

CITY AND COUNTY OF DENVER

STATE OF COLORADO



DENVER
THE MILE HIGH CITY

DEPARTMENT OF PUBLIC WORKS

Contract Documents

Contract Number: 201950021



Genesee Park Base Camp

April 29, 2019



NOTICE OF APPARENT LOW BIDDER

GoodLand Construction, Inc.
760 Nile Street
Golden, Colorado 80401

The EXECUTIVE DIRECTOR OF PUBLIC WORKS has considered the Bid submitted on **May 23, 2019**, for work to be done and materials to be furnished in and for:

CONTRACT NO: 201950021 GENESEE PARK BASE CAMP

as set forth in detail in the Contract Documents for the City and County of Denver, Colorado. It appears that your Bid is fair, equitable, and to the best interest of the City and County; therefore, said Bid is hereby accepted at the bid price contained herein, subject to the approval and execution of the Contract Documents by the City in accordance with the Charter of the City and County of Denver, and to your furnishing the items specified below. The award is based on the total bid items: **(01 11 00 through 33 55 00: Thirty Three (33) total bid items,** the total estimated cost thereof being: **Five Hundred Twenty One Thousand, Six Hundred Twenty Nine Dollars, and Eighty-Six Cents (\$521,629.86).**

It will be necessary for you to appear forthwith at the office of the Department of Public Works, Contract Administration, 201 W. Colfax Ave., Dept 614, Denver, Colorado 80202, to receive the said Contract Documents, execute the same and return them to the Department of Public Works, Contract Administration within the time limit set forth in the Bid Package Documents.

In accordance with the requirements set forth in the Contract Documents, you are required to furnish the following documents:

- a. Insurance Certificates: General Liability and Automotive Liability, Workman's Compensation and Employer Liability;
- b. Payment and Performance Bond along with One original Power of Attorney relative to Performance and/or Payment Bond; and,

All construction Contracts made and entered into by the City and County of Denver are subject to Affirmative Action and Equal Opportunity Rules and Regulations, as adopted by the Manager of Public Works, and each contract requiring payment by the City of one-half million dollars (\$500,000.00) or more shall first be approved by the City Council acting by ordinance and in accordance with Section 3.2.6 of the Charter of the City and County of Denver.

Prior to issuance of Notice to Proceed, all Equal Opportunity requirements must be completed. Additional information may be obtained by contacting the Director of Contract Compliance at (720-913-1700).

Denver Public Works/Office of the Executive Director
201 West Colfax Avenue, Dept 608 | Denver, CO 80202
www.denvergov.org/dpw
p. 720.865.8630 | f. 720.865.8795



NOTICE OF APPARENT LOW BIDDER

CONTRACT NO. 201950021

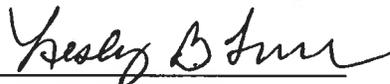
Page 2

The Bid Security submitted with your Bid, will be returned upon execution of the Contract and furnishing of the Performance Bond. In the event you should fail to execute the Contract and to furnish the performance Bond within the time limit specified, said Bid Security will be retained by the City and County of Denver as liquidated damages, and not as a penalty for the delay and extra work caused thereby.

Dated at Denver, Colorado this 5th day of June 2019.

CITY AND COUNTY OF DENVER

By


Eulois Cleckley
Executive Director of Public Works

cc: (CAO), Treasury (taxauditadmin@denvergov.org), DSBO Inbox (dsbo@denvergov.org), Project Manager, Prevailing Wage(prevailingwage@denvergov.org), File.

Denver Public Works/Office of the Executive Director
201 West Colfax Avenue, Dept 608 | Denver, CO 80202
www.denvergov.org/dpw
p. 720.865.8630 | f. 720.865.8795

CITY AND COUNTY OF DENVER
STATE OF COLORADO



DENVER
THE MILE HIGH CITY

DEPARTMENT OF PUBLIC WORKS

Bid Form Package

Contract Number: 201950021



Genesee Park Base Camp

April 29, 2019

**CITY AND COUNTY OF DENVER
DEPARTMENT OF PUBLIC WORKS
201950021**

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This Checklist is provided solely for the assistance of the bidders, and need not be returned by Bidders with your BID FORM PACKAGE.

BIDDER'S CHECKLIST

These forms comprise the Bid Form and Submittal Package. Designated forms must be completed and turned in at the time of Bid Opening. Bidders should refer to the Contract Documents, particularly the Instructions to Bidders, accompanying this package, in completing these forms.

