic control nor obstruct any runway visual aids, signs, or navigation aids. The FAA must also study those areas to determine effects on airport design criteria, surfaces established by 14 CFR Part 77, Safe, Efficient Use, and Preservation of the Navigable Airspace (Part 77), and on NAVAIDs and Instrument Approach Procedures (IAP). See paragraph 2.13.1 for further information.

2.9.2.3 **Access and Haul Roads.**

Determine the construction contractor’s access to the construction sites and haul roads. Do not permit the construction contractor to use any access or haul roads other than those approved. Access routes used by contractor vehicles must be clearly marked to prevent inadvertent entry to areas open to airport operations. Pay special attention to ensure that if construction traffic is to share or cross any ARFF routes that ARFF right of way is not impeded at any time, and that construction traffic on haul

roads does not interfere with NAVAIDs or approach surfaces of operational runways. Address whether access gates will be blocked or inoperative or if a rally point will be blocked or inaccessible.

2.9.2.4 Marking and lighting of vehicles in accordance with AC 150/5210-5, *Painting, Marking, and Lighting of Vehicles Used on an Airport.*

2.9.2.5 Description of proper vehicle operations on various areas under normal, lost communications, and emergency conditions.

2.9.2.6 Required escorts.

2.9.2.7 **Training Requirements for Vehicle Drivers to Ensure Compliance with the Airport Operator's Vehicle Rules and Regulations.**

Specific training should be provided to vehicle operators, including those providing escorts. See AC 150/5210-20, *Ground Vehicle Operations on Airports*, for information on training and records maintenance requirements.

2.9.2.8 **Situational Awareness.**

Vehicle drivers must confirm by personal observation that no aircraft is approaching their position (either in the air or on the ground) when given clearance to cross a runway, taxiway, or any other area open to airport operations. In addition, it is the responsibility of the escort vehicle driver to verify the movement/position of all escorted vehicles at any given time. At non-towered airports, all aircraft movements and flight operations rely on aircraft operators to self-report their positions and intentions. However, there is no requirement for an aircraft to have radio communications. Because aircraft do not always broadcast their positions or intentions, visual checking, radio monitoring, and situational awareness of the surroundings is critical to safety.

2.9.2.9 **Two-Way Radio Communication Procedures.**

2.9.2.9.1 General.

The airport operator must ensure that tenant and construction contractor personnel engaged in activities involving unescorted operation on aircraft movement areas observe the proper procedures for communications, including using appropriate radio frequencies at airports with and without ATCT. When operating vehicles on or near open runways or taxiways, construction personnel must understand the critical importance of maintaining radio contact, as directed by the airport operator, with:

1. Airport operations
2. ATCT

3. Common Traffic Advisory Frequency (CTAF), which may include UNICOM, MULTICOM.
4. Automatic Terminal Information Service (ATIS). This frequency is useful for monitoring conditions on the airport. Local air traffic will broadcast information regarding construction related runway closures and "shortened" runways on the ATIS frequency.

2.9.2.9.2 Areas Requiring Two-Way Radio Communication with the ATCT.

Vehicular traffic crossing active movement areas must be controlled either by two-way radio with the ATCT, escort, flagman, signal light, or other means appropriate for the particular airport.

2.9.2.9.3 Frequencies to be Used.

The airport operator will specify the frequencies to be used by the contractor, which may include the CTAF for monitoring of aircraft operations. Frequencies may also be assigned by the airport operator for other communications, including any radio frequency in compliance with Federal Communications Commission requirements. At airports with an ATCT, the airport operator will specify the frequency assigned by the ATCT to be used between contractor vehicles and the ATCT.

2.9.2.9.4 Proper radio usage, including read back requirements.

2.9.2.9.5 Proper phraseology, including the International Phonetic Alphabet.

2.9.2.9.6 Light Gun Signals.

Even though radio communication is maintained, escort vehicle drivers must also familiarize themselves with ATCT light gun signals in the event of radio failure. See the FAA safety placard "Ground Vehicle Guide to Airport Signs and Markings." This safety placard may be downloaded through the Runway Safety Program Web site at http://www.faa.gov/airports/runway_safety/publications/ (see "Signs & Markings Vehicle Dashboard Sticker") or obtained from the FAA Airports Regional Office.

2.9.2.10 **Maintenance of the secured area of the airport, including:**

2.9.2.10.1 Fencing and Gates.

Airport operators and contractors must take care to maintain security during construction when access points are created in the security fencing to permit the passage of construction vehicles or personnel. Temporary gates should be equipped so they can be securely closed and locked to prevent access by animals and unauthorized people. Procedures should be in place to ensure that only authorized persons and vehicles have access to the AOA and to prohibit "piggybacking" behind another person or vehicle. The Department of Transportation (DOT) document DOT/FAA/AR-

00/52, *Recommended Security Guidelines for Airport Planning and Construction*, provides more specific information on fencing. A copy of this document can be obtained from the Airport Consultants Council, Airports Council International, or American Association of Airport Executives.

2.9.2.10.2 Badging Requirements.

Airports subject to 49 CFR Part 1542, *Airport Security*, must meet standards for access control, movement of ground vehicles, and identification of construction contractor and tenant personnel.

2.10 Wildlife Management.

The CSPP and SPCD must be in accordance with the airport operator's wildlife hazard management plan, if applicable. See AC 150/5200-33, *Hazardous Wildlife Attractants On or Near Airports,* and CertAlert 98-05, *Grasses Attractive to Hazardous Wildlife.* Construction contractors must carefully control and continuously remove waste or loose materials that might attract wildlife. Contractor personnel must be aware of and avoid construction activities that can create wildlife hazards on airports, such as:

2.10.1 Trash.

Food scraps must be collected from construction personnel activity.

2.10.2 Standing Water.

2.10.3 Tall Grass and Seeds.

Requirements for turf establishment can be at odds with requirements for wildlife control. Grass seed is attractive to birds. Lower quality seed mixtures can contain seeds of plants (such as clover) that attract larger wildlife. Seeding should comply with the guidance in AC 150/5370-10, *Standards for Specifying Construction of Airports,* Item T-901, Seeding. Contact the local office of the United Sates Department of Agriculture Soil Conservation Service or the State University Agricultural Extension Service (County Agent or equivalent) for assistance and recommendations. These agencies can also provide liming and fertilizer recommendations.

2.10.4 Poorly Maintained Fencing and Gates.

See paragraph 2.9.2.10.1.

2.10.5 Disruption of Existing Wildlife Habitat.

While this will frequently be unavoidable due to the nature of the project, the CSPP should specify under what circumstances (location, wildlife type) contractor personnel should immediately notify the airport operator of wildlife sightings.

2.11 Foreign Object Debris (FOD) Management.

Waste and loose materials, commonly referred to as FOD, are capable of causing damage to aircraft landing gears, propellers, and jet engines. Construction contractors must not leave or place FOD on or near active aircraft movement areas. Materials capable of creating FOD must be continuously removed during the construction project. Fencing (other than security fencing) or covers may be necessary to contain material that can be carried by wind into areas where aircraft operate. See AC 150/5210-24, *Foreign Object Debris (FOD) Management.*

2.12 Hazardous Materials (HAZMAT) Management.

Contractors operating construction vehicles and equipment on the airport must be prepared to expeditiously contain and clean-up spills resulting from fuel or hydraulic fluid leaks. Transport and handling of other hazardous materials on an airport also requires special procedures. See AC 150/5320-15, *Management of Airport Industrial Waste.*

2.13 Notification of Construction Activities.

The CSPP and SPCD must detail procedures for the immediate notification of airport users and the FAA of any conditions adversely affecting the operational safety of the airport. It must address the notification actions described below, as applicable.

2.13.1 List of Responsible Representatives/points of contact for all involved parties, and procedures for contacting each of them, including after hours.

2.13.2 NOTAMs.

Only the airport operator may initiate or cancel NOTAMs on airport conditions, and is the only entity that can close or open a runway. The airport operator must coordinate the issuance, maintenance, and cancellation of NOTAMs about airport conditions resulting from construction activities with tenants and the local air traffic facility (control tower, approach control, or air traffic control center), and must either enter the NOTAM into NOTAM Manager, or provide information on closed or hazardous conditions on airport movement areas to the FAA Flight Service Station (FSS) so it can issue a NOTAM. The airport operator must file and maintain a list of authorized representatives with the FSS. Refer to AC 150/5200-28, *Notices to Airmen (NOTAMs) for Airport Operators,* for a sample NOTAM form. Only the FAA may issue or cancel NOTAMs on shutdown or irregular operation of FAA owned facilities. Any person having reason to believe that a NOTAM is missing, incomplete, or inaccurate must notify the airport operator. See paragraph 2.7.1.1 about issuing NOTAMs for partially closed runways versus runways with displaced thresholds.

2.13.3 Emergency notification procedures for medical, fire fighting, and police response.

2.13.4 Coordination with ARFF.

The CSPP must detail procedures for coordinating through the airport sponsor with ARFF personnel, mutual aid providers, and other emergency services if construction requires:

1. The deactivation and subsequent reactivation of water lines or fire hydrants, or
2. The rerouting, blocking and restoration of emergency access routes, or
3. The use of hazardous materials on the airfield.

2.13.5 Notification to the FAA.

2.13.5.1 **Part 77.**

Any person proposing construction or alteration of objects that affect navigable airspace, as defined in Part 77, must notify the FAA. This includes construction equipment and proposed parking areas for this equipment (i.e., cranes, graders, other equipment) on airports. FAA Form 7460-1, *Notice of Proposed Construction or Alteration*, can be used for this purpose and submitted to the appropriate FAA Airports Regional or District Office. See Appendix A to download the form. Further guidance is available on the FAA web site at oeaaa.faa.gov.

2.13.5.2 **Part 157.**

With some exceptions, Title 14 CFR Part 157, *Notice of Construction, Alteration, Activation, and Deactivation of Airports*, requires that the airport operator notify the FAA in writing whenever a non-Federally funded project involves the construction of a new airport; the construction, realigning, altering, activating, or abandoning of a runway, landing strip, or associated taxiway; or the deactivation or abandoning of an entire airport. Notification involves submitting FAA Form 7480-1, *Notice of Landing Area Proposal*, to the nearest FAA Airports Regional or District Office. See Appendix A to download the form.

2.13.5.3 **NAVAIDs.**

For emergency (short-notice) notification about impacts to both airport owned and FAA owned NAVAIDs, contact: 866-432-2622.

2.13.5.3.1 Airport Owned/FAA Maintained.

If construction operations require a shutdown of 24 hours or greater in duration, or more than 4 hours daily on consecutive days, of a NAVAID owned by the airport but maintained by the FAA, provide a 45-day minimum notice to FAA ATO/Technical Operations prior to facility shutdown, using Strategic Event Coordination (SEC) Form 6000.26 contained within FAA Order 6000.15, *General Maintenance Handbook for National Airspace System (NAS) Facilities*.

2.13.5.3.2 FAA Owned.

1. The airport operator must notify the appropriate FAA ATO Service Area Planning and Requirements (P&R) Group a minimum of 45 days prior to implementing an event that causes impacts to NAVAIDs, using SEC Form 6000.26.
2. Coordinate work for an FAA owned NAVAID shutdown with the local FAA ATO/Technical Operations office, including any necessary reimbursable agreements and flight checks. Detail procedures that address unanticipated utility outages and cable cuts that could impact FAA NAVAIDs. Refer to active Service Level Agreement with ATO for specifics.

2.14 **Inspection Requirements.**

2.14.1 Daily Inspections.

Inspections should be conducted at least daily, but more frequently if necessary to ensure conformance with the CSPP. A sample checklist is provided in Appendix D, Construction Project Daily Safety Inspection Checklist. See also AC 150/5200-18, *Airport Safety Self-Inspection.* Airport operators holding a Part 139 certificate are required to conduct self-inspections during unusual conditions, such as construction activities, that may affect safe air carrier operations.

2.14.2 Interim Inspections.

Inspections should be conducted of all areas to be (re)opened to aircraft traffic to ensure the proper operation of lights and signs, for correct markings, and absence of FOD. The contractor should conduct an inspection of the work area with airport operations personnel. The contractor should ensure that all construction materials have been secured, all pavement surfaces have been swept clean, all transition ramps have been properly constructed, and that surfaces have been appropriately marked for aircraft to operate safely. Only if all items on the list meet with the airport operator's approval should the air traffic control tower be notified to open the area to aircraft operations. The contractor should be required to retain a suitable workforce and the necessary equipment at the work area for any last minute cleanup that may be requested by the airport operator prior to opening the area.

2.14.3 Final Inspections.

New runways and extended runway closures may require safety inspections at certificated airports prior to allowing air carrier service. Coordinate with the FAA Airport Certification Safety Inspector (ACSI) to determine if a final inspection will be necessary.

2.15 **Underground Utilities.**

The CSPP and/or SPCD must include procedures for locating and protecting existing underground utilities, cables, wires, pipelines, and other underground facilities in excavation areas. This may involve coordinating with public utilities and FAA ATO/Technical Operations. Note that "One Call" or "Miss Utility" services do not include FAA ATO/Technical Operations.

2.16 **Penalties.**

The CSPP should detail penalty provisions for noncompliance with airport rules and regulations and the safety plans (for example, if a vehicle is involved in a runway incursion). Such penalties typically include rescission of driving privileges or access to the AOA.

2.17 **Special Conditions.**

The CSPP must detail any special conditions that affect the operation of the airport and will require the activation of any special procedures (for example, low-visibility operations, snow removal, aircraft in distress, aircraft accident, security breach, Vehicle / Pedestrian Deviation (VPD) and other activities requiring construction suspension/resumption).

2.18 **Runway and Taxiway Visual Aids.**

This includes marking, lighting, signs, and visual NAVAIDs. The CSPP must ensure that areas where aircraft will be operating are clearly and visibly separated from construction areas, including closed runways. Throughout the duration of the construction project, verify that these areas remain clearly marked and visible at all times and that marking, lighting, signs, and visual NAVAIDs that are to continue to perform their functions during construction remain in place and operational. Visual NAVAIDs that are not serving their intended function during construction must be temporarily disabled, covered, or modified as necessary. The CSPP must address the following, as appropriate:

2.18.1 General.

Airport markings, lighting, signs, and visual NAVAIDs must be clearly visible to pilots, not misleading, confusing, or deceptive. All must be secured in place to prevent movement by prop wash, jet blast, wing vortices, and other wind currents and constructed of materials that will minimize damage to an aircraft in the event of inadvertent contact. Items used to secure such markings must be of a color similar to the marking.

2.18.2 Markings.

During the course of construction projects, temporary pavement markings are often required to allow for aircraft operations during or between work periods. During the design phase of the project, the designer should coordinate with the project manager,

airport operations, airport users, the FAA Airports project manager, and Airport Certification Safety Inspector for Part 139 airports to determine minimum temporary markings. The FAA Airports project manager will, wherever a runway is closed, coordinate with the appropriate FAA Flight Standards Office and disseminate findings to all parties. Where possible, the temporary markings on finish grade pavements should be placed to mirror the dimensions of the final markings. Markings must be in compliance with the standards of AC 150/5340-1, *Standards for Airport Markings*, except as noted herein. Runways and runway exit taxiways closed to aircraft operations are marked with a yellow X. The preferred visual aid to depict temporary runway closure is the lighted X signal placed on or near the runway designation numbers. (See paragraph 2.18.2.1.2.)

2.18.2.1 **Closed Runways and Taxiways.**

2.18.2.1.1 Permanently Closed Runways.

For runways, obliterate the threshold marking, runway designation marking, and touchdown zone markings, and place an X at each end and at 1,000-foot (300 m) intervals. For a multiple runway environment, if the lighted X on a designated number will be located in the RSA of an adjacent active runway, locate the lighted X farther down the closed runway to clear the RSA of the active runway. In addition, the closed runway numbers located in the RSA of an active runway must be marked with a flat yellow X.

2.18.2.1.2 Temporarily Closed Runways.

For runways that have been temporarily closed, place an X at each end of the runway directly on or as near as practicable to the runway designation numbers. For a multiple runway environment, if the lighted X on a designated number will be located in the RSA of an adjacent active runway, locate the lighted X farther down the closed runway to clear the RSA of the active runway. In addition, the closed runway numbers located in the RSA of an active runway must be marked with a flat yellow X. See Figure 2-3. See also paragraph 2.18.3.3.

2.18.2.1.3 Partially Closed Runways and Displaced Thresholds.

When threshold markings are needed to identify the temporary beginning of the runway that is available for landing, the markings must comply with AC 150/5340-1. An X is not used on a partially closed runway or a runway with a displaced threshold. See paragraph 2.7.1.1 for the difference between partially closed runways and runways with displaced thresholds. Because of the temporary nature of threshold displacement due to construction, it is not necessary to re-adjust the existing runway centerline markings to meet standard spacing for a runway with a visual approach. Some of the requirements below may be waived in the cases of low-activity airports and/or short duration changes that are measured in days rather than weeks. Consider whether the presence of an airport traffic

control tower allows for the development of special procedures. Contact the appropriate FAA Airports Regional or District Office for assistance.