FORM/ PAGE NO.	COMMENTS	COMPLETE
BF-4 – BF-5	a.) Legal name, address, Acknowledgment signature and attestation (if required.)	<input type="checkbox"/>
BF-6+	a.) Fill in individual bid item dollars and totals in Numerical figures only	<input type="checkbox"/>
	b.) Complete all blanks	<input type="checkbox"/>
	c.) Legal name required	<input type="checkbox"/>
BF-7	a.) Write out bid total or bid totals in words and figures in the blank form space(s) provided	<input type="checkbox"/>
	b.) Calculate Textura® Construction Payment Management System Fee from chart on pg. BF-3 and write fee in the space provided	<input type="checkbox"/>
BF-8	a.) List all subcontractors who are performing work on this project	<input type="checkbox"/>
BF-9 – BF-10	a.) Fully complete List of Proposed Minority /Woman Business Enterprise Bidders, Subcontractors, Suppliers, Manufacturers, or Brokers – check appropriate boxes.	<input type="checkbox"/>
BF-11	a.) Complete all blanks	<input type="checkbox"/>
	b.) If Addenda have been issued, complete bottom section.	<input type="checkbox"/>
BF-12	a.) Complete appropriate sections - signature(s) required.	<input type="checkbox"/>
	b.) If corporation, then corporate seal required.	<input type="checkbox"/>
BF-13	a.) Fully complete Commitment to Participation	<input type="checkbox"/>
BF-16	a.) If applicable, fully complete Joint Venture Affidavit (Submit 10 days prior to Bid Opening date)	<input type="checkbox"/>
BF-17 – BF-19	a.) If applicable, fully complete Joint Venture Eligibility Form (Submit 10 days prior to Bid Opening date)	<input type="checkbox"/>
BF-20	a.) Fill in all Bid Bond blanks	<input type="checkbox"/>
	b.) Signatures required	<input type="checkbox"/>
	c.) Corporate Seal if required	<input type="checkbox"/>
	d.) Dated	<input type="checkbox"/>
	e.) Attach Surety Agents Power of Attorney or Certified or cashier's check made out to the Manager of Revenue referencing Bidder's Company and Contract Number.	<input type="checkbox"/>
BF-21- BF-24	a.) Each bidder, as a condition of responsiveness to this solicitation, shall complete and return the "Diversity and Inclusiveness in City Solicitations Information Request Form" with their Bid.	<input type="checkbox"/>

Textura ® Construction Payment Management System (“Textura”)

Bidder recognizes and agrees that it shall be required to use the Textura® Construction Payment Management System (“Textura”) for this Project to request payment from the City and to pay subcontractors. All certified subcontractors or suppliers who are listed for participation towards any assigned program goal must be paid via Textura. All fees associated with Textura are to be paid by the bidder for billings for work performed. Bidders are required, when preparing a bid, to enter the price of Textura on the line provided for the service. The fee is all inclusive of all subcontractor, project and subscription fees associated with Textura. The bidder will calculate the fee based on their total bid (not including any alternates, if applicable) and the table below, and then include it on the line item provided in the bid form labeled “Textura® Construction Payment Management System Fee”. This expense becomes part of the contract and billable to the City. All costs including, but not limited to, costs associated with training, entering data, and/or utilizing Textura other than the Textura Construction Payment Management System Fee are overhead and shall not be reimbursed by the City. Bidder will be responsible for any tax on the Textura fee. As with other taxes, the City will not reimburse bidder for this cost and therefore this cost should be included in bidder’s bid. Textura will invoice the awarded bidder directly.

Project Value	Project Fee (GC + Sub Usage)
\$100,000 – 249,999.99	\$780
\$250,000 - \$499,999.99	\$1,625
\$500,000 - \$999,999.99	\$3,250
\$1,000,000 - \$2,999,999.99	\$5,850
\$3,000,000 - \$4,999,999.99	\$9,100
\$5,000,000 - \$9,999,999.99	\$12,220
\$10,000,000 - \$19,999,999.99	\$20,345
\$20,000,000 - \$49,999,999.99	\$32,500
\$50,000,000 - \$99,999,999.99	\$48,750
\$100,000,000 - \$199,999,999.99	\$69,095
\$200,000,000 - \$299,999,999.99	\$85,345
\$300,000,000 - \$399,999,999.99	\$109,720
\$400,000,000 - \$499,999,999.99	\$142,220
\$500,000,000 - \$999,999,999.99	\$162,500
\$1,000,000,000 - \$1,999,999,999.99	\$345,345
\$2,000,000,000 - \$4,999,999,999.99	\$650,000
\$5,000,000,000 - \$9,999,999,999.99	\$1,015,625
\$10,000,000,000 or greater	\$1,503,125

For more information:

<http://www.denvergov.org/content/denvergov/en/contract-administration/bidding-process.html>

**CITY AND COUNTY OF DENVER
DEPARTMENT OF PUBLIC WORKS**

BID FORM AND SUBMITTAL PACKAGE ACKNOWLEDGMENT

CONTRACT NO. 201950021

Genesee Park Base Camp

BIDDER: GoodLand Construction, Inc.
(Legal Name per Colorado Secretary of State)

ADDRESS: 760 Nile Street
Golden, CO 80401

CONTACT PERSON FOR ALL MATTERS RELATING TO THIS DOCUMENT:

NAME: Matt Worland **TITLE:** President

EMAIL: matt@goodlandconstruction.com **PHONE NUMBER:** 303-278-8100

The undersigned bidder states that the undersigned bidder has received and had an opportunity to fully and thoroughly examine a complete set of the Contract Documents for **Contract No. 201950021, Genesee Park Base Camp**, made available to the undersigned bidder pursuant to Notice of Invitation for Bids dated April 29, 2019.

The undersigned bidder acknowledges that a complete and final set of the Contract Documents for the referenced Project, the components of which are identified below, are bound and maintained as the record set of Contract Documents by the Contract Administration Division of the Department of Public Works and that this Record Set is available for examination by the undersigned bidder.

The undersigned bidder, having thoroughly examined each of the components identified below and contained in Contract Documents, HEREBY SUBMITS THIS BID FORM AND SUBMITTAL PACKAGE, fully understanding that the Contract Documents, as defined in Paragraph 1 of the contract, including this executed Bid Form and Submittal Package, constitute all of the terms, conditions and requirements upon which this submission is based and further understanding that, by submission of this Bid Form and Submittal Package, the City shall rely on the representations and commitments of the undersigned bidder contained herein.

The following completed documents comprising this Bid Form and Submittal Package will be included with and, by this reference, are expressly incorporated into the Contract Documents specified at Paragraph 1 of the Contract:

- Bid Form and Submittal Package Acknowledgment Form
- Bid Form
- List of Proposed Minority/Woman Owned Business Enterprise(s)
- Commitment to Minority/Woman Owned Business Enterprise Participation
- Minority/Woman Owned Business Enterprise(s) of Intent
- Joint Venture Affidavit (if applicable)
- Joint Venture Eligibility Form (if applicable)
- Bid Bond
- Certificate of Insurance

The following designated documents constitute that portion of the Contract Documents made available by the Notice of Invitation for Bids, but not included in the Bid Form and Submittal Package:

- Notice of Invitation for Bids
- Instructions to Bidders
- Addenda (as applicable)
- Equal Employment Opportunity Provisions (Appendix A and Appendix F)
- Contract Form
- General Contract Conditions
- Special Contract Conditions
- Performance and Payment Bond
- Notice to Apparent Low Bidder
- Notice to Proceed
- Contractor's Certification of Payment Form
- Final/Partial Lien Release Form
- Final Receipt
- Change Orders (as applicable)
- Federal Requirements (as applicable)
- Prevailing Wage Rate Schedule(s)
- Technical Specifications
- Contract Drawings
- Accepted Shop Drawings

The undersigned bidder expressly assumes responsibility for the complete contents of these designated documents as bound together with the Bid Form and Submittal Package submitted herewith and designated the Contract Documents.

IN WITNESS WHEREOF, the undersigned bidder has signed personally or by duly authorized officer or agent and duly attested.

BIDDER:

Name: GoodLand Construction, Inc.

By: Matt Worland

Title: President

ATTEST:

By: _____



**CITY AND COUNTY OF DENVER
DEPARTMENT OF PUBLIC WORKS**

BID FORM

**CONTRACT NO. 201950021
Genesee Park Base Camp**

BIDDER GoodLand Construction, Inc.
(Legal Name per Colorado Secretary of State)

TO: The Manager of Public Works
City and County of Denver
c/o Contract Administration
201 West Colfax, Dept. 614
Denver, Colorado 80202

The Undersigned Bidder, having examined the plans, technical specifications, and remainder of the proposed Contract Documents as designated and enumerated in the General and Special Contract Conditions and any and all addenda thereto; having investigated the location of and conditions affecting the proposed Work; and being acquainted with and fully understanding the extent and character of the Work covered by this bid, and all factors and conditions affecting or which may be affected by Work, HEREBY SUBMITS THIS BID, pursuant to an advertisement of a Notice of Invitation for Bids as published on **April 29, 2019**, to furnish all required materials, tools, appliances, equipment and plant; to perform all necessary labor and to undertake and complete: **CONTRACT NO. 201950021, Genesee Park Base Camp**, in Denver, Colorado, in full accordance with and conformity to the Plans, Technical Specifications, and Contract Documents hereto attached or by reference made a part hereof, at and for the following price(s) set forth on this Bid Form.