Figure 2-3. Markings for a Temporarily Closed Runway

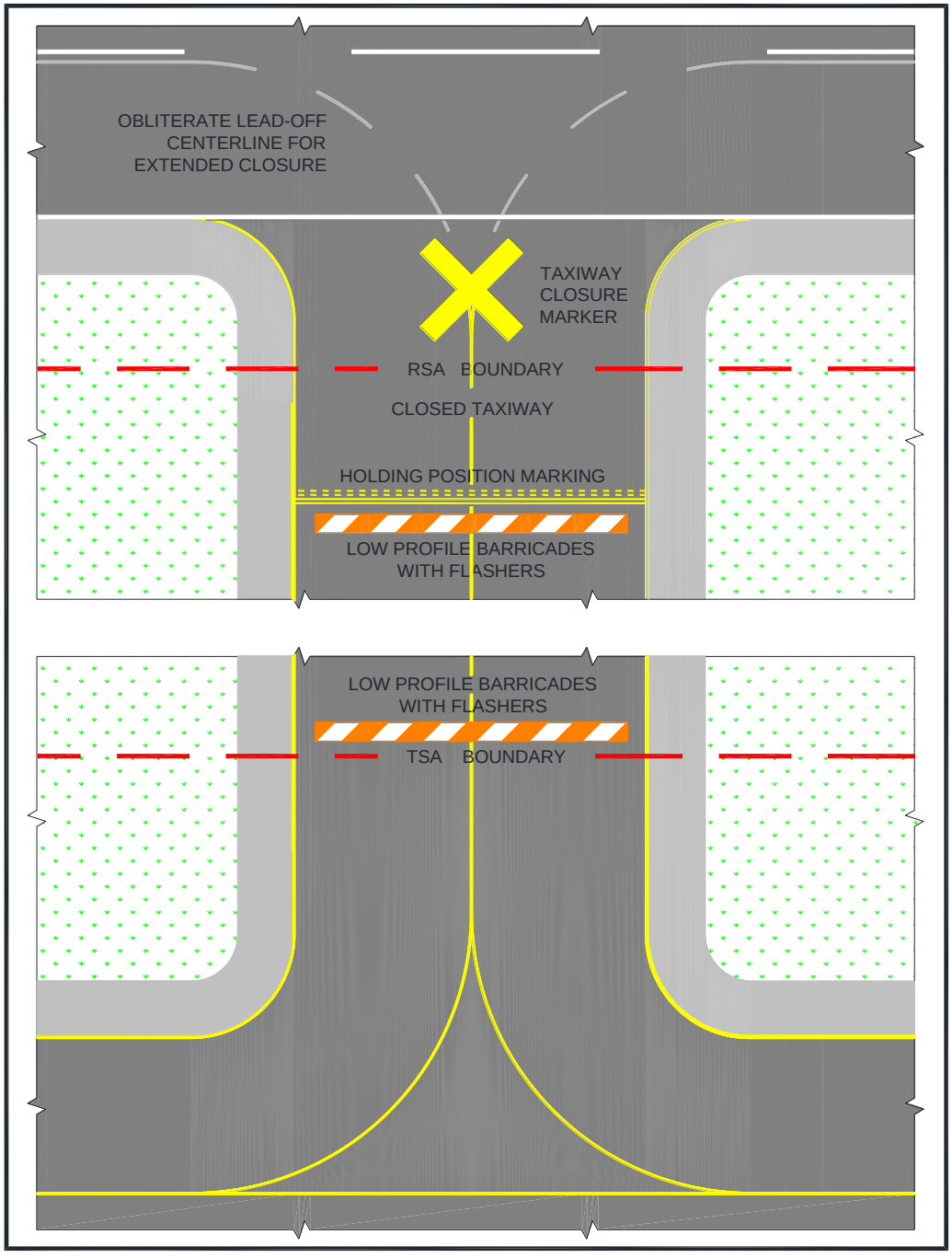
1. **Partially Closed Runways.** Pavement markings for temporary closed portions of the runway consist of a runway threshold bar, runway designation, and yellow chevrons to identify pavement areas that are unsuitable for takeoff or landing (see AC 150/5340-1). Obliterate or cover markings prior to the moved threshold. Existing touchdown zone markings beyond the moved threshold may remain in place. Obliterate aiming point markings. Issue appropriate NOTAMs regarding any nonstandard markings. See Figure 2-4.

2. **Displaced Thresholds.** Pavement markings for a displaced threshold consist of a runway threshold bar, runway designation, and white arrowheads with and without arrow shafts. These markings are required to identify the portion of the runway before the displaced threshold to provide centerline guidance for pilots during approaches, takeoffs, and landing rollouts from the opposite direction. See AC 150/5340-1. Obliterate markings prior to the displaced threshold. Existing touchdown zone markings beyond the displaced threshold may remain in place. Obliterate aiming point markings. Issue appropriate NOTAMs regarding any nonstandard markings. See Figure 2-2.

2.18.2.1.4 Taxiways.

1. **Permanently Closed Taxiways.** AC 150/5300-13 *Airport Design*, notes that it is preferable to remove the pavement, but for pavement that is to remain, place an X at the entrance to both ends of the closed section. Obliterate taxiway centerline markings, including runway leadoff lines, leading to the closed taxiway. See Figure 2-4.

Figure 2-4. Temporary Taxiway Closure



2. **Temporarily Closed Taxiways.** Place barricades outside the safety area of intersecting taxiways. For runway/taxiway intersections, place an X at the entrance to the closed taxiway from the runway. If the taxiway will be closed for an extended period, obliterate taxiway centerline markings, including runway leadoff lines and taxiway to taxiway turns, leading to the closed section. Always obliterate runway lead-off lines for high speed exits, regardless of the duration of the closure. If the centerline markings will be reused upon reopening the taxiway, it is preferable to paint over the marking. This will result in less damage to the pavement when the upper layer of paint is ultimately removed. See Figure 2-4.

2.18.2.1.5 Temporarily Closed Airport.

When the airport is closed temporarily, mark all the runways as closed.

2.18.2.2 If unable to paint temporary markings on the pavement, construct them from any of the following materials: fabric, colored plastic, painted sheets of plywood, or similar materials. They must be properly configured and appropriately secured to prevent movement by prop wash, jet blast, or other wind currents. Items used to secure such markings must be of a color similar to the marking.

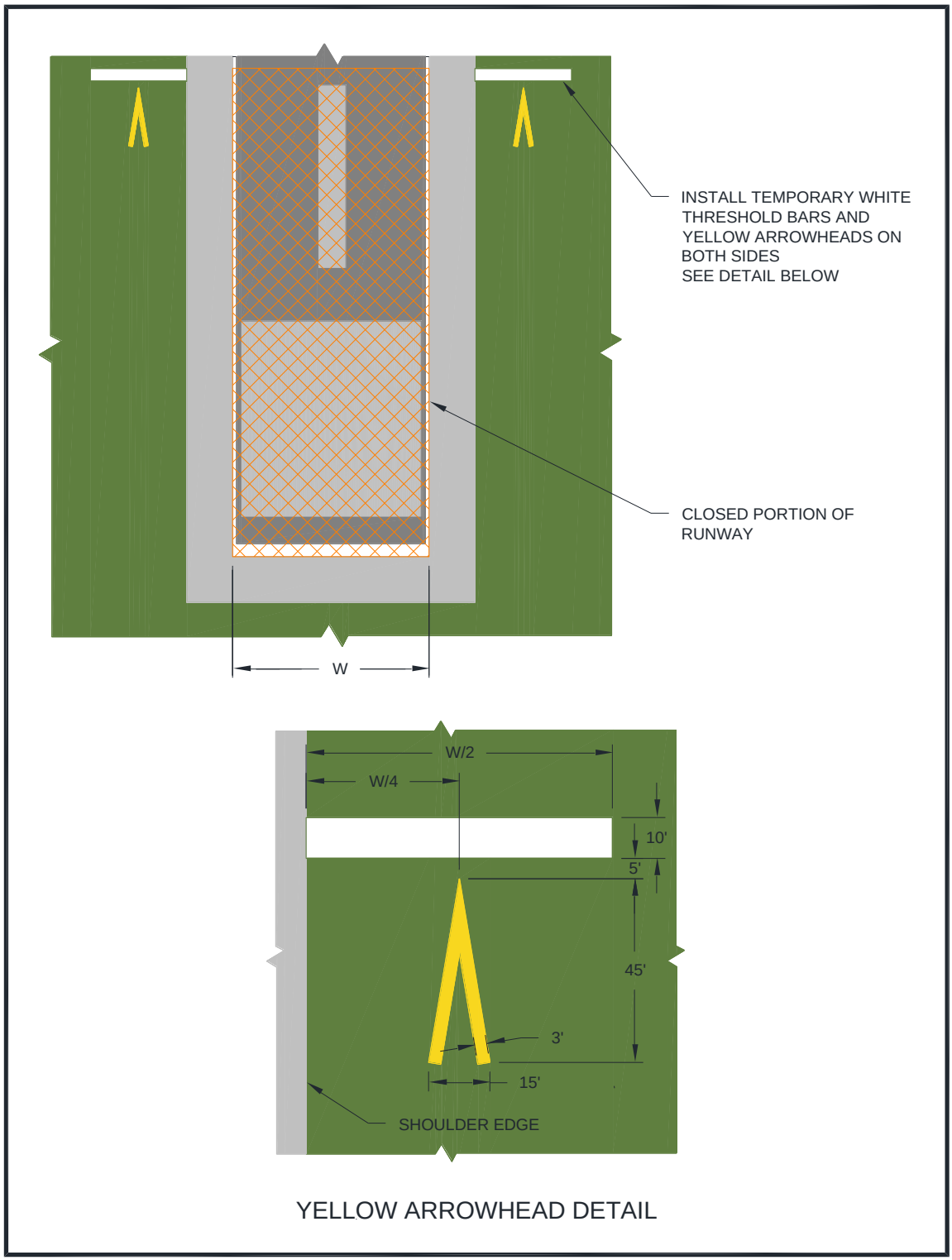
2.18.2.3 It may be necessary to remove or cover runway markings, including but not limited to, runway designation markings, threshold markings, centerline markings, edge stripes, touchdown zone markings and aiming point markings, depending on the length of construction and type of activity at the airport. When removing runway markings, apply the same treatment to areas between stripes or numbers, as the cleaned area will appear to pilots as a marking in the shape of the treated area.

2.18.2.4 If it is not possible to install threshold bars, chevrons, and arrows on the pavement, "temporary outboard white threshold bars and yellow arrowheads", see Figure 2-5, may be used. Locate them outside of the runway pavement surface on both sides of the runway. The dimensions must be as shown in Figure 2-5. If the markings are not discernible on grass or snow, apply a black background with appropriate material over the ground to ensure they are clearly visible.

2.18.2.5 The application rate of paint to mark a short-term temporary runway and taxiway markings may deviate from the standard (see Item P-620, "Runway and Taxiway Painting," in AC 150/5370-10), but the dimensions must meet the existing standards. When applying temporary markings at night, it is recommended that the fast curing, Type II paint be used to help offset the higher humidity and cooler temperatures often experienced at night. Diluting the paint will substantially increase cure time and is not recommended. Glass beads are not recommended for temporary markings. Striated markings may also be used for certain temporary markings. AC

150/5340-1, *Standards for Airport Markings*, has additional guidance on temporary markings.

Figure 2-5. Temporary Outboard White Threshold Bars and Yellow Arrowheads



2.18.3 Lighting and Visual NAVAIDs.

This paragraph refers to standard runway and taxiway lighting systems. See below for hazard lighting. Lighting installation must be in conformance with AC 150/5340-30, *Design and Installation Details for Airport Visual Aids,* and fixture design in conformance with AC 150/5345-50, *Specification for Portable Runway and Taxiway Lights.* When disconnecting runway and taxiway lighting fixtures, disconnect the associated isolation transformers. See AC 150/5340-26, *Maintenance of Airport Visual Aid Facilities*, for disconnect procedures and safety precautions. Alternately, cover the light fixture in such a way as to prevent light leakage. Avoid removing the lamp from energized fixtures because an excessive number of isolation transformers with open secondaries may damage the regulators and/or increase the current above its normal value. Secure, identify, and place any above ground temporary wiring in conduit to prevent electrocution and fire ignition sources. Maintain mandatory hold signs to operate normally in any situation where pilots or vehicle drivers could mistakenly be in that location. At towered airports certificated under Part 139, holding position signs are required to be illuminated on open taxiways crossing to closed or inactive runways. If the holding position sign is installed on the runway circuit for the closed runway, install a jumper to the taxiway circuit to provide power to the holding position sign for nighttime operations. Where it is not possible to maintain power to signs that would normally be operational, install barricades to exclude aircraft. Figure 2-1, Figure 2-2, Figure 2-3, and Figure 2-4 illustrate temporary changes to lighting and visual NAVAIDs.

2.18.3.1 **Permanently Closed Runways and Taxiways.**

For runways and taxiways that have been permanently closed, disconnect the lighting circuits.

2.18.3.2 **Temporarily Closed Runways and New Runways Not Yet Open to Air Traffic.**

If available, use a lighted X, both at night and during the day, placed at each end of the runway on or near the runway designation numbers facing the approach. (Note that the lighted X must be illuminated at all times that it is on a runway.) The use of a lighted X is required if night work requires runway lighting to be on. See AC 150/5345-55, *Specification for L-893, Lighted Visual Aid to Indicate Temporary Runway Closure.* For runways that have been temporarily closed, but for an extended period, and for those with pilot controlled lighting, disconnect the lighting circuits or secure switches to prevent inadvertent activation. For runways that will be opened periodically, coordinate procedures with the FAA air traffic manager or, at airports without an ATCT, the airport operator. Activate stop bars if available. Figure 2-6 shows a lighted X by day. Figure 2-7 shows a lighted X at night.

Figure 2-6. Lighted X in Daytime

Figure 2-7. Lighted X at Night

2.18.3.3 **Partially Closed Runways and Displaced Thresholds.**

When a runway is partially closed, a portion of the pavement is unavailable for any aircraft operation, meaning taxiing and landing or taking off in either direction. A displaced threshold, by contrast, is put in place to ensure obstacle clearance by landing aircraft. The pavement prior to the displaced threshold is available for takeoff in the direction of the displacement, and for landing and takeoff in the opposite direction. Misunderstanding this difference and issuance of a subsequently inaccurate NOTAM can result in a hazardous situation. For both partially

closed runways and displaced thresholds, approach lighting systems at the affected end must be placed out of service.

2.18.3.3.1 Partially Closed Runways.

Disconnect edge and threshold lights on that part of the runway at and behind the threshold (that is, the portion of the runway that is closed). Alternately, cover the light fixtures in such a way as to prevent light leakage. See Figure 2-1.

2.18.3.3.2 Temporary Displaced Thresholds.

Edge lighting in the area of the displacement emits red light in the direction of approach and yellow light (white for visual runways) in the opposite direction. If the displacement is 700 feet or less, blank out centerline lights in the direction of approach or place the centerline lights out of service. If the displacement is over 700 feet, place the centerline lights out of service. See AC 150/5340-30 for details on lighting displaced thresholds. See Figure 2-2.

2.18.3.3.3 Temporary runway thresholds and runway ends must be lighted if the runway is lighted and it is the intended threshold for night landings or instrument meteorological conditions.

2.18.3.3.4 A temporary threshold on an unlighted runway may be marked by retroreflective, elevated markers in addition to markings noted in paragraph 2.18.2.1.3. Markers seen by aircraft on approach are green. Markers at the rollout end of the runway are red. At certificated airports, temporary elevated threshold markers must be mounted with a frangible fitting (see 14 CFR Part 139.309). At non-certificated airports, the temporary elevated threshold markings may either be mounted with a frangible fitting or be flexible. See AC 150/5345-39, *Specification for L-853, Runway and Taxiway Retroreflective Markers.*

2.18.3.3.5 Temporary threshold lights and runway end lights and related visual NAVAIDs are installed outboard of the edges of the full-strength pavement only when they cannot be installed on the pavement. They are installed with bases at grade level or as low as possible, but not more than 3 inch (7.6 cm) above ground. (The standard above ground height for airport lighting fixtures is 14 inches (35 cm)). When any portion of a base is above grade, place properly compacted fill around the base to minimize the rate of gradient change so aircraft can, in an emergency, cross at normal landing or takeoff speeds without incurring significant damage. See AC 150/5370-10.

2.18.3.3.6 Maintain threshold and edge lighting color and spacing standards as described in AC 150/5340-30. Battery powered, solar, or portable lights that meet the criteria in AC 150/5345-50 may be used. These systems are intended primarily for visual flight rules (VFR) aircraft operations but may

be used for instrument flight rules (IFR) aircraft operations, upon individual approval from the Flight Standards Division of the applicable FAA Regional Office.

2.18.3.3.7 When runway thresholds are temporarily displaced, reconfigure yellow lenses (caution zone), as necessary, and place the centerline lights out of service.

2.18.3.3.8 Relocate the Visual Glide Slope Indicator (VGSI), such as Visual Approach Slope Indicator (VASI) and Precision Approach Path Indicator (PAPI); other airport lights, such as Runway End Identifier Lights (REIL); and approach lights to identify the temporary threshold. Another option is to disable the VGSI or any equipment that would give misleading indications to pilots as to the new threshold location. Installation of temporary visual aids may be necessary to provide adequate guidance to pilots on approach to the affected runway. If the FAA owns and operates the VGSI, coordinate its installation or disabling with the local ATO/Technical Operations Office. Relocation of such visual aids will depend on the duration of the project and the benefits gained from the relocation, as this can result in great expense. See FAA JO 6850.2, *Visual Guidance Lighting Systems,* for installation criteria for FAA owned and operated NAVAIDs.

2.18.3.3.9 Issue a NOTAM to inform pilots of temporary lighting conditions.

2.18.3.4 **Temporarily Closed Taxiways.**

If possible, deactivate the taxiway lighting circuits. When deactivation is not possible (for example other taxiways on the same circuit are to remain open), cover the light fixture in a way as to prevent light leakage.

2.18.4 Signs.

To the extent possible, signs must be in conformance with AC 150/5345-44, *Specification for Runway and Taxiway Signs*, and AC 150/5340-18, *Standard for Airport Sign Systems.*

2.18.4.1 **Existing Signs.**

Runway exit signs are to be covered for closed runway exits. Outbound destination signs are to be covered for closed runways. Any time a sign does not serve its normal function or would provide conflicting information, it must be covered or removed to prevent misdirecting pilots. Note that information signs identifying a crossing taxiway continue to perform their normal function even if the crossing taxiway is closed. For long term construction projects, consider relocating signs, especially runway distance remaining signs.

2.18.4.2 **Temporary Signs.**

Orange construction signs comprise a message in black on an orange background. Orange construction signs may help pilots be aware of changed conditions. The airport operator may choose to introduce these signs as part of a movement area construction project to increase situational awareness when needed. Locate signs outside the taxiway safety limits and ahead of construction areas so pilots can take timely action. Use temporary signs judiciously, striking a balance between the need for information and the increase in pilot workload. When there is a concern of pilot "information overload," the applicability of mandatory hold signs must take precedence over orange construction signs recommended during construction. Temporary signs must meet the standards for such signs in Engineering Brief 93, *Guidance for the Assembly and Installation of Temporary Orange Construction Signs.* Many criteria in AC 150/5345-44, *Specification for Runway and Taxiway Signs*, are referenced in the Engineering Brief. Permissible sign legends are:

1. CONSTRUCTION AHEAD,
2. CONSTRUCTION ON RAMP, and
3. RWY XX TAKEOFF RUN AVAILABLE XXX FT.

Phasing, supported by drawings and sign schedule, for the installation of orange construction signs must be included in the CSPP or SPCD.

2.18.4.2.1 Takeoff Run Available (TORA) signs.

Recommended: Where a runway has been shortened for takeoff, install orange TORA signs well before the hold lines, such as on a parallel taxiway prior to a turn to a runway hold position. See EB 93 for sign size and location.

2.18.4.2.2 Sign legends are shown in Figure F-1.

Note: See Figure E-1, Figure E-2, Figure E-3, Figure F-2, and Figure F-3 for examples of orange construction sign locations.

2.19 **Marking and Signs for Access Routes.**

The CSPP should indicate that pavement markings and signs for construction personnel will conform to AC 150/5340-18 and, to the extent practicable, with the Federal Highway Administration Manual on Uniform Traffic Control Devices (MUTCD) and/or State highway specifications. Signs adjacent to areas used by aircraft must comply with the frangibility requirements of AC 150/5220-23, *Frangible Connections*, which may require modification to size and height guidance in the MUTCD.

2.20 **Hazard Marking, Lighting and Signing.**

2.20.1 Hazard marking, lighting, and signing prevent pilots from entering areas closed to aircraft, and prevent construction personnel from entering areas open to aircraft. The CSPP must specify prominent, comprehensible warning indicators for any area affected by construction that is normally accessible to aircraft, personnel, or vehicles. Hazard marking and lighting must also be specified to identify open manholes, small areas under repair, stockpiled material, waste areas, and areas subject to jet blast. Also consider less obvious construction-related hazards and include markings to identify FAA, airport, and National Weather Service facilities cables and power lines; instrument landing system (ILS) critical areas; airport surfaces, such as RSA, OFA, and OFZ; and other sensitive areas to make it easier for contractor personnel to avoid these areas.

2.20.2 Equipment.

2.20.2.1 **Barricades.**

Low profile barricades, including traffic cones, (weighted or sturdily attached to the surface) are acceptable methods used to identify and define the limits of construction and hazardous areas on airports. Careful consideration must be given to selecting equipment that poses the least danger to aircraft but is sturdy enough to remain in place when subjected to typical winds, prop wash and jet blast. The spacing of barricades must be such that a breach is physically prevented barring a deliberate act. For example, if barricades are intended to exclude aircraft, gaps between barricades must be smaller than the wingspan of the smallest aircraft to be excluded; if barricades are intended to exclude vehicles, gaps between barricades must be smaller than the width of the excluded vehicles, generally 4 feet (1.2 meters). Provision must be made for ARFF access if necessary. If barricades are intended to exclude pedestrians, they must be continuously linked. Continuous linking may be accomplished through the use of ropes, securely attached to prevent FOD.

2.20.2.2 **Lights.**

Lights must be red, either steady burning or flashing, and must meet the luminance requirements of the State Highway Department. Batteries powering lights will last longer if lights flash. Lights must be mounted on barricades and spaced at no more than 10 feet (3 meters). Lights must be operated between sunset and sunrise and during periods of low visibility whenever the airport is open for operations. They may be operated by photocell, but this may require that the contractor turn them on manually during periods of low visibility during daytime hours.

2.20.2.3 **Supplement Barricades with Signs (for example) As Necessary.**

Examples are “No Entry” and “No Vehicles.” Be aware of the increased effects of wind and jet blast on barricades with attached signs.

2.20.2.4 **Air Operations Area – General.**

Barricades are not permitted in any active safety area or on the runway side of a runway hold line. Within a runway or taxiway object free area, and on aprons, use orange traffic cones, flashing or steady burning red lights as noted above, highly reflective collapsible barricades marked with diagonal, alternating orange and white stripes; and/or signs to separate all construction/maintenance areas from the movement area. Barricades may be supplemented with alternating orange and white flags at least 20 by 20 inch (50 by 50 cm) square and securely fastened to eliminate FOD. All barricades adjacent to any open runway or taxiway / taxilane safety area, or apron must be as low as possible to the ground, and no more than 18 inches high, exclusive of supplementary lights and flags. Barricades must be of low mass; easily collapsible upon contact with an aircraft or any of its components; and weighted or sturdily attached to the surface to prevent displacement from prop wash, jet blast, wing vortex, and other surface wind currents. If affixed to the surface, they must be frangible at grade level or as low as possible, but not to exceed 3 inch (7.6 cm) above the ground. Figure 2-8 and Figure 2-9 show sample barricades with proper coloring and flags.

Figure 2-8. Interlocking Barricades

Figure 2-9. Low Profile Barricades

2.20.2.5 **Air Operations Area – Runway/Taxiway Intersections.**

Use highly reflective barricades with lights to close taxiways leading to closed runways. Evaluate all operating factors when determining how to mark temporary closures that can last from 10 to 15 minutes to a much longer period of time. However, even for closures of relatively short duration, close all taxiway/runway intersections with barricades. The use of traffic cones is appropriate for short duration closures.

2.20.2.6 **Air Operations Area – Other.**

Beyond runway and taxiway object free areas and aprons, barricades intended for construction vehicles and personnel may be many different shapes and made from various materials, including railroad ties, sawhorses, jersey barriers, or barrels.

2.20.2.7 **Maintenance.**

The construction specifications must include a provision requiring the contractor to have a person on call 24 hours a day for emergency maintenance of airport hazard lighting and barricades. The contractor must file the contact person's information with the airport operator. Lighting should be checked for proper operation at least once per day, preferably at dusk.

2.21 Work Zone Lighting for Nighttime Construction.

Lighting equipment must adequately illuminate the work area if the construction is to be performed during nighttime hours. Refer to AC 150/5370-10 for minimum illumination levels for nighttime paving projects. Additionally, it is recommended that all support equipment, except haul trucks, be equipped with artificial illumination to safely

illuminate the area immediately surrounding their work areas. The lights should be positioned to provide the most natural color illumination and contrast with a minimum of shadows. The spacing must be determined by trial. Light towers should be positioned and adjusted to aim away from ATCT cabs and active runways to prevent blinding effects. Shielding may be necessary. Light towers should be removed from the construction site when the area is reopened to aircraft operations. Construction lighting units should be identified and generally located on the construction phasing plans in relationship to the ATCT and active runways and taxiways.

2.22 **Protection of Runway and Taxiway Safety Areas.**

Runway and taxiway safety areas, OFZs, OFAs, and approach surfaces are described in AC 150/5300-13. Protection of these areas includes limitations on the location and height of equipment and stockpiled material. An FAA airspace study may be required. Coordinate with the appropriate FAA Airports Regional or District Office if there is any doubt as to requirements or dimensions (see paragraph 2.13.5) as soon as the location and height of materials or equipment are known. The CSPP should include drawings showing all safety areas, object free areas, obstacle free zones and approach departure surfaces affected by construction.

2.22.1 Runway Safety Area (RSA).

A runway safety area is the defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway (see AC 150/5300-13). Construction activities within the existing RSA are subject to the following conditions:

2.22.1.1 No construction may occur within the existing RSA while the runway is open for aircraft operations. The RSA dimensions may be temporarily adjusted if the runway is restricted to aircraft operations requiring an RSA that is equal to the RSA width and length beyond the runway ends available during construction. (See AC 150/5300-13). The temporary use of declared distances and/or partial runway closures may provide the necessary RSA under certain circumstances. Coordinate with the appropriate FAA Airports Regional or District Office to have declared distances information published, and appropriate NOTAMs issued. See AC 150/5300-13 for guidance on the use of declared distances.

2.22.1.2 The airport operator must coordinate the adjustment of RSA dimensions as permitted above with the appropriate FAA Airports Regional or District Office and the local FAA air traffic manager and issue a NOTAM.

2.22.1.3 The CSPP and SPCD must provide procedures for ensuring adequate distance for protection from blasting operations, if required by operational considerations.

2.22.1.4 **Excavations.**

2.22.1.4.1 Open trenches or excavations are not permitted within the RSA while the runway is open. Backfill trenches before the runway is opened. If backfilling excavations before the runway must be opened is impracticable, cover the excavations appropriately. Covering for open trenches must be designed to allow the safe operation of the heaviest aircraft operating on the runway across the trench without damage to the aircraft.

2.22.1.4.2 Construction contractors must prominently mark open trenches and excavations at the construction site with red or orange flags, as approved by the airport operator, and light them with red lights during hours of restricted visibility or darkness.

2.22.1.5 **Erosion Control.**

Soil erosion must be controlled to maintain RSA standards, that is, the RSA must be cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations, and capable, under dry conditions, of supporting snow removal equipment, aircraft rescue and fire fighting equipment, and the occasional passage of aircraft without causing structural damage to the aircraft.

2.22.2 Runway Object Free Area (ROFA).

Construction, including excavations, may be permitted in the ROFA. However, equipment must be removed from the ROFA when not in use, and material should not be stockpiled in the ROFA if not necessary. Stockpiling material in the OFA requires submittal of a 7460-1 form and justification provided to the appropriate FAA Airports Regional or District Office for approval.

2.22.3 Taxiway Safety Area (TSA).

2.22.3.1 A taxiway safety area is a defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an airplane unintentionally departing the taxiway. (See AC 150/5300-13.) Since the width of the TSA is equal to the wingspan of the design aircraft, no construction may occur within the TSA while the taxiway is open for aircraft operations. The TSA dimensions may be temporarily adjusted if the taxiway is restricted to aircraft operations requiring a TSA that is equal to the TSA width available during construction. Give special consideration to TSA dimensions at taxiway turns and intersections. (see AC 150/5300-13).

2.22.3.2 The airport operator must coordinate the adjustment of the TSA width as permitted above with the appropriate FAA Airports Regional or District Office and the FAA air traffic manager and issue a NOTAM.

2.22.3.3 The CSPP and SPCD must provide procedures for ensuring adequate distance for protection from blasting operations.

2.22.3.4 **Excavations.**

1. Curves. Open trenches or excavations are not permitted within the TSA while the taxiway is open. Trenches should be backfilled before the taxiway is opened. If backfilling excavations before the taxiway must be opened is impracticable, cover the excavations appropriately. Covering for open trenches must be designed to allow the safe operation of the heaviest aircraft operating on the taxiway across the trench without damage to the aircraft.
2. Straight Sections. Open trenches or excavations are not permitted within the TSA while the taxiway is open for unrestricted aircraft operations. Trenches should be backfilled before the taxiway is opened. If backfilling excavations before the taxiway must be opened is impracticable, cover the excavations to allow the safe passage of ARFF equipment and of the heaviest aircraft operating on the taxiway across the trench without causing damage to the equipment or aircraft. In rare circumstances where the section of taxiway is indispensable for aircraft movement, open trenches or excavations may be permitted in the TSA while the taxiway is open to aircraft operations, subject to the following restrictions:
    a. Taxiing speed is limited to 10 mph.
    b. Appropriate NOTAMs are issued.
    c. Marking and lighting meeting the provisions of paragraphs 2.18 and 2.20 are implemented.
    d. Low mass, low-profile lighted barricades are installed.
    e. Appropriate temporary orange construction signs are installed.
3. Construction contractors must prominently mark open trenches and excavations at the construction site with red or orange flags, as approved by the airport operator, and light them with red lights during hours of restricted visibility or darkness.

2.22.3.5 **Erosion control.**

Soil erosion must be controlled to maintain TSA standards, that is, the TSA must be cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations, and capable, under dry conditions, of supporting snow removal equipment, aircraft rescue and firefighting equipment, and the occasional passage of aircraft without causing structural damage to the aircraft.

2.22.4 Taxiway Object Free Area (TOFA).

Unlike the Runway Object Free Area, aircraft wings regularly penetrate the taxiway object free area during normal operations. Thus, the restrictions are more stringent. Except as provided below, no construction may occur within the taxiway object free area while the taxiway is open for aircraft operations.

2.22.4.1 The taxiway object free area dimensions may be temporarily adjusted if the taxiway is restricted to aircraft operations requiring a taxiway object free area that is equal to the taxiway object free area width available. Give special consideration to TOFA dimensions at taxiway turns and intersections.

2.22.4.2 Offset taxiway centerline and edge pavement markings (do not use glass beads) may be used as a temporary measure to provide the required taxiway object free area. Where offset taxiway pavement markings are provided, centerline lighting, centerline reflectors, or taxiway edge reflectors are required. Existing lighting that does not coincide with the temporary markings must be taken out of service.

2.22.4.3 Construction activity, including open excavations, may be accomplished without adjusting the width of the taxiway object free area, subject to the following restrictions:

2.22.4.3.1 Taxiing speed is limited to 10 mph.

2.22.4.3.2 NOTAMs issued advising taxiing pilots of hazard and recommending reduced taxiing speeds on the taxiway.

2.22.4.3.3 Marking and lighting meeting the provisions of paragraphs 2.18 and 2.20 are implemented.

2.22.4.3.4 If desired, appropriate orange construction signs are installed. See paragraph 2.18.4.2 and Appendix F.

2.22.4.3.5 Five-foot clearance is maintained between equipment and materials and any part of an aircraft (includes wingtip overhang). If such clearance can only be maintained if an aircraft does not have full use of the entire taxiway width (with its main landing gear at the edge of the usable pavement), then it will be necessary to move personnel and equipment for the passage of that aircraft.

2.22.4.3.6 Flaggers furnished by the contractor must be used to direct and control construction equipment and personnel to a pre-established setback distance for safe passage of aircraft, and airline and/or airport personnel. Flaggers must also be used to direct taxiing aircraft. Due to liability issues, the airport operator should require airlines to provide flaggers for directing taxiing aircraft.

2.22.5 Obstacle Free Zone (OFZ).

In general, personnel, material, and/or equipment may not penetrate the OFZ while the runway is open for aircraft operations. If a penetration to the OFZ is necessary, it may be possible to continue aircraft operations through operational restrictions. Coordinate with the FAA through the appropriate FAA Airports Regional or District Office.

2.22.6 Runway Approach/Departure Areas and Clearways.

All personnel, materials, and/or equipment must remain clear of the applicable threshold siting surfaces, as defined in AC 150/5300-13. Objects that do not penetrate these surfaces may still be obstructions to air navigation and may affect standard instrument approach procedures. Coordinate with the FAA through the appropriate FAA Airports Regional or District Office.

2.22.6.1 Construction activity in a runway approach/departure area may result in the need to partially close a runway or displace the existing runway threshold. Partial runway closure, displacement of the runway threshold, as well as closure of the complete runway and other portions of the movement area also require coordination through the airport operator with the appropriate FAA air traffic manager (FSS if non-towered) and ATO/Technical Operations (for affected NAVAIDS) and airport users.

2.22.6.2 **Caution About Partial Runway Closures.**

When filing a NOTAM for a partial runway closure, clearly state that the portion of pavement located prior to the threshold is not available for landing and departing traffic. In this case, the threshold has been moved for both landing and takeoff purposes (this is different than a displaced threshold). There may be situations where the portion of closed runway is available for taxiing only. If so, the NOTAM must reflect this condition).

2.22.6.3 **Caution About Displaced Thresholds.**

Implementation of a displaced threshold affects runway length available for aircraft landing over the displacement. Depending on the reason for the displacement (to provide obstruction clearance or RSA), such a displacement may also require an adjustment in the landing distance available and accelerate-stop distance available in the opposite direction. If project scope includes personnel, equipment, excavation, or other work within the existing RSA of any usable runway end, do not implement a displaced threshold unless arrivals and departures toward the construction activity are prohibited. Instead, implement a partial closure.

2.23 **Other Limitations on Construction.**

The CSPP must specify any other limitations on construction, including but not limited to:

2.23.1 Prohibitions.

2.23.1.1 No use of tall equipment (cranes, concrete pumps, and so on) unless a 7460-1 determination letter is issued for such equipment.

2.23.1.2 No use of open flame welding or torches unless fire safety precautions are provided and the airport operator has approved their use.

2.23.1.3 No use of electrical blasting caps on or within 1,000 feet (300 meters) of the airport property. See AC 150/5370-10.

2.23.2 Restrictions.

2.23.2.1 Construction suspension required during specific airport operations.

2.23.2.2 Areas that cannot be worked on simultaneously.

2.23.2.3 Day or night construction restrictions.

2.23.2.4 Seasonal construction restrictions.

2.23.2.5 Temporary signs not approved by the airport operator.

2.23.2.6 Grades changes that could result in unplanned effects on NAVAIDs.

CHAPTER 3. GUIDELINES FOR WRITING A CSPP

3.1 General Requirements.

The CSPP is a standalone document written to correspond with the subjects outlined in paragraph 2.4. The CSPP is organized by numbered sections corresponding to each subject listed in paragraph 2.4, and described in detail in paragraphs 2.5 - 2.23. Each section number and title in the CSPP matches the corresponding subject outlined in paragraph 2.4 (for example, 1. Coordination, 2. Phasing, 3. Areas and Operations Affected by the Construction Activity, and so on). With the exception of the project scope of work outlined in Section 2. Phasing, only subjects specific to operational safety during construction should be addressed.

3.2 Applicability of Subjects.

Each section should, to the extent practical, focus on the specific subject. Where an overlapping requirement spans several sections, the requirement should be explained in detail in the most applicable section. A reference to that section should be included in all other sections where the requirement may apply. For example, the requirement to protect existing underground FAA ILS cables during trenching operations could be considered FAA ATO coordination (Coordination, paragraph 2.5.3), an area and operation affected by the construction activity (Areas and Operations Affected by the Construction Activity, paragraph 2.7.1.4), a protection of a NAVAID (Protection of Navigational Aids (NAVAIDs), paragraph 2.8), or a notification to the FAA of construction activities (Notification of Construction Activities, paragraph 2.13.5.3.2). However, it is more specifically an underground utility requirement (Underground Utilities, paragraph 2.15). The procedure for protecting underground ILS cables during trenching operations should therefore be described in 2.4.2.11: "The contractor must coordinate with the local FAA System Support Center (SSC) to mark existing ILS cable routes along Runway 17-35. The ILS cables will be located by hand digging whenever the trenching operation moves within 10 feet of the cable markings." All other applicable sections should include a reference to 2.4.2.11: "ILS cables shall be identified and protected as described in 2.4.2.11" or "See 2.4.2.11 for ILS cable identification and protection requirements." Thus, the CSPP should be considered as a whole, with no need to duplicate responses to related issues.

3.3 Graphical Representations.

Construction safety drawings should be included in the CSPP as attachments. When other graphical representations will aid in supporting written statements, the drawings, diagrams, and/or photographs should also be attached to the CSPP. References should be made in the CSPP to each graphical attachment and may be made in multiple sections.

3.4 **Reference Documents.**

The CSPP must not incorporate a document by reference unless reproduction of the material in that document is prohibited. In that case, either copies of or a source for the referenced document must be provided to the contractor. Where this AC recommends references (e.g. as in paragraph 3.9) the intent is to include a reference to the corresponding section in the CSPP, not to this Advisory Circular.

3.5 **Restrictions.**

The CSPP should not be considered as a project design review document. The CSPP should also avoid mention of permanent ("as-built") features such as pavements, markings, signs, and lighting, except when such features are intended to aid in maintaining operational safety during the construction.

3.6 **Coordination.**

Include in this section a detailed description of conferences and meetings to be held both before and during the project. Include appropriate information from AC 150/5370-12. Discuss coordination procedures and schedules for each required FAA ATO Technical Operations shutdown and restart and all required flight inspections.

3.7 **Phasing.**

Include in this section a detailed scope of work description for the project as a whole and each phase of work covered by the CSPP. This includes all locations and durations of the work proposed. Attach drawings to graphically support the written scope of work. Detail in this section the sequenced phases of the proposed construction. Include a reference to paragraph 3.8, as appropriate.

3.8 **Areas and Operations Affected by Construction.**

Focus in this section on identifying the areas and operations affected by the construction. Describe corresponding mitigation that is not covered in detail elsewhere in the CSPP. Include references to paragraphs below as appropriate. Attach drawings as necessary to graphically describe affected areas and mechanisms proposed. See Appendix F for sample operational effects tables and figures.

3.9 **NAVAID Protection.**

List in this section all NAVAID facilities that will be affected by the construction. Identify NAVAID facilities that will be placed out of service at any time prior to or during construction activities. Identify individuals responsible for coordinating each shutdown and when each facility will be out of service. Include a reference to paragraph 3.6 for FAA ATO NAVAID shutdown, restart, and flight inspection coordination. Outline in detail procedures to protect each NAVAID facility remaining in service from interference by construction activities. Include a reference to paragraph 3.14 for the

issuance of NOTAMs as required. Include a reference to paragraph 3.16 for the protection of underground cables and piping serving NAVAIDs. If temporary visual aids are proposed to replace or supplement existing facilities, include a reference to paragraph 3.19. Attach drawings to graphically indicate the affected NAVAIDS and the corresponding critical areas.

3.10 **Contractor Access.**

This will necessarily be the most extensive section of the CSPP. Provide sufficient detail so that a contractor not experienced in working on airports will understand the unique restrictions such work will require. Due to this extent, it should be broken down into subsections as described below:

3.10.1 Location of Stockpiled Construction Materials.

Describe in this section specific locations for stockpiling material. Note any height restrictions on stockpiles. Include a reference to paragraph 3.21 for hazard marking and lighting devices used to identify stockpiles. Include a reference to paragraph 3.11 for provisions to prevent stockpile material from becoming wildlife attractants. Include a reference to paragraph 3.12 for provisions to prevent stockpile material from becoming FOD. Attach drawings to graphically indicate the stockpile locations.

3.10.2 Vehicle and Pedestrian Operations.

While there are many items to be addressed in this major subsection of the CSPP, all are concerned with one main issue: keeping people and vehicles from areas of the airport where they don't belong. This includes preventing unauthorized entry to the AOA and preventing the improper movement of pedestrians or vehicles on the airport. In this section, focus on mechanisms to prevent construction vehicles and workers traveling to and from the worksite from unauthorized entry into movement areas. Specify locations of parking for both employee vehicles and construction equipment, and routes for access and haul roads. In most cases, this will best be accomplished by attaching a drawing. Quote from AC 150/5210-5 specific requirements for contractor vehicles rather than referring to the AC as a whole, and include special requirements for identifying HAZMAT vehicles. Quote from, rather than incorporate by reference, AC 150/5210-20 as appropriate to address the airport's rules for ground vehicle operations, including its training program. Discuss the airport's recordkeeping system listing authorized vehicle operators.

3.10.3 Two-Way Radio Communications.

Include a special section to identify all individuals who are required to maintain communications with Air Traffic (AT) at airports with active towers, or monitor CTAF at airports without or with closed ATCT. Include training requirements for all individuals required to communicate with AT. Individuals required to monitor AT frequencies should also be identified. If construction employees are also required to communicate by radio with Airport Operations, this procedure should be described in detail. Usage of vehicle mounted radios and/or portable radios should be addressed. Communication procedures for the event of disabled radio communication (that is, light

signals, telephone numbers, others) must be included. All radio frequencies should by identified (Tower, Ground Control, CTAF, UNICOM, ATIS, and so on).

3.10.4 Airport Security.

Address security as it applies to vehicle and pedestrian operations. Discuss TSA requirements, security badging requirements, perimeter fence integrity, gate security, and other needs. Attach drawings to graphically indicate secured and/or Security Identification Display Areas (SIDA), perimeter fencing, and available access points.

3.11 **Wildlife Management.**

Discuss in this section wildlife management procedures. Describe the maintenance of existing wildlife mitigation devices, such as perimeter fences, and procedures to limit wildlife attractants. Include procedures to notify Airport Operations of wildlife encounters. Include a reference to paragraph 3.10 for security (wildlife) fence integrity maintenance as required.

3.12 **FOD Management.**

In this section, discuss methods to control and monitor FOD: worksite housekeeping, ground vehicle tire inspections, runway sweeps, and so on. Include a reference to paragraph 3.15 for inspection requirements as required.

3.13 **HAZMAT Management.**

Describe in this section HAZMAT management procedures: fuel deliveries, spill recovery procedures, Safety Data Sheet (SDS), Material Safety Data Sheet (MSDS) or Product Safety Data Sheet (PSDS) availability, and other considerations. Any specific airport HAZMAT restrictions should also be identified. Include a reference to paragraph 3.10 for HAZMAT vehicle identification requirements. Quote from, rather than incorporate by reference, AC 150/5320-15.

3.14 **Notification of Construction Activities.**

List in this section the names and telephone numbers of points of contact for all parties affected by the construction project. We recommend a single list that includes all telephone numbers required under this section. Include emergency notification procedures for all representatives of all parties potentially impacted by the construction. Identify individual representatives – and at least one alternate – for each party. List both on-duty and off-duty contact information for each individual, including individuals responsible for emergency maintenance of airport construction hazard lighting and barricades. Describe procedures to coordinate immediate response to events that might adversely affect the operational safety of the airport (such as interrupted NAVAID service). Explain requirements for and the procedures for the issuance of Notices to Airmen (NOTAMs), notification to FAA required by 14 CFR Part 77 and Part 157 and in the event of affected NAVAIDs. For NOTAMs, identify an individual, and at least one alternate, responsible for issuing and cancelling each specific type of Notice to

Airmen (NOTAM) required. Detail notification methods for police, fire fighting, and medical emergencies. This may include 911, but should also include direct phone numbers of local police departments and nearby hospitals. Identify the E911 address of the airport and the emergency access route via haul roads to the construction site. Require the contractor to have this information available to all workers. The local Poison Control number should be listed. Procedures regarding notification of Airport Operations and/or the ARFF Department of such emergencies should be identified, as applicable. If airport radio communications are identified as a means of emergency notification, include a reference to paragraph 3.10. Differentiate between emergency and nonemergency notification of ARFF personnel, the latter including activities that affect ARFF water supplies and access roads. Identify the primary ARFF contact person and at least one alternate. If notification is to be made through Airport Operations, then detail this procedure. Include a method of confirmation from the ARFF department.

3.15 **Inspection Requirements.**

Describe in this section inspection requirements to ensure airfield safety compliance. Include a requirement for routine inspections by the resident engineer (RE) or other airport operator's representative and the construction contractors. If the engineering consultants and/or contractors have a Safety Officer who will conduct such inspections, identify this individual. Describe procedures for special inspections, such as those required to reopen areas for aircraft operations. Part 139 requires daily airfield inspections at certificated airports, but these may need to be more frequent when construction is in progress. Discuss the role of such inspections on areas under construction. Include a requirement to immediately remedy any deficiencies, whether caused by negligence, oversight, or project scope change.

3.16 **Underground Utilities.**

Explain how existing underground utilities will be located and protected. Identify each utility owner and include contact information for each company/agency in the master list. Address emergency response procedures for damaged or disrupted utilities. Include a reference to paragraph 3.14 for notification of utility owners of accidental utility disruption as required.

3.17 **Penalties.**

Describe in this section specific penalties imposed for noncompliance with airport rules and regulations, including the CSPP: SIDA violations, VPD, and others.

3.18 **Special Conditions.**

Identify any special conditions that may trigger specific safety mitigation actions outlined in this CSPP: low visibility operations, snow removal, aircraft in distress, aircraft accident, security breach, VPD, and other activities requiring construction suspension/resumption. Include a reference to paragraph 3.10 for compliance with airport safety and security measures and for radio communications as required. Include

a reference to paragraph 3.14 for emergency notification of all involved parties, including police/security, ARFF, and medical services.

3.19 **Runway and Taxiway Visual Aids.**

Include marking, lighting, signs, and visual NAVAIDS. Detail temporary runway and taxiway marking, lighting, signs, and visual NAVAIDs required for the construction. Discuss existing marking, lighting, signs, and visual NAVAIDs that are temporarily, altered, obliterated, or shut down. Consider non-federal facilities and address requirements for reimbursable agreements necessary for alteration of FAA facilities and for necessary flight checks. Identify temporary TORA signs or runway distance remaining signs if appropriate. Identify required temporary visual NAVAIDs such as REIL or PAPI. Quote from, rather than incorporate by reference, AC 150/5340-1, *Standards for Airport Markings;* AC 150/5340-18, *Standards for Airport Sign Systems;* and AC 150/5340-30, as required. Attach drawings to graphically indicate proposed marking, lighting, signs, and visual NAVAIDs.

3.20 **Marking and Signs for Access Routes.**

Detail plans for marking and signs for vehicle access routes. To the extent possible, signs should be in conformance with the Federal Highway Administration MUTCD and/or State highway specifications, not hand lettered. Detail any modifications to the guidance in the MUTCD necessary to meet frangibility/height requirements.

3.21 **Hazard Marking and Lighting.**

Specify all marking and lighting equipment, including when and where each type of device is to be used. Specify maximum gaps between barricades and the maximum spacing of hazard lighting. Identify one individual and at least one alternate responsible for maintenance of hazard marking and lighting equipment in the master telephone list. Include a reference to paragraph 3.14. Attach drawings to graphically indicate the placement of hazard marking and lighting equipment.

3.22 **Work Zone Lighting for Nighttime Construction.**

If work is to be conducted at night, specify all lighting equipment, including when and where each type of device is to be used. Indicate the direction lights are to be aimed and any directions that aiming of lights is prohibited. Specify any shielding necessary in instances where aiming is not sufficient to prevent interference with air traffic control and aircraft operations. Attach drawings to graphically indicate the placement and aiming of lighting equipment. Where the plan only indicates directions that aiming of lights is prohibited, the placement and positioning of portable lights must be proposed by the Contractor and approved by the airport operator’s representative each time lights are relocated or repositioned.

3.23 **Protection of Runway and Taxiway Safety Areas.**

This section should focus exclusively on procedures for protecting all safety areas, including those altered by the construction: methods of demarcation, limit of access, movement within safety areas, stockpiling and trenching restrictions, and so on. Reference AC 150/5300-13, as required. Include a reference to paragraph 3.10 for procedures regarding vehicle and personnel movement within safety areas. Include a reference to paragraph 3.10 for material stockpile restrictions as required. Detail requirements for trenching, excavations, and backfill. Include a reference to paragraph 3.21 for hazard marking and lighting devices used to identify open excavations as required. If runway and taxiway closures are proposed to protect safety areas, or if temporary displaced thresholds and/or revised declared distances are used to provide the required Runway Safety Area, include a reference to paragraphs 3.14 and 3.19. Detail procedures for protecting the runway OFZ, runway OFA, taxiway OFA and runway approach surfaces including those altered by the construction: methods of demarcation, limit of cranes, storage of equipment, and so on. Quote from, rather than incorporate by reference, AC 150/5300-13, as required. Include a reference to paragraph 3.24 for height (i.e., crane) restrictions as required. One way to address the height of equipment that will move during the project is to establish a three-dimensional "box" within which equipment will be confined that can be studied as a single object. Attach drawings to graphically indicate the safety area, OFZ, and OFA boundaries.

3.24 **Other Limitations on Construction.**

This section should describe what limitations must be applied to each area of work and when each limitation will be applied: limitations due to airport operations, height (i.e., crane) restrictions, areas which cannot be worked at simultaneously, day/night work restrictions, winter construction, and other limitations. Include a reference to paragraph 3.7 for project phasing requirements based on construction limitations as required.

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APPENDIX A. RELATED READING MATERIAL

Obtain the latest version of the following free publications from the FAA on its Web site at http://www.faa.gov/airports/.

Table A-1. FAA Publications

Number	Title and Description
AC 150/5200-28	*Notices to Airmen (NOTAMs) for Airport Operators* Guidance for using the NOTAM System in airport reporting.
AC 150/5200-30	*Airport Field Condition Assessments and Winter Operations Safety* Guidance for airport owners/operators on the development of an acceptable airport snow and ice control program and on appropriate field condition reporting procedures.
AC 150/5200-33	*Hazardous Wildlife Attractants On or Near Airports* Guidance on locating certain land uses that might attract hazardous wildlife to public-use airports.
AC 150/5210-5	*Painting, Marking, and Lighting of Vehicles Used on an Airport* Guidance, specifications, and standards for painting, marking, and lighting vehicles operating in the airport air operations areas.
AC 150/5210-20	*Ground Vehicle Operations to include Taxiing or Towing an Aircraft on Airports* Guidance to airport operators on developing ground vehicle operation training programs.
AC 150/5300-13	*Airport Design* FAA standards and recommendations for airport design. Establishes approach visibility minimums as an airport design parameter, and contains the Object Free area and the obstacle free-zone criteria.
AC 150/5210-24	*Airport Foreign Object Debris (FOD) Management* Guidance for developing and managing an airport foreign object debris (FOD) program

Number	Title and Description
AC 150/5320-15	*Management of Airport Industrial Waste* Basic information on the characteristics, management, and regulations of industrial wastes generated at airports. Guidance for developing a Storm Water Pollution Prevention Plan (SWPPP) that applies best management practices to eliminate, prevent, or reduce pollutants in storm water runoff with particular airport industrial activities.
AC 150/5340-1	*Standards for Airport Markings* FAA standards for the siting and installation of signs on airport runways and taxiways.
AC 150/5340-18	*Standards for Airport Sign Systems* FAA standards for the siting and installation of signs on airport runways and taxiways.
AC 150/5345-28	*Precision Approach Path Indicator (PAPI) Systems* FAA standards for PAPI systems, which provide pilots with visual glide slope guidance during approach for landing.
AC 150/5340-30	*Design and Installation Details for Airport Visual Aids* Guidance and recommendations on the installation of airport visual aids.
AC 150/5345-39	*Specification for L-853, Runway and Taxiway Retroreflective Markers*
AC 150/5345-44	*Specification for Runway and Taxiway Signs* FAA specifications for unlighted and lighted signs for taxiways and runways.
AC 150/5345-53	*Airport Lighting Equipment Certification Program* Details on the Airport Lighting Equipment Certification Program (ALECP).
AC 150/5345-50	*Specification for Portable Runway and Taxiway Lights* FAA standards for portable runway and taxiway lights and runway end identifier lights for temporary use to permit continued aircraft operations while all or part of a runway lighting system is inoperative.
AC 150/5345-55	*Specification for L-893, Lighted Visual Aid to Indicate Temporary Runway Closure*

Number	Title and Description
AC 150/5370-10	*Standards for Specifying Construction of Airports* Standards for construction of airports, including earthwork, drainage, paving, turfing, lighting, and incidental construction.
AC 150/5370-12	*Quality Management for Federally Funded Airport Construction Projects*
EB 93	*Guidance for the Assembly and Installation of Temporary Orange Construction Signs*
FAA Order 5200.11	FAA Airports (ARP) Safety Management System (SMS) Basics for implementing SMS within ARP. Includes roles and responsibilities of ARP management and staff as well as other FAA lines of business that contribute to the ARP SMS.
FAA Certalert 98-05	*Grasses Attractive to Hazardous Wildlife* Guidance on grass management and seed selection.
FAA Form 7460-1	Notice of Proposed Construction or Alteration
FAA Form 7480-1	Notice of Landing Area Proposal
FAA Form 6000.26	National NAS Strategic Interruption Service Level Agreement, Strategic Events Coordination, Airport Sponsor Form

Obtain the latest version of the following free publications from the Electronic Code of Federal Regulations at http://www.ecfr.gov/.

Table A-2. Code of Federal Regulation

Number	Title
Title 14 CFR Part 77	Safe, Efficient Use and Preservation of the Navigable Airspace
Title 14 CFR Part 139	Certification of Airports
Title 49 CFR Part 1542	Airport Security

Obtain the latest version of the Manual on Uniform Traffic Control Devices from the Federal Highway Administration at http://mutcd.fhwa.dot.gov/.

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APPENDIX B. TERMS AND ACRONYMS

Table B-1. Terms and Acronyms

Term	Definition
Form 7460-1	Notice of Proposed Construction or Alteration. For on-airport projects, the form submitted to the FAA regional or airports division office as formal written notification of any kind of construction or alteration of objects that affect navigable airspace, as defined in 14 CFR Part 77, *Safe, Efficient Use, and Preservation of the Navigable Airspace*. (See guidance available on the FAA web site at https://oeaaa.faa.gov.) The form may be downloaded at http://www.faa.gov/airports/resources/forms/, or filed electronically at: https://oeaaa.faa.gov.
Form 7480-1	Notice of Landing Area Proposal. Form submitted to the FAA Airports Regional Division Office or Airports District Office as formal written notification whenever a project without an airport layout plan on file with the FAA involves the construction of a new airport; the construction, realigning, altering, activating, or abandoning of a runway, landing strip, or associated taxiway; or the deactivation or abandoning of an entire airport The form may be downloaded at http://www.faa.gov/airports/resources/forms/.
Form 6000-26	Airport Sponsor Strategic Event Submission Form
AC	Advisory Circular
ACSI	Airport Certification Safety Inspector
ADG	Airplane Design Group
AIP	Airport Improvement Program
ALECP	Airport Lighting Equipment Certification Program
ANG	Air National Guard
AOA	Air Operations Area, as defined in 14 CFR Part 107. Means a portion of an airport, specified in the airport security program, in which security measures are carried out. This area includes aircraft movement areas, aircraft parking areas, loading ramps, and safety areas, and any adjacent areas (such as general aviation areas) that are not separated by adequate security systems, measures, or procedures. This area does not include the secured area of the airport terminal building.
ARFF	Aircraft Rescue and Fire Fighting
ARP	FAA Office of Airports
ASDA	Accelerate-Stop Distance Available
AT	Air Traffic
ATCT	Airport Traffic Control Tower
ATIS	Automatic Terminal Information Service
ATO	Air Traffic Organization
Certificated Airport	An airport that has been issued an Airport Operating Certificate by the FAA under

Term	Definition
	the authority of 14 CFR Part 139, *Certification of Airports*.
CFR	Code of Federal Regulations
Construction	The presence of construction-related personnel, equipment, and materials in any location that could infringe upon the movement of aircraft.
CSPP	Construction Safety and Phasing Plan. The overall plan for safety and phasing of a construction project developed by the airport operator, or developed by the airport operator's consultant and approved by the airport operator. It is included in the invitation for bids and becomes part of the project specifications.
CTAF	Common Traffic Advisory Frequency
Displaced Threshold	A threshold that is located at a point on the runway other than the designated beginning of the runway. The portion of pavement behind a displaced threshold is available for takeoffs in either direction or landing from the opposite direction.
DOT	Department of Transportation
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FOD	Foreign Object Debris/Damage
FSS	Flight Service Station
GA	General Aviation
HAZMAT	Hazardous Materials
HMA	Hot Mix Asphalt
IAP	Instrument Approach Procedures
IFR	Instrument Flight Rules
ILS	Instrument Landing System
LDA	Landing Distance Available
LOC	Localizer antenna array
Movement Area	The runways, taxiways, and other areas of an airport that are used for taxiing or hover taxiing, air taxiing, takeoff, and landing of aircraft, exclusive of loading aprons and aircraft parking areas (reference 14 CFR Part 139).
MSDS	Material Safety Data Sheet
MUTCD	Manual on Uniform Traffic Control Devices
NAVAID	Navigation Aid
NAVAID Critical Area	An area of defined shape and size associated with a NAVAID that must remain clear and graded to avoid interference with the electronic signal.
Non-Movement Area	The area inside the airport security fence exclusive of the Movement Area. It is important to note that the non-movement area includes pavement traversed by aircraft.

Term	Definition
NOTAM	Notices to Airmen
Obstruction	Any object/obstacle exceeding the obstruction standards specified by 14 CFR Part 77, subpart C.
OCC	Operations Control Center
OE / AAA	Obstruction Evaluation / Airport Airspace Analysis
OFA	Object Free Area. An area on the ground centered on the runway, taxiway, or taxi lane centerline provided to enhance safety of aircraft operations by having the area free of objects except for those objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes. (See AC 150/5300-13 for additional guidance on OFA standards and wingtip clearance criteria.)
OFZ	Obstacle Free Zone. The airspace below 150 ft (45 m) above the established airport elevation and along the runway and extended runway centerline that is required to be clear of all objects, except for frangible visual NAVAIDs that need to be located in the OFZ because of their function, in order to provide clearance protection for aircraft landing or taking off from the runway and for missed approaches. The OFZ is subdivided as follows: Runway OFZ, Inner Approach OFZ, Inner Transitional OFZ, and Precision OFZ. Refer to AC 150/5300-13 for guidance on OFZ.
OSHA	Occupational Safety and Health Administration
OTS	Out of Service
P&R	Planning and Requirements Group
NPI	NAS Planning & Integration
PAPI	Precision Approach Path Indicator
PFC	Passenger Facility Charge
PLASI	Pulse Light Approach Slope Indicator
Project Proposal Summary	A clear and concise description of the proposed project or change that is the object of Safety Risk Management.
RA	Reimbursable Agreement
RE	Resident Engineer
REIL	Runway End Identifier Lights
RNAV	Area Navigation
ROFA	Runway Object Free Area
RSA	Runway Safety Area. A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway, in accordance with AC 150/5300-13.
SDS	Safety Data Sheet
SIDA	Security Identification Display Area
SMS	Safety Management System

Term	Definition
SPCD	Safety Plan Compliance Document. Details developed and submitted by a contractor to the airport operator for approval providing details on how the performance of a construction project will comply with the CSPP.
SRM	Safety Risk Management
SSC	System Support Center
Taxiway Safety Area	A defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an airplane unintentionally departing the taxiway, in accordance with AC 150/5300-13.
TDG	Taxiway Design Group
Temporary	Any condition that is not intended to be permanent.
Temporary Runway End	The beginning of that portion of the runway available for landing and taking off in one direction, and for landing in the other direction. Note the difference from a displaced threshold.
Threshold	The beginning of that portion of the runway available for landing. In some instances, the landing threshold may be displaced.
TODA	Takeoff Distance Available
TOFA	Taxiway Object Free Area
TORA	Takeoff Run Available. The length of the runway less any length of runway unavailable and/or unsuitable for takeoff run computations. See AC 150/5300-13 for guidance on declared distances.
TSA	Taxiway Safety Area, or Transportation Security Administration
UNICOM	A radio communications system of a type used at small airports.
VASI	Visual Approach Slope Indicator
VGSI	Visual Glide Slope Indicator. A device that provides a visual glide slope indicator to landing pilots. These systems include precision approach path indicator (PAPI), visual approach slope indicator (VASI), and pulse light approach slope indicator (PLASI).
VFR	Visual Flight Rules
VOR	Very High Frequency Omnidirectional Radio Range
VPD	Vehicle / Pedestrian Deviation

APPENDIX C. SAFETY AND PHASING PLAN CHECKLIST

This appendix is keyed to Chapter 2. In the electronic version of this AC, clicking on the paragraph designation in the Reference column will access the applicable paragraph. There may be instances where the CSPP requires provisions that are not covered by the list in this appendix.

This checklist is intended as an aid, not a required submittal.

Table C-1. CSPP Checklist

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
General Considerations					
Requirements for predesign, prebid, and preconstruction conferences to introduce the subject of airport operational safety during construction are specified.	2.5				
Operational safety is a standing agenda item for construction progress meetings.	2.5				
Scheduling of the construction phases is properly addressed.	2.6				
Any formal agreements are established.	2.5.3				
Areas and Operations Affected by Construction Activity					
Drawings showing affected areas are included.	2.7.1				
Closed or partially closed runways, taxiways, and aprons are depicted on drawings.	2.7.1.1				
Access routes used by ARFF vehicles affected by the project are addressed.	2.7.1.2				
Access routes used by airport and airline support vehicles affected by the project are addressed.	2.7.1.3				
Underground utilities, including water supplies for firefighting and drainage.	2.7.1.4				

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
Approach/departure surfaces affected by heights of temporary objects are addressed.	2.7.1.5				
Construction areas, storage areas, and access routes near runways, taxiways, aprons, or helipads are properly depicted on drawings.	2.7.1				
Temporary changes to taxi operations are addressed.	2.7.2.1				
Detours for ARFF and other airport vehicles are identified.	2.7.2.2				
Maintenance of essential utilities and underground infrastructure is addressed.	2.7.2.3				
Temporary changes to air traffic control procedures are addressed.	2.7.2.4				
NAVAIDs					
Critical areas for NAVAIDs are depicted on drawings.	2.8				
Effects of construction activity on the performance of NAVAIDS, including unanticipated power outages, are addressed.	2.8				
Protection of NAVAID facilities is addressed.	2.8				
The required distance and direction from each NAVAID to any construction activity is depicted on drawings.	2.8				
Procedures for coordination with FAA ATO/Technical Operations, including identification of points of contact, are included.	2.8, 2.13.1, 2.13.5.3.1, 2.18.1				
Contractor Access					
The CSPP addresses areas to which contractor will have access and how	2.9				

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
the areas will be accessed.					
The application of 49 CFR Part 1542 Airport Security, where appropriate, is addressed.	2.9				
The location of stockpiled construction materials is depicted on drawings.	2.9.1				
The requirement for stockpiles in the ROFA to be approved by FAA is included.	2.9.1				
Requirements for proper stockpiling of materials are included.	2.9.1				
Construction site parking is addressed.	2.9.2.1				
Construction equipment parking is addressed.	2.9.2.2				
Access and haul roads are addressed.	2.9.2.3				
A requirement for marking and lighting of vehicles to comply with AC 150/5210-5, *Painting, Marking and Lighting of Vehicles Used on an Airport,* is included.	2.9.2.4				
Proper vehicle operations, including requirements for escorts, are described.	2.9.2.5, 2.9.2.6				
Training requirements for vehicle drivers are addressed.	2.9.2.7				
Two-way radio communications procedures are described.	2.9.2.9				
Maintenance of the secured area of the airport is addressed.	2.9.2.10				
Wildlife Management					
The airport operator's wildlife management procedures are addressed.	2.10				

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
Foreign Object Debris Management					
The airport operator's FOD management procedures are addressed.	2.11				
Hazardous Materials Management					
The airport operator's hazardous materials management procedures are addressed.	2.12				
Notification of Construction Activities					
Procedures for the immediate notification of airport user and local FAA of any conditions adversely affecting the operational safety of the airport are detailed.	2.13				
Maintenance of a list by the airport operator of the responsible representatives/points of contact for all involved parties and procedures for contacting them 24 hours a day, seven days a week is specified.	2.13.1				
A list of local ATO/Technical Operations personnel is included.	2.13.1				
A list of ATCT managers on duty is included.	2.13.1				
A list of authorized representatives to the OCC is included.	2.13.2				
Procedures for coordinating, issuing, maintaining and cancelling by the airport operator of NOTAMS about airport conditions resulting from construction are included.	2.8, 2.13.2, 2.18.3.3.9				
Provision of information on closed or hazardous conditions on airport movement areas by the airport operator to the OCC is specified.	2.13.2				
Emergency notification procedures for medical, fire fighting, and police	2.13.3				

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
response are addressed.					
Coordination with ARFF personnel for non-emergency issues is addressed.	2.13.4				
Notification to the FAA under 14 CFR parts 77 and 157 is addressed.	2.13.5				
Reimbursable agreements for flight checks and/or design and construction for FAA owned NAVAIDs are addressed.	2.13.5.3.2				
Inspection Requirements					
Daily and interim inspections by both the airport operator and contractor are specified.	2.14.1, 2.14.2				
Final inspections at certificated airports are specified when required.	2.14.3				
Underground Utilities					
Procedures for protecting existing underground facilities in excavation areas are described.	2.15				
Penalties					
Penalty provisions for noncompliance with airport rules and regulations and the safety plans are detailed.	2.16				
Special Conditions					
Any special conditions that affect the operation of the airport or require the activation of any special procedures are addressed.	2.17				
Runway and Taxiway Visual Aids - Marking, Lighting, Signs, and Visual NAVAIDs					
The proper securing of temporary airport markings, lighting, signs, and visual NAVAIDs is addressed.	2.18.1				
Frangibility of airport markings, lighting, signs, and visual NAVAIDs is specified.	2.18.1, 2.18.3, 2.18.4.2, 2.20.2.4				

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
The requirement for markings to be in compliance with AC 150/5340-1, *Standards for Airport Markings*, is specified.	2.18.2				
Detailed specifications for materials and methods for temporary markings are provided.	2.18.2				
The requirement for lighting to conform to AC 150/5340-30, *Design and Installation Details for Airport Visual Aids;* AC 150/5345-50, *Specification for Portable Runway and Taxiway Lights;* and AC 150/5345-53, *Airport Lighting Certification Program*, is specified.	2.18.3				
The use of a lighted X is specified where appropriate.	2.18.2.1.2, 2.18.3.2				
The requirement for signs to conform to AC 150/5345-44, *Specification for Runway and Taxiway Signs;* AC 50/5340-18, *Standards for Airport Sign Systems;* and AC 150/5345-53, *Airport Lighting Certification Program*, is specified.	2.18.4				
Marking and Signs For Access Routes					
The CSPP specifies that pavement markings and signs intended for construction personnel should conform to AC 150/5340-18 and, to the extent practicable, with the MUTCD and/or State highway specifications.	2.18.4.2				
Hazard Marking and Lighting					
Prominent, comprehensible warning indicators for any area affected by construction that is normally accessible to aircraft, personnel, or vehicles are specified.	2.20.1				

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
Hazard marking and lighting are specified to identify open manholes, small areas under repair, stockpiled material, and waste areas.	2.20.1				
The CSPP considers less obvious construction-related hazards.	2.20.1				
Equipment that poses the least danger to aircraft but is sturdy enough to remain in place when subjected to typical winds, prop wash and jet blast is specified.	2.20.2.1				
The spacing of barricades is specified such that a breach is physically prevented barring a deliberate act.	2.20.2.1				
Red lights meeting the luminance requirements of the State Highway Department are specified.	2.20.2.2				
Barricades, temporary markers, and other objects placed and left in areas adjacent to any open runway, taxiway, taxi lane, or apron are specified to be as low as possible to the ground, and no more than 18 inch high.	2.20.2.3				
Barricades are specified to indicate construction locations in which no part of an aircraft may enter.	2.20.2.3				
Highly reflective barriers with lights are specified to barricade taxiways leading to closed runways.	2.20.2.5				
Markings for temporary closures are specified.	2.20.2.5				
The provision of a contractor's representative on call 24 hours a day for emergency maintenance of airport hazard lighting and barricades is specified.	2.20.2.7				

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
Work Zone Lighting for Nighttime Construction					
If work is to be conducted at night, the CSPP identifies construction lighting units and their general locations and aiming in relationship to the ATCT and active runways and taxiways.	2.21				
Protection of Runway and Taxiway Safety Areas					
The CSPP clearly states that no construction may occur within a safety area while the associated runway or taxiway is open for aircraft operations.	2.22.1.1, 2.22.3.1				
The CSPP specifies that the airport operator coordinates the adjustment of RSA or TSA dimensions with the ATCT and the appropriate FAA Airports Regional or District Office and issues a local NOTAM.	2.22.1.2, 2.22.3.2				
Procedures for ensuring adequate distance for protection from blasting operations, if required by operational considerations, are detailed.	2.22.3.3				
The CSPP specifies that open trenches or excavations are not permitted within a safety area while the associated runway or taxiway is open, subject to approved exceptions.	2.22.1.4				
Appropriate covering of excavations in the RSA or TSA that cannot be backfilled before the associated runway or taxiway is open is detailed.	2.22.1.4				
The CSPP includes provisions for prominent marking of open trenches and excavations at the construction site.	2.22.1.4				
Grading and soil erosion control to maintain RSA/TSA standards are	2.22.3.5				

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
addressed.					
The CSPP specifies that equipment is to be removed from the ROFA when not in use.	2.22.2				
The CSPP clearly states that no construction may occur within a taxiway safety area while the taxiway is open for aircraft operations.	2.22.3				
Appropriate details are specified for any construction work to be accomplished in a taxiway object free area.	2.22.4				
Measures to ensure that personnel, material, and/or equipment do not penetrate the OFZ or threshold siting surfaces while the runway is open for aircraft operations are included.	2.22.4.3.6				
Provisions for protection of runway approach/departure areas and clearways are included.	2.22.6				
Other Limitations on Construction					
The CSPP prohibits the use of open flame welding or torches unless adequate fire safety precautions are provided and the airport operator has approved their use.	2.23.1.2				
The CSPP prohibits the use of electrical blasting caps on or within 1,000 ft (300 m) of the airport property.	2.23.1.3				

APPENDIX D. CONSTRUCTION PROJECT DAILY SAFETY INSPECTION CHECKLIST

The situations identified below are potentially hazardous conditions that may occur during airport construction projects. Safety area encroachments, unauthorized and improper ground vehicle operations, and unmarked or uncovered holes and trenches near aircraft operating surfaces pose the most prevalent threats to airport operational safety during airport construction projects. The list below is one tool that the airport operator or contractor may use to aid in identifying and correcting potentially hazardous conditions. It should be customized as appropriate for each project including information such as the date, time and name of the person conducting the inspection.

Table D-1. Potentially Hazardous Conditions

Item	Action Required (Describe)	No Action Required (Check)
Excavation adjacent to runways, taxiways, and aprons improperly backfilled.		
Mounds of earth, construction materials, temporary structures, and other obstacles near any open runway, taxiway, or taxi lane; in the related Object Free area and aircraft approach or departure areas/zones; or obstructing any sign or marking.		
Runway resurfacing projects resulting in lips exceeding 3 inch (7.6 cm) from pavement edges and ends.		
Heavy equipment (stationary or mobile) operating or idle near AOA, in runway approaches and departures areas, or in OFZ.		
Equipment or material near NAVAIDs that may degrade or impair radiated signals and/or the monitoring of navigation and visual aids. Unauthorized or improper vehicle operations in localizer or glide slope critical areas, resulting in electronic interference and/or facility shutdown.		
Tall and especially relatively low visibility units (that is, equipment with slim profiles) — cranes, drills, and similar objects — located in critical areas, such as OFZ and		

Item	Action Required (Describe)	No Action Required (Check)
approach zones.		
Improperly positioned or malfunctioning lights or unlighted airport hazards, such as holes or excavations, on any apron, open taxiway, or open taxi lane or in a related safety, approach, or departure area.		
Obstacles, loose pavement, trash, and other debris on or near AOA. Construction debris (gravel, sand, mud, paving materials) on airport pavements may result in aircraft propeller, turbine engine, or tire damage. Also, loose materials may blow about, potentially causing personal injury or equipment damage.		
Inappropriate or poorly maintained fencing during construction intended to deter human and animal intrusions into the AOA. Fencing and other markings that are inadequate to separate construction areas from open AOA create aviation hazards.		
Improper or inadequate marking or lighting of runways (especially thresholds that have been displaced or runways that have been closed) and taxiways that could cause pilot confusion and provide a potential for a runway incursion. Inadequate or improper methods of marking, barricading, and lighting of temporarily closed portions of AOA create aviation hazards.		
Wildlife attractants — such as trash (food scraps not collected from construction personnel activity), grass seeds, tall grass, or standing water — on or near airports.		
Obliterated or faded temporary markings on active operational areas.		
Misleading or malfunctioning obstruction lights. Unlighted or unmarked obstructions in the approach to any open runway pose aviation hazards.		

Item	Action Required (Describe)	No Action Required (Check)
Failure to issue, update, or cancel NOTAMs about airport or runway closures or other construction related airport conditions.		
Failure to mark and identify utilities or power cables. Damage to utilities and power cables during construction activity can result in the loss of runway / taxiway lighting; loss of navigation, visual, or approach aids; disruption of weather reporting services; and/or loss of communications.		
Restrictions on ARFF access from fire stations to the runway / taxiway system or airport buildings.		
Lack of radio communications with construction vehicles in airport movement areas.		
Objects, regardless of whether they are marked or flagged, or activities anywhere on or near an airport that could be distracting, confusing, or alarming to pilots during aircraft operations.		
Water, snow, dirt, debris, or other contaminants that temporarily obscure or derogate the visibility of runway/taxiway marking, lighting, and pavement edges. Any condition or factor that obscures or diminishes the visibility of areas under construction.		
Spillage from vehicles (gasoline, diesel fuel, oil) on active pavement areas, such as runways, taxiways, aprons, and airport roadways.		
Failure to maintain drainage system integrity during construction (for example, no temporary drainage provided when working on a drainage system).		

Item	Action Required (Describe)	No Action Required (Check)
Failure to provide for proper electrical lockout and tagging procedures. At larger airports with multiple maintenance shifts/workers, construction contractors should make provisions for coordinating work on circuits.		
Failure to control dust. Consider limiting the amount of area from which the contractor is allowed to strip turf.		
Exposed wiring that creates an electrocution or fire ignition hazard. Identify and secure wiring, and place it in conduit or bury it.		
Site burning, which can cause possible obscuration.		
Construction work taking place outside of designated work areas and out of phase.		

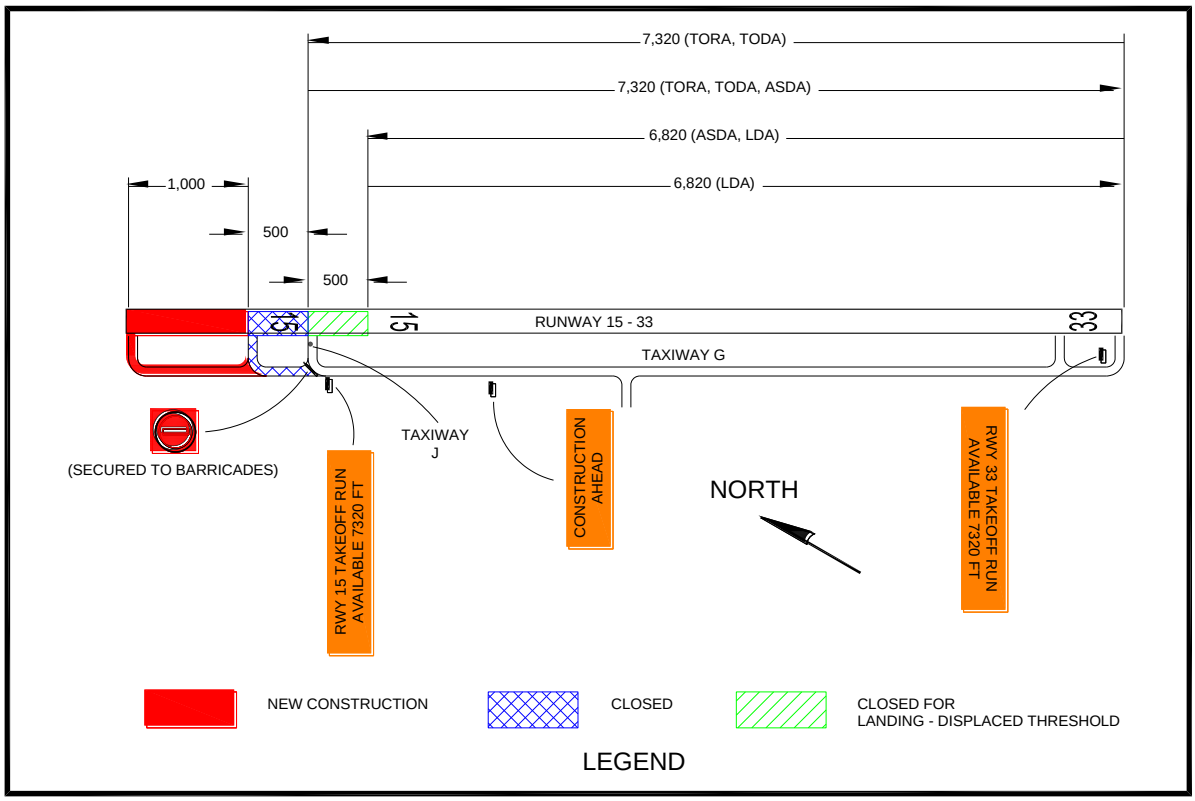
APPENDIX E. SAMPLE OPERATIONAL EFFECTS TABLE

E.1 Project Description.

Runway 15-33 is currently 7820 feet long, with a 500 foot stopway on the north end. This project will remove the stopway and extend the runway 1000 feet to the north and 500 feet to the south. Finally, the existing portion of the runway will be repaved. The runway 33 glide slope will be relocated. The new runway 33 localizer has already been installed by FAA Technical Operations and only needs to be switched on. Runway 15 is currently served only by a localizer, which will remain in operation as it will be beyond the future RSA. Appropriate NOTAMS will be issued throughout the project.

E.1.1 During Phase I, the runway 15 threshold will be displaced 1000 feet to keep construction equipment below the approach surface. The start of runway 15 takeoff and the departure end of runway 33 will also be moved 500 feet to protect workers from jet blast. Declared distances for runway 33 will be adjusted to provide the required RSA and applicable departure surface. Excavation near Taxiway G will require its ADG to be reduced from IV to III. See Figure E-1.

Figure E-1. Phase I Example

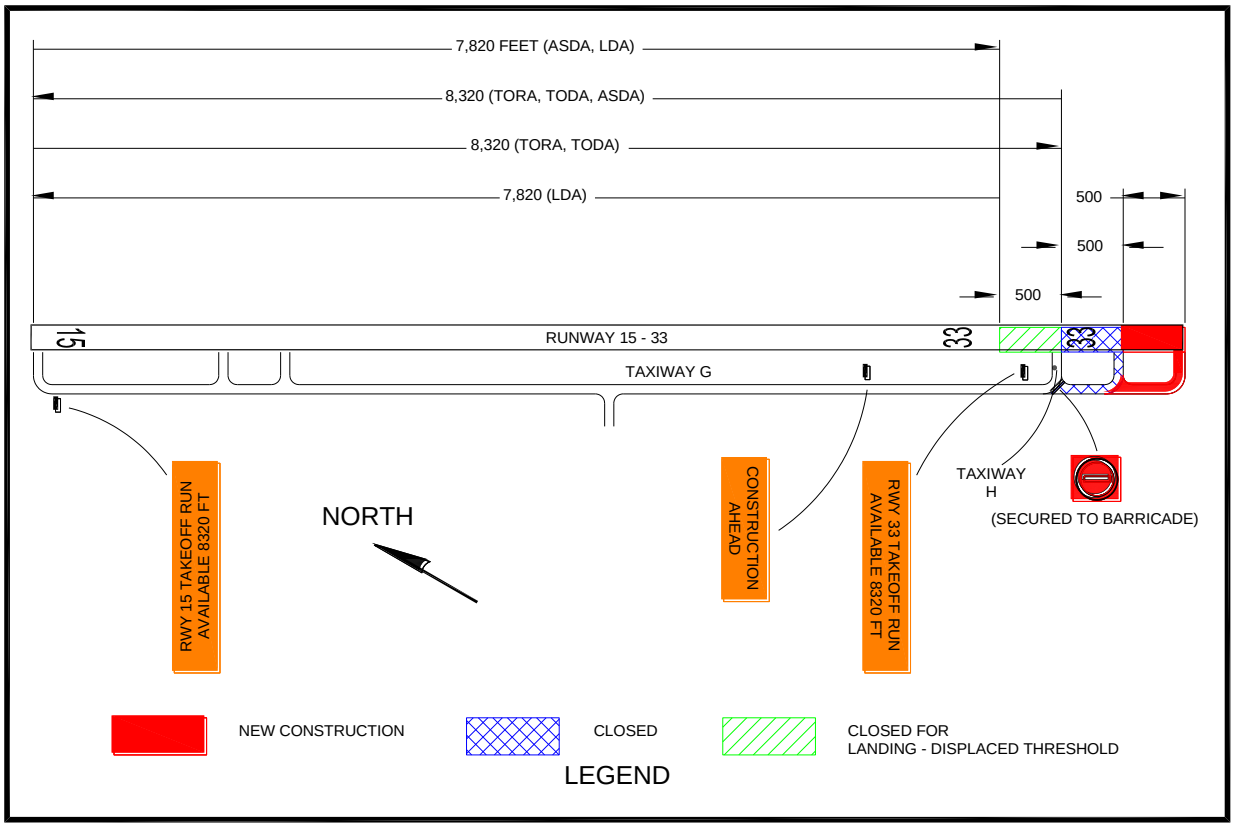


Note 1: Where hold signs are installed on both sides of a taxiway, install the TORA sign on the left side of the taxiway before the final turn to the runway intersection.

Note 2: Based on the declared distances for Runway 33 departures, the maximum equipment height in the construction area is 12.5 feet (500/40 = 12.5).

E.2 During Phase II, the runway 33 threshold will be displaced 1000 feet to keep construction equipment below the approach surface. The start of runway 33 takeoff and the departure end of runway 15 will also be moved 500 feet to protect workers from jet blast. Declared distances for runway 15 will be adjusted to provide the required RSA and applicable departure surface. See Figure E-2.

Figure E-2. Phase II Example



Note 1: Where hold signs are installed on both sides of a taxiway, install the TORA sign on the left side of the taxiway before the final turn to the runway intersection.

Note 2: Based on the declared distances for Runway 15 departures, the maximum equipment height in the construction area is 12.5 feet (500/40 = 12.5).

E.3 During Phase III, the existing portion of the runway will be repaved with Hot Mix Asphalt (HMA) and the runway 33 glide slope will be relocated. Construction will be accomplished between the hours of 8:00 pm and 5:00 am, during which the runway will be closed to operations.

Figure E-3. Phase III Example

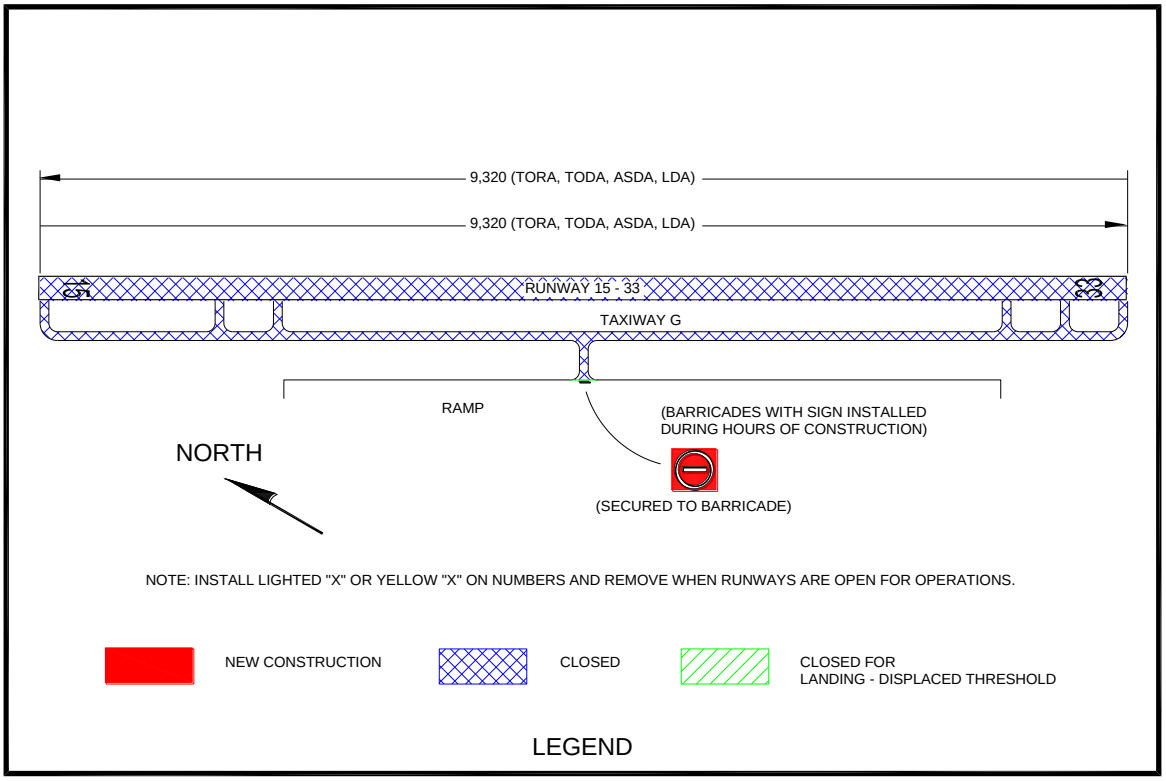


Table E-1. Operational Effects Table

Project	**Runway 15-33 Extension and Repaving**			
Phase	**Normal (Existing)**	**Phase I: Extend Runway 15 End**	**Phase II: Extend Runway 33 End**	**Phase III: Repave Runway**
Scope of Work	N/A	Extend Runway 15-33 1,000 ft on north end with Hot Mix Asphaltic Concrete (HMA).	Extend Runway 15-33 500 ft on south end with Hot Mix Asphaltic Concrete (HMA).	Repave existing runway with HMA Relocate Runway 33 Glide Slope
Effects of Construction Operations	N/A	Existing North 500 ft closed	Existing South 500 ft closed	Runway closed between 8:00 pm and 5:00 am Edge lighting out of service
Construction Phase	N/A	Phase I (Anticipated)	Phase II (Anticipated)	Phase III (Anticipated)
Runway 15 Average Aircraft Operations	Carrier: 52 /day GA: 26 /day Military: 11 /day	Carrier: 40 /day GA: 26 /day Military: 0 /day	Carrier: 45 /day GA: 26 /day Military: 5 /day	Carrier: 45 / day GA: 20 / day Military: 0 /day
Runway 33 Average Aircraft Operations	Carrier: 40 /day GA: 18 /day Military: 10 /day	Carrier: 30 /day GA: 18 /day Military: 0 /day	Carrier: 25 /day GA: 18 /day Military: 5 /day	Carrier: 20 /day GA: 5 /day Military: 0 /day
Runway 15-33 Aircraft Category	C-IV	C-IV	C-IV	C-IV
Runway 15 Approach Visibility Minimums	1 mile	1 mile	1 mile	1 mile
Runway 33 Approach Visibility Minimums	¾ mile	¾ mile	¾ mile	1 mile

Note: Proper coordination with Flight Procedures group is necessary to maintain instrument approach procedures during construction.

Project		Runway 15-33 Extension and Repaving			
Phase		Normal (Existing)	Phase I: Extend Runway 15 End	Phase II: Extend Runway 33 End	Phase III: Repave Runway
Runway 15 Declared Distances	TORA	7,820	7,320	8,320	9,320
	TODA	7,820	7,320	8,320	9,320
	ASDA	7,820	7,320	7,820	9,320
	LDA	7,820	6,820	7,820	9,320
Runway 33 Declared Distances	TORA	7,820	7,320	8,320	9,320
	TODA	7,820	7,320	8,320	9,320
	ASDA	8,320	6,820	8,320	9,320
	LDA	7,820	6,820	7,820	9,320
Runway 15 Approach Procedures		LOC only	LOC only	LOC only	LOC only
		RNAV	RNAV	RNAV	RNAV
		VOR	VOR	VOR	VOR
Runway 33 Approach Procedures		ILS	ILS	ILS	LOC only
		RNAV	RNAV	RNAV	RNAV
		VOR	VOR	VOR	VOR
Runway 15 NAVAIDs		LOC	LOC	LOC	LOC
Runway 33 NAVAIDs		ILS, MALSR	ILS, MALSR	ILS, MALSR	LOC, MALSR
Taxiway G ADG		IV	III	IV	IV
Taxiway G TDG		4	4	4	4
ATCT (hours open)		24 hours	24 hours	24 hours	0500 - 2000
ARFF Index		D	D	D	D

Project	Runway 15-33 Extension and Repaving			
Phase	**Normal (Existing)**	**Phase I: Extend Runway 15 End**	**Phase II: Extend Runway 33 End**	**Phase III: Repave Runway**
Special Conditions	Air National Guard (ANG) military operations	All military aircraft relocated to alternate ANG Base	Some large military aircraft relocated to alternate ANG Base	All military aircraft relocated to alternate ANG Base
Information for NOTAMs		Refer above for applicable declared distances. Taxiway G limited to 118 ft wingspan	Refer above for applicable declared distances.	Refer above for applicable declared distances. Airport closed 2000 – 0500. Runway 15 glide slope OTS.

Note: This table is one example. It may be advantageous to develop a separate table for each project phase and/or to address the operational status of the associated NAVAIDs per construction phase.

Complete the following chart for each phase to determine the area that must be protected along the runway and taxiway edges:

Table E-2. Runway and Taxiway Edge Protection

Runway/Taxiway	Aircraft Approach Category* A, B, C, or D	Airplane Design Group* I, II, III, or IV	Safety Area Width in Feet Divided by 2*

*See AC 150/5300-13 to complete the chart for a specific runway/taxiway.

Complete the following chart for each phase to determine the area that must be protected before the runway threshold:

Table E-3. Protection Prior to Runway Threshold

Runway End Number	Airplane Design Group* I, II, III, or IV	Aircraft Approach Category* A, B, C, or D	Minimum Safety Area Prior to the Threshold*	Minimum Distance to Threshold Based on Required Approach Slope*	
			ft	ft	: 1
			ft	ft	: 1
			ft	ft	: 1
			ft	ft	: 1

*See AC 150/5300-13 to complete the chart for a specific runway.

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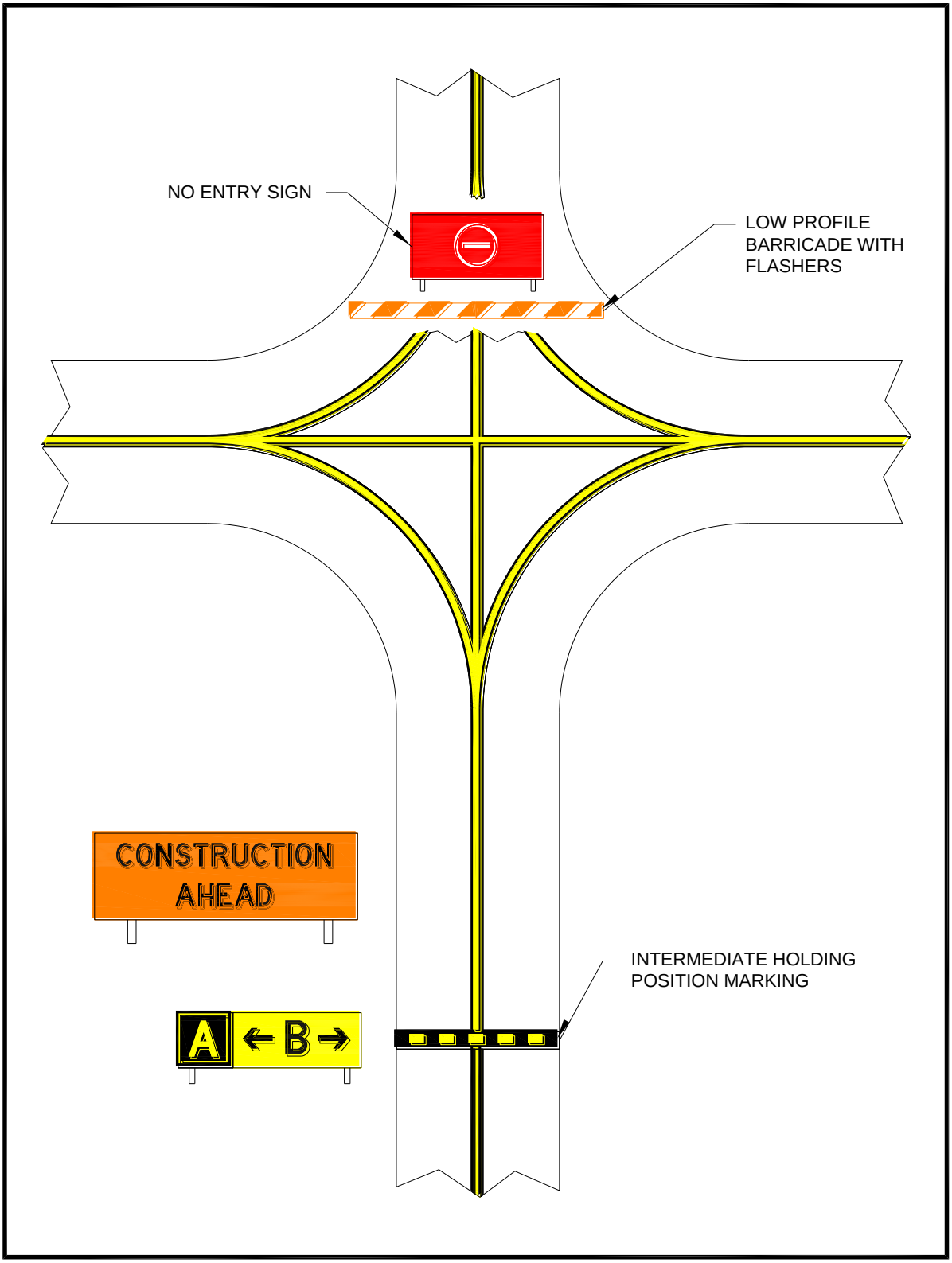
APPENDIX F. ORANGE CONSTRUCTION SIGNS

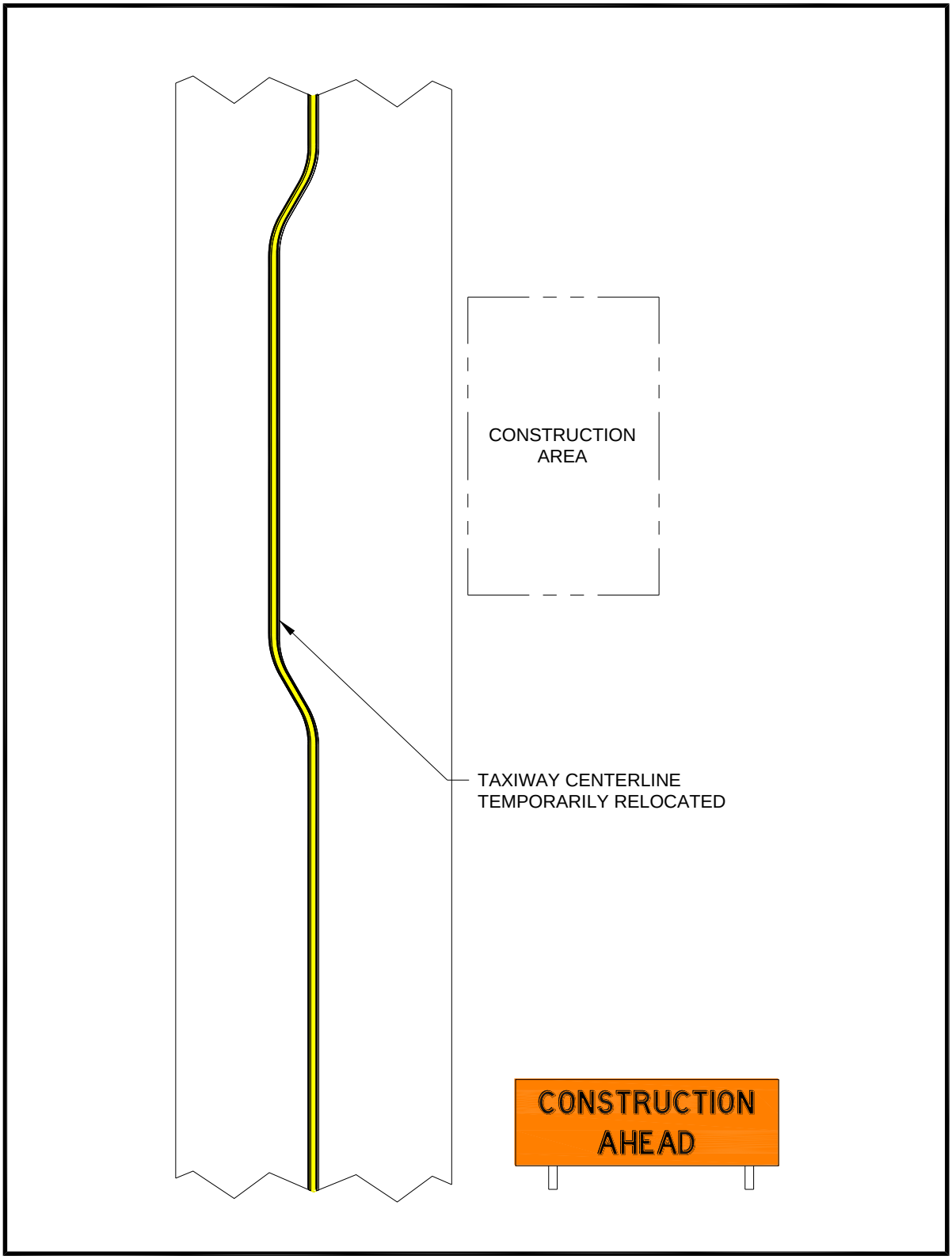
Figure F-1. Approved Sign Legends

Figure F-2. Orange Construction Sign Example 1



Note: For proper placement of signs, refer to EB 93.

Figure F-3. Orange Construction Sign Example 2



Note: For proper placement of signs, refer to EB 93.

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Advisory Circular Feedback

If you find an error in this AC, have recommendations for improving it, or have suggestions for new items/subjects to be added, you may let us know by (1) mailing this form to Manager, Airport Engineering Division, Federal Aviation Administration ATTN: AAS-100, 800 Independence Avenue SW, Washington DC 20591 or (2) faxing it to the attention of the Office of Airport Safety and Standards at (202) 267-5383.

Subject: AC 150/5370-2G Date: _____

Please check all appropriate line items:

☐ An error (procedural or typographical) has been noted in paragraph _____ on page _____.

☐ Recommend paragraph _____ on page _____ be changed as follows:

_____
_____
_____

☐ In a future change to this AC, please cover the following subject:
(Briefly describe what you want added.)

_____
_____
_____

☐ Other comments:

_____
_____
_____

☐ I would like to discuss the above. Please contact me at (phone number, email address).

_____

Submitted by: _____ Date: _____

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First Amendment to Ground Lease Agreement

Exhibit E – Airport Rules, Regulations, and Guidelines

The performance of the Work on the Leased Property shall in all respects be constructed in accordance with the following:

1. The Airport Rules and Regulations

2. The requirements governing tenant construction specifications and other non-technical requirements in accordance with the Denver International Airport Design Standards Manual, available at http://business.flydenver.com/bizops/bizRequirements.asp

3. The Denver International Airport Environmental Management System Guidelines, available at https://www.flydenver.com/about/administration/environmental_management#guidelines

4. The Standard Specifications for Construction General Contract Conditions, 2011 Edition, available at https://www.denvergov.org/content/dam/denvergov/Portals/743/documents/2011%20DENVER%20GENERAL%20CONTRACT%20CONDITIONS.pdf

First Amendment to Ground Lease Agreement
Exhibit F – Form of CMR Performance and Payment Bonds

Bond No. 9313826 / 070-208-407

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS:

Fidelity and Deposit Company of Maryland / Zurich American Insurance Company /

That we, SWINERTON, INC., ("Principal"), and Liberty Mutual Insurance Company, Surety herein, a corporation duly organized under the laws of the State of IL / NY / MA, and authorized to issue surety bonds in the State of Colorado, are held and firmly bound unto SOUTHWEST AIRLINES CO. ("Southwest" and/or "Obligee") in the sum of SEVENTY-NINE MILLION THREE HUNDRED EIGHTY-NINE THOUSAND SEVEN HUNDRED SIXTY-SEVEN and NO/100 DOLLARS ($79,389,767.00) for the payment of which sum we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal has entered into that certain Construction Manager at Risk ("CMR") Agreement, hereinafter referred to as the "Contract," with Southwest dated the 21st day of March, 2019, for Preconstruction and Construction Services related to the SOUTHWEST AIRLINES CO. MAINTENANCE HANGAR FACILITY at Denver International Airport, Denver, Colorado (the "Project"); and

WHEREAS, the CITY AND COUNTY OF DENVER ("DEN") is the owner of the real property on which the improvements are to be constructed; and

WHEREAS, the DENVER DEPARTMENT OF AVIATION ("DDOA") manages Denver International Airport; and

WHEREAS, pursuant to that certain First Amendment to Ground Lease Agreement (the "Amendment") by and among the DEN and Southwest, Southwest is responsible for the construction the Project;

NOW, THEREFORE, the condition of this obligation is such, that if the said Principal (a) shall faithfully construct the improvements as provided in the Contract in accordance with the plans, specifications, and contract documents, and (b) shall fully indemnify and save harmless Obligee from all costs and damage which Obligee may suffer by reason of Principal's default, including liquidated damages assessed pursuant to the Contract, and (c) shall reimburse and repay Obligee all outlay and expense which Obligee may incur in making good such default, then this obligation shall be void; otherwise to remain in full force and effect.

Whenever Principal shall be, and declared by Obligee to be, in default under the Contract, Obligee, having performed Obligee's obligations thereunder, may call upon the Surety who shall promptly remedy the default and:

1. Complete the Contract in accordance with the terms and conditions; or

2. Obtain a bid or bids for completion of the Contract in accordance with its terms and conditions, and, upon determination by Surety of the lowest responsible bidder, arrange for a contract between such bidder and Obligee, and make available as work progresses (even though there should be a default or a succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the contract price; but not exceeding, including other costs and damages for which Surety may be liable hereunder, the amounts set forth in the first paragraph hereof. The term "balance of the contract price" as used in this paragraph shall mean the

total amount payable by Obligee to Principal under the Contract and any amendments thereto, less the amount properly paid by Obligee to Principal.

Surety, for value received, stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the work to be performed thereunder, or the plans, specifications, or drawings accompanying the same, shall in any way affect its obligation on this Bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract, or to the work to be performed thereunder.

Surety expressly agrees to be bound to, and shall have the right to participate in, any mandatory dispute resolution procedures required in the Contract therein incorporated with regard to any claim asserted against this Bond.

This Bond is given pursuant to the provisions of the law of the State of Colorado. If any legal action be filed upon this Bond, exclusive venue shall lie in Denver County, State of Colorado.

IN WITNESS WHEREOF, this instrument has been executed by the duly authorized representatives of the Principal and the Surety.

Signed and sealed this 12th day of July 2019

Principal: SWINERTON, INC.

By: _____

Its: Operations Manager - John Speight

Surety: Zurich American Insurance Company

By: _____

M. Moody, Attorney-in-Fact

Surety: Fidelity and Deposit Company of Maryland

By: _____

Its: Attorney-in-Fact M. Moody

Surety: Liberty Mutual Insurance Company

By: _____

M. Moody, Attorney-in-Fact

[Attach Power of Attorney for Surety's Attorney-in-Fact.]

Approved:

SOUTHWEST AIRLINES CO.

By: _____

Its: Managing Dir Corp Facilities

ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California
County of San Francisco)

On July 12, 2019 before me, Betty L. Tolentino, Notary Public
(Insert name and title of the officer)

personally appeared M. Moody,
who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

BETTY L. TOLENTINO
COMM. #2186585
NOTARY PUBLIC-CALIFORNIA
SAN FRANCISCO COUNTY
My Comm. Expires Apr. 12, 2021

Signature _____ (Seal)

ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California
County of San Francisco)

On July 12, 2019 before me, Betty L. Tolentino, Notary Public
(insert name and title of the officer)

personally appeared M Moody,
who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

PC01 BETTY L. TOLENTINO COMM. #2186585 NOTARY PUBLIC-CALIFORNIA SAN FRANCISCO COUNTY My Comm. Expires Apr. 12, 2021 PC01

Signature _____ (Seal)

ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California
County of San Francisco)

On July 12, 2019 before me, Betty L. Tolentino, Notary Public
(insert name and title of the officer)

personally appeared M Moody
who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

BETTY L. TOLENTINO
COMM. #2186585
NOTARY PUBLIC-CALIFORNIA
SAN FRANCISCO COUNTY
My Comm. Expires Apr. 12, 2021

Signature _____ (Seal)

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 **Maureen O'CONNELL, Robert P. WRIXON, M MOODY, Betty L. TOLENTINO, Janet C. ROJO, Virginia L. BLACK, Kevin RE, Susan M. EXLINE, Gillian BHASKARAN, T. LE, Brittany KAVAN, Julia ORTEGA, K. ZEROUNIAN, Douglas B. BOWRING, Susan HECKER and Matthew KALAFATIS, of Lafayette and San Francisco, California, 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 COLONIAL AMERICAN CASUALTY AND SURETY COMPANY at its office in Owings Mills, Maryland., and 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 11th day of June, A.D. 2019.

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

By: Robert D. Murray
Vice President

By: Dawn E. Brown
Secretary

State of Maryland
County of Baltimore

On this 11th day of June, A.D. 2019, 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.

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 12th day of July, 2019.

By: Brian M. Hodges
Vice President

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

This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Liberty Mutual Insurance Company
The Ohio Casualty Insurance Company
West American Insurance Company

Certificate No: 8197921- 024125

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That The Ohio Casualty Insurance Company is a corporation duly organized under the laws of the State of New Hampshire, that Liberty Mutual Insurance Company is a corporation duly organized under the laws of the State of Massachusetts, and West American Insurance Company is a corporation duly organized under the laws of the State of Indiana (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Julia Ortega, Susan M Exline, Gillian Bhaskaran, all of the city of Lafayette state of California; Susan Hecker, M. Moody, Janet C. Rojo, R.A Bass, Virginia L. Black, Brittany Kavan, T Le, Maureen O'Connell, Kevin Re, Betty L. Tolentino, Robert P Wrixon, K. Zerounian

all of the city of San Francisco state of California each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations. In pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 7th day of November, 2018.

Liberty Mutual Insurance Company
The Ohio Casualty Insurance Company
West American Insurance Company

By: _____
David M. Carey, Assistant Secretary

State of PENNSYLVANIA
County of MONTGOMERY ss

On this 7th day of November, 2018 before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of Liberty Mutual Insurance Company, The Ohio Casualty Company, and West American Insurance Company, and that he, as such, being authorized so to do, execute 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 have hereunto subscribed my name and affixed my notarial seal at King of Prussia, Pennsylvania, on the day and year first above written.

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Teresa Pastella, Notary Public
Upper Merion Twp., Montgomery County
My Commission Expires March 28, 2021
Member, Pennsylvania Association of Notaries

By: _____
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-laws and Authorizations of The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company which resolutions are now in full force and effect reading as follows:

ARTICLE IV – OFFICERS: Section 12. Power of Attorney.
Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and execution of any such instruments and to attach thereto the seal of the Corporation. When so executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

ARTICLE XIII – Execution of Contracts: Section 5. Surety Bonds and Undertakings.
Any officer of the Company authorized for that purpose in writing by the chairman or the president, and subject to such limitations as the chairman or the president may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Company by their signature and execution of any such instruments and to attach thereto the seal of the Company. When so executed such instruments shall be as binding as if signed by the president and attested by the secretary.

Certificate of Designation – The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

Authorization – By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Renee C. Llewellyn, the undersigned, Assistant Secretary, The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company do hereby certify that the original power of attorney of which the foregoing is a full true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 12th day of July, 2019.

By: _____
Renee C. Llewellyn, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, currency rate, interest rate or residual value guarantees.

To confirm the validity of this Power of Attorney call 1-610-832-8240 between 9:00 am and 4:30 pm EST on any business day.

Bond No. 9313626 / 070-208-407

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS:

That we, SWINERTON, INC., Principal, and Fidelity and Deposit Company of Maryland / Zurich American Insurance Company / Liberty Mutual Insurance Company, Surety herein, a corporation duly organized under the laws of the State of IL / NY / MA, and authorized to issue surety bonds in the State of Colorado, are held and firmly bound unto SOUTHWEST AIRLINES CO. ("Southwest" and/or "Obligee") in the sum of SEVENTY-NINE MILLION THREE HUNDRED EIGHTY-NINE THOUSAND SEVEN HUNDRED SIXTY-SEVEN and NO/100 DOLLARS ($79,389,767.00) for the payment of which sum we will bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal has entered into that certain Construction Manager at Risk ("CMR") Agreement, hereinafter referred to as the "Contract," with Southwest dated the 21st day of March, 2019, for Preconstruction and Construction Services related to the SOUTHWEST AIRLINES CO. MAINTENANCE HANGAR FACILITY at Denver International Airport, Denver, Colorado (the "Project"); and

WHEREAS, the CITY AND COUNTY OF DENVER ("DEN") is the owner of the real property on which the improvements are to be constructed; and

WHEREAS, the DENVER DEPARTMENT OF AVIATION ("DDOA") manages Denver International Airport; and

WHEREAS, pursuant to that certain Addendum to Ground Lease Agreement (the "Lease") by and among the DEN and Southwest, Southwest is responsible for the construction the Project;

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the said Principal shall make payments of all amounts lawfully due to all persons supplying or furnishing Principal or Principal's subcontractors with labor, materials, team hire, sustenance, provisions, provender, rental machinery, tools, or equipment, or other supplies performed, used or consumed in the prosecution of the work provided for under the Contract and duly authorized normal and usual extras thereto, and, further, that Principal indemnifies and saves harmless Southwest, the DEN, and DDOA to the extent of any payments in connection with the carrying out of any such Contract which they may be required to make under the law, then this obligation shall be void; otherwise to remain in full force and effect.

Principal and Surety further warrant that it if Principal fails to pay any person who supplies laborers, rental machinery, tools, or equipment, all amounts due as the result of the use of such laborers, machinery, tools, or equipment, in the prosecution of the Work under the Contract, Surety will pay the same in an amount not exceeding the penal sum specified herein together with interest at the rate of eight percent (8%) per annum.

Provided, however, that Southwest, DEN, and DDOA, having required Principal to furnish this Bond in order to comply with the provisions of COLO. REV. STAT. §§38-26-106 and 38-24-101, *et seq.*, as applicable, all rights and remedies under this Bond shall be determined in accordance with the provisions, conditions, and limitations of said statutes to the same extent as if they were copied at length herein. This Bond is given pursuant to the provisions of the law of the State of Colorado. If any legal action be filed upon this Bond, exclusive venue shall lie in Denver County, State of Colorado.

IN WITNESS WHEREOF, the said Principal and Surety have signed and sealed this instrument on the 12th day of July 2019.

Principal: SWINERTON, INC.

By: _____
Its: Operations Manager - John Spiga

Surety: Zurich American Insurance Company

By: _____
M Moody, Attorney-in-Fact

Surety: Fidelity and Deposit Company of Maryland

By: _____
Its: Attorney-in-Fact M Moody

[Attach Power of Attorney for Surety's Attorney-in-Fact.]
[Insert: Statutory Surety Identification / Complaint Notice.]

Surety: Liberty Mutual Insurance Company

By: _____
M. Moody, Attorney-in-Fact

APPROVED:

SOUTHWEST AIRLINES CO.

By: _____
Its: Mgr, Dir Corp Facilities

ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of Ca ifornia
County of San Francisco)

On July 12, 2019 before me, Betty L. Tolentino, Notary Public
(insert name and title of the officer)

personally appeared M. Moody,
who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

PC01 BETTY L. TOLENTINO COMM. #2186585 NOTARY PUBLIC-CALIFORNIA SAN FRANCISCO COUNTY My Comm. Expires Apr. 12, 2021 PC01

Signature _____ (Seal)

ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California
County of San Francisco)

On July 12, 2019 before me, Betty L. Tolentino, Notary Public
(insert name and title of the officer)

personally appeared M. Moody,
who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature _____ (Seal)

PC01 BETTY L. TOLENTINO COMM. #2186585 NOTARY PUBLIC-CALIFORNIA SAN FRANCISCO COUNTY My Comm. Expires Apr. 12, 2021 PC01

ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California
County of San Francisco)

On July 12, 2019 before me, Betty L. Tolentino, Notary Public
(insert name and title of the officer)

personally appeared M Moody,
who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

BETTY L. TOLENTINO
COMM. #2186585
NOTARY PUBLIC-CALIFORNIA
SAN FRANCISCO COUNTY
My Comm. Expires Apr. 12, 2021

Signature _____ (Seal)

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 **Maureen O'CONNELL, Robert P. WRIXON, M MOODY, Betty L. TOLENTINO, Janet C. ROJO, Virginia L. BLACK, Kevin RE, Susan M. EXLINE, Gillian BHASKARAN, T. LE, Brittany KAVAN, Julia ORTEGA, K. ZEROUNIAN, Douglas B. BOWRING, Susan HECKER and Matthew KALAFATIS, of Lafayette and San Francisco, California, 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 COLONIAL AMERICAN CASUALTY AND SURETY COMPANY at its office in Owings Mills, Maryland., and 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 11th day of June, A.D. 2019.

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

By: Robert D. Murray
Vice President

By Dawn E. Brown
Secretary

State of Maryland
County of Baltimore

On this 11th day of June, A.D. 2019, 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.

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 12th day of July, 2019.

By: Brian M. Hodges
Vice President

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

This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Liberty Mutual. SURETY

Liberty Mutual Insurance Company
The Ohio Casualty Insurance Company
West American Insurance Company

Certificate No: 8197921- 024125

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That The Ohio Casualty Insurance Company is a corporation duly organized under the laws of the State of New Hampshire, that Liberty Mutual Insurance Company is a corporation duly organized under the laws of the State of Massachusetts, and West American Insurance Company is a corporation duly organized under the laws of the State of Indiana (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Julie Ortega, Susan M. Exline, Gillian Bhaskaran, all of the city of Lafayette state of California, Susan Hecker, M Moody, Janet C Rojo, R A Bass, Virginia L Black, Brittany Kavan, T. Le, Maureen O'Connell, Kevin Re, Betty L. Tolentino, Robert P Wrixon, K Zerounian

all of the city of San Francisco state of California each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 7th day of November, 2018

Liberty Mutual Insurance Company
The Ohio Casualty Insurance Company
West American Insurance Company

By: _____
David M. Carey, Assistant Secretary

State of PENNSYLVANIA
County of MONTGOMERY ss

On this 7th day of November, 2018 before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of Liberty Mutual Insurance Company, The Ohio Casualty Company, and West American Insurance Company, and that he, as such, being authorized so to do, execute 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 have hereunto subscribed my name and affixed my notarial seal at King of Prussia, Pennsylvania, on the day and year first above written.

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Teresa Pastella, Notary Public
Upper Merion Twp., Montgomery County
My Commission Expires March 28, 2021
Member, Pennsylvania Association of Notaries

By: _____
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-laws and Authorizations of The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company which resolutions are now in full force and effect reading as follows:

ARTICLE IV – OFFICERS: Section 12. Power of Attorney
Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and execution of any such instruments and to attach thereto the seal of the Corporation. When so executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

ARTICLE XIII – Execution of Contracts: Section 5. Surety Bonds and Undertakings.
Any officer of the Company authorized for that purpose in writing by the chairman or the president, and subject to such limitations as the chairman or the president may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Company by their signature and execution of any such instruments and to attach thereto the seal of the Company. When so executed such instruments shall be as binding as if signed by the president and attested by the secretary.

Certificate of Designation – The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

Authorization – By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Renee C. Llewellyn, the undersigned, Assistant Secretary, The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 12th day of July, 2019.

By: _____
Renee C. Llewellyn, Assistant Secretary

LMS-12873 LMIC OCIC WAIC Multi Co_062016

Not valid for mortgage, note, loan, letter of credit, currency rate, interest rate or residual value guarantees.

To confirm the validity of this Power of Attorney call 1-610-832-8240 between 9:00 am and 4:30 pm EST on any business day.

Bond No. 9313626 / 070-208-407

JOINT OBLIGEE RIDER
TO
CMR'S PERFORMANCE BOND AND PAYMENT BOND

WHEREAS, SWINERTON, INC., ("CMR") has entered into that certain Construction Manager at Risk ("CMR") Agreement, hereinafter referred to as the "Contract", with SOUTHWEST AIRLINES CO. ("Southwest" and/or "Obligee") dated the 21st day of March, 2019 for Preconstruction and Construction Services related to the SOUTHWEST AIRLINES CO. MAINTENANCE HANGAR FACILITY at Denver International Airport, Denver, Colorado (the "Project"); and

WHEREAS, CMR, as Principal, and Fidelity and Deposit Company of Maryland / Zurich American Insurance Company / Liberty Mutual Insurance Company as Surety (hereinafter referred to as "Surety"), made, executed, and delivered to Southwest, as Obligee, their joint and several Performance Bond and a Payment Bond (collectively, the "Bonds"); and

WHEREAS, the CITY AND COUNTY OF DENVER ("DEN") is the owner of the real property on which the improvements are to be constructed; and

WHEREAS, the DENVER DEPARTMENT OF AVIATION ("DDOA") manages the Denver International Airport; and

WHEREAS, pursuant to that certain First Amendment to Ground Lease Agreement (the "Amendment") by and among DEN and Southwest, Southwest is responsible for the construction the Project; and

WHEREAS, DEN and DDOA have requested CMR and its Surety to join with Southwest in execution and delivery of this Rider, and they have agreed to do so upon the conditions herein stated.

NOW, THEREFORE, in consideration of One Dollar and other good and valuable consideration, receipt of which is hereby acknowledged, the undersigned hereby agree as follows:

The Bonds as aforesaid shall be and it is hereby amended as follows:

1. The DEN and DDOA are hereby added to the Bonds as Joint Obligees (the "Governmental Obligees").

2. The aggregate liability of the Surety under said Bonds to Obligee and the Governmental Obligees, as their interests may appear, is limited to the penal sums of the Bonds.

3. Surety's obligation to perform hereunder is included within its obligations under the Bonds to which this rider is attached; provided that such obligation shall be conditioned on Governmental Obligees having performed as required under the Amendment and, provided further, that such obligation shall be without regard for Obligee's compliance under the Contract.

4. All rights and remedies under the Bonds with regard to the Governmental Obligees shall be determined in accordance with the provisions, conditions, and limitations of the laws of the State of Colorado.

5. Except as herein modified, said Bonds shall be and remain in full force and effect.

No right of action shall accrue hereunder to or for the use of any person, firm, or corporation other than Southwest and the Governmental Obligees named herein.

Signed and sealed this 12th day of July, 2019.

Principal: SWINERTON, INC.

By: _____

Its: Operations Manager - John Speight

Surety: Zurich American Insurance Company

By _____
M Moody, Attorney-in Fact

Surety: Fidelity and Deposit Company of Mary and

By: _____

Its: Attorney-in-Fact M. Moody

[Attach Power of Attorney for Surety's Attorney-in-Fact.]

Surety: Liberty Mutual Insurance Company

By: _____
M. Moody, Attorney-in-Fact

Approved:

SOUTHWEST AIRLINES CO.

By: _____

Its: Managing Dir. Corp Facilities

THE CITY AND COUNTY OF DENVER

By: _____

Its: Mayor

By: _____

Its: CEO, Department of Aviation

Approved As To Form:

Kristin Bronson, Attorney for the City and County of Denver

By: _____

David Steinberger, Assistant City Attorney

ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document

State of California
County of San Francisco)

On July 12, 2019 before me, Betty L. Tolentino, Notary Public
(insert name and title of the officer)

personally appeared M Moody,
who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

BETTY L. TOLENTINO
COMM. #2186585
NOTARY PUBLIC-CALIFORNIA
SAN FRANCISCO COUNTY
My Comm. Expires Apr. 12, 2021

Signature _____ (Seal)

ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California
County of San Francisco)

On July 12, 2019 before me, Betty L. Tolentino, Notary Public
(insert name and title of the officer)

personally appeared M. Moody,
who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature _____ (Seal)

PC01 BETTY L. TOLENTINO COMM. #2186585 NOTARY PUBLIC-CALIFORNIA SAN FRANCISCO COUNTY My Comm. Expires Apr. 12, 2021 PC01

ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California
County of San Francisco)

On July 12, 2019 before me, Betty L. Tolentino, Notary Public
(insert name and title of the officer)

personally appeared M Moody,
who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

BETTY L. TOLENTINO
COMM. #2186585
NOTARY PUBLIC-CALIFORNIA
SAN FRANCISCO COUNTY
My Comm. Expires Apr. 12, 2021

Signature _____ (Seal)

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 **Maureen O'CONNELL, Robert P. WRIXON, M MOODY, Betty L. TOLENTINO, Janet C. ROJO, Virginia L. BLACK, Kevin RE, Susan M. EXLINE, Gillian BHASKARAN, T. LE, Brittany KAVAN, Julia ORTEGA, K. ZEROUNIAN, Douglas B. BOWRING, Susan HECKER and Matthew KALAFATIS, of Lafayette and San Francisco, California, 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 COLONIAL AMERICAN CASUALTY AND SURETY COMPANY at its office in Owings Mills, Maryland., and 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 11th day of June, A.D. 2019.

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

By: Robert D. Murray
Vice President

By: Dawn E. Brown
Secretary

State of Maryland
County of Baltimore

On this 11th day of June, A.D. 2019, 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.

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 12th day of July, 2019.

Brian M Hodges

By: Brian M. Hodges
Vice President

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

Liberty Mutual. SURETY

This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Liberty Mutual Insurance Company
The Ohio Casualty Insurance Company
West American Insurance Company

Certificate No: 8197921- 024126

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That The Ohio Casualty Insurance Company is a corporation duly organized under the laws of the State of New Hampshire, that Liberty Mutual Insurance Company is a corporation duly organized under the laws of the State of Massachusetts, and West American Insurance Company is a corporation duly organized under the laws of the State of Indiana (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Julia Ortega, Susan M. Exline, Gillian Bhaskaran, all of the city of Lafayette state of California, Susan Hecker, M. Moody, Janet C. Rojo, R.A. Bass, Virginia L. Black, Brittany Kavan, T. Le, Maureen O'Connell, Kevin Re. Betty L. Tolentino, Robert P. Wrixon, K Zerounian

all of the city of San Francisco state of California each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 7th day of November, 2018

Liberty Mutual Insurance Company
The Ohio Casualty Insurance Company
West American Insurance Company

By: _____
David M. Carey, Assistant Secretary

State of PENNSYLVANIA
County of MONTGOMERY ss

On this 7th day of November, 2018 before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of Liberty Mutual Insurance Company, The Ohio Casualty Company, and West American Insurance Company, and that he, as such, being authorized so to do, execute 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 have hereunto subscribed my name and affixed my notarial seal at King of Prussia, Pennsylvania, on the day and year first above written.

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Teresa Pastella, Notary Public
Upper Merion Twp., Montgomery County
My Commission Expires March 28, 2021
Member, Pennsylvania Association of Notaries

By: _____
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-laws and Authorizations of The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company which resolutions are now in full force and effect reading as follows:

ARTICLE IV – OFFICERS: Section 12. Power of Attorney.
Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and execution of any such instruments and to attach thereto the seal of the Corporation. When so executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

ARTICLE XIII – Execution of Contracts: Section 5. Surety Bonds and Undertakings.
Any officer of the Company authorized for that purpose in writing by the chairman or the president, and subject to such limitations as the chairman or the president may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Company by their signature and execution of any such instruments and to attach thereto the seal of the Company. When so executed such instruments shall be as binding as if signed by the president and attested by the secretary.

Certificate of Designation – The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

Authorization – By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Renee C. Llewellyn, the undersigned, Assistant Secretary, The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 12th day of July, 2019.

By: _____
Renee C. Llewellyn, Assistant Secretary

LMS-12873 LMIC OCIC WAIC Multi Co_062018

Not valid for mortgage, note, loan, letter of credit, currency rate, interest rate or residual value guarantees.

To confirm the validity of this Power of Attorney call 1-610-832-8240 between 9:00 am and 4:30 pm EST on any business day

First Amendment to Ground Lease Agreement
Exhibit G – Temporary Access Property

RUBBLE YARD
ACCESS PERMIT

109TH AVE.

ADDITIONAL
PARKING

NEWBERN ST.

RUNWAY 16L/34R

TAXIWAY F

TIE-BACK
GRADING

HANGAR
LEASE
PROPERTY

GRADING & UTILITY TIE-IN

QUEENSBURG ST.

CONSTRUCTION
ACCESS FOR
AIRFIELD TIE-IN,
PERIMETER ROAD
PAVING, UTILITIES

RUBBLE YARD
ACCESS PERMIT

LEGEND

HANGAR LEASE LIMITS

CONSTRUCTION ACCESS AREAS

EXISTING AOA FENCE

N

GRAPHIC SCALE
200 0 200 400
(IN FEET)

Southwest®

DEN RON HANGAR
SITE EXHIBIT

DATE: JULY 10, 2019

Plotted: July 10, 2019 @ 2:48 PM by: Andy Remstad
L:\WN\DEN\Maint Hangar - Program Mgmt\CAD\WORKING-LILPWN-RON HANGAR Construction Exhibit R3-1.dwg

First Amendment to Ground Lease Agreement
Exhibit H – DDOA Inspection Proposal/Scope of Work

EXHIBIT H

August 08,2019

DEN Quality Assurance (DEN QA)
Scope of Services During Construction for
Southwest Airlines - Denver International Airport (DEN) - MAINTENANCE HANGAR

It is anticipated that DEN QA will provide part time, average 2 man-hours per day, representation on the Southwest Airlines (WN) - Denver International Airport (DEN) - MAINTENANCE HANGAR construction project jobsite.

DEN QA will aid in the existing utilities location and conditions inspections and provide documentation in support of the WN Project efforts.

Providing liaison and construction logistics coordination between WN contractors, DEN Operations, and other Stakeholders at the North Recycling Yard.

DEN QA will observe and document the contractor's compliance or non-compliance with its Safety Plan, Shut Down Requests, Haul Route Requirements and with DEN Environmental, Security, Safety and other regulations.

QA Inspectors will assist in communication and logistical coordination between the contractor and DEN Ops, tenants, and other project stakeholders to facilitate a contractor's timely access to the AOA, Shut Down Areas and project jobsite.

Review Site Specific Safety Plans, report compliance issues to DEN OPS.

Review Environmental plans and permits, report compliance issues to DEN-Environmental and DEN PM.

Communicate any project issues with the DEN PM.

Notify and advise the DEN PM of any Operations, Safety, Environmental, and Security deficiency issues

Anticipated average monthly cost of $10,257 for the above efforts and supported by the following spreadsheet.

Contact Information

- Matt Nutter – DEN Airport Infrastructure
  303.342.2652
  Matt.Nutter@flydenver.com
- Jeff Hanson – QA Program Supervisor
  310.908.0912
  Jeffery.Hanson@flydenver.com

Estimate Date: 08.08.2019

File : 2020 Airside QA Cost Estimate - WN@DEN Maintenance Hangar 08-08-2019

2020 QA COST ESTIMATE for
Southwest Airlines - Denver International Airport (DEN)
MAINTENANCE HANGAR

	Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18				
QA PERSONNEL	**Total**	**July**	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**June**	**July**	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**	**2020 ST Rate**	**2020 OT Rate**	**2020 Subtotals**	**PROJECT TOTALS**
		2019						2020															
	1063	0	158	148	148	95	52	52	52	52	52	52	52	52	52	52	0	0	0				
Lead Civil Inspector	602		43	43	43	43	43	43	43	43	43	43	43	43	43	43				$111.00	$147.00	**$72,240**	
Civil Inspector	301		86	86	86	43														$103.00	$131.00	**$33,110**	
Sr. Chief Inspector	120		9	9	9	9	9	9	9	9	9	9	9	9	9	9				$117.00	$155.00	**$18,662**	
QA Material Lab Supervisor	40		20	10	10															$155.00		**$6,200**	
Project Vehicles	1023																			$6.40		**$6,550**	**$136,762**

Assumptions:

No Material Testing Services included

Construction Shift: Day Shift Only

Included are 1 part time Lead Inspectors average 2 hours/ day for coordination

Part Time Civil Inspector provided for North Recycling Yard Management

If project scope or construction schedule changes, this estimate also subject to change.

SUBTOTAL	**$136,762**
Add 5.0% Contingency	**$6,838**
Total Estimate	**$143,600**