The following documents, which taken as a whole constitute the Contract Documents for this Project, and which are incorporated herein, by reference, were made available to the Bidder as provided in the Advertisement of Notice of Invitation for Bids, were received by the bidder, and form the basis for this bid:

- Advertisement of Notice of Invitation for Bids*
- Instructions to Bidders*
- Commitment to M/WBE Participation*
- Article III, Divisions 1 and 3 of Chapter 28, D.R.M.C.*
- Bid Bond*
- Addenda (as applicable)*
- Equal Employment Opportunity Provisions (Appendix A and Appendix F)*
- Bid Form*
- Contract Form*
- General Contract Conditions*
- Special Contract Conditions*
- Performance and Payment Bond*
- Notice to Apparent Low Bidder*
- Notice to Proceed*
- Contractor's Certification of Payment Form*
- Final/Partial Lien Release Form*
- Final Receipt*
- Change Orders (as applicable)*
- Federal Requirements (as applicable)*
- Prevailing Wage Rate Schedule(s)*
- Technical Specifications*
- Contract Drawing*
- Accepted Shop Drawings*
- Certificate of Insurance*

Item No.	Description and Price	Estimated Quantity	Estimated Cost
01 11 00	General Conditions at the unit price of \$ <u>82,500.00</u> per Lump Sum.	1 LS	\$ <u>82,500.00</u>
01 56 39	Tree Retention and Protection at the unit price of \$ <u>14,305.00</u> per Lump Sum.	1 LS	\$ <u>14,305.00</u>
01 57 13	Erosion and Sedimentation Control at the unit price of \$ <u>18,930.00</u> per Lump Sum.	1 LS	\$ <u>18,930.00</u>
02 41 00	Demolition at the unit price of \$ <u>7,355.00</u> per Lump Sum.	1 LS	\$ <u>7,355.00</u>
03 41 00	Precast Concrete - Concrete Prep Tables at the unit price of \$ <u>4,350.00</u> per Each.	2 EA	\$ <u>8,700.00</u>
03 41 00	Precast Concrete - Curb Stops at the unit price of \$ <u>315.00</u> per Each.	9 EA	\$ <u>2,835.00</u>
04 43 13.13	Anchored Stone Masonry Veneer at the unit price of \$ <u>4,310.00</u> per Each.	6 EA	\$ <u>25,860.00</u>
05 53 13	Metal Fabrications at the unit price of \$ <u>3,960.00</u> per Lump Sum.	1 LS	\$ <u>3,960.00</u>
12 87 50	Prefabricated Picnic Shelter Installation at the unit price of \$ <u>36,650.00</u> per Lump Sum.	1 LS	\$ <u>36,650.00</u>
12 87 60	Vault Toilet Site Prep at the unit price of \$ <u>3,250.00</u> per Each.	2 EA	\$ <u>6,500.00</u>
12 93 00	Site Furnishings - Picnic Tables Standard at the unit price of \$ <u>1,955.00</u> per Each.	4 EA	\$ <u>7,820.00</u>

Item No.	Description and Price	Estimated Quantity	Estimated Cost
12 93 00	Site Furnishings - Picnic Tables Accessible at the unit price of \$ <u>1,575.00</u> per Each.	2 EA	\$ <u>3,150.00</u>
12 93 00	Site Furnishings - Log Benches at the unit price of \$ <u>415.00</u> per Each.	20 EA	\$ <u>8,300.00</u>
13 93 00	Site Furnishings - Handicap Parking Signs at the unit price of \$ <u>700.00</u> per Lump Sum.	1 LS	\$ <u>700.00</u>
31 11 00	Clearing and Grubbing at the unit price of \$ <u>1,470.00</u> per Lump Sum.	1 LS	\$ <u>1,470.00</u>
31 11 00	Clearing and Grubbing - Stump Removal 12"-18" at the unit price of \$ <u>4,695.00</u> per Each.	19 EA	\$ <u>4,695.00</u>
31 11 00	Clearing and Grubbing - Stump Removal less than 12" at the unit price of \$ <u>3,105.00</u> per Each.	16 EA	\$ <u>3,105.00</u>
31 20 00	Earth Moving at the unit price of \$ <u>29,335.00</u> per Lump Sum.	1 LS	\$ <u>29,335.00</u>
31 37 00	Riprap, Boulders, Stone, and Bedding - Stacked Brownstone Walls and Seating at the unit price of \$ <u>41,100.00</u> per Lump Sum.	1 LS	\$ <u>41,100.00</u>
31 37 00	Riprap, Boulders, Stone, and Bedding - Soil Rip Rap - Type L at the unit price of \$ <u>1,270.00</u> per Lump Sum.	1 LS	\$ <u>1,270.00</u>
31 37 00	Riprap, Boulders, Stone, and Bedding - Soil Rip Rap - Type M at the unit price of \$ <u>1,270.00</u> per Lump Sum.	1 LS	\$ <u>1,270.00</u>

Item No.	Description and Price	Estimated Quantity	Estimated Cost
31 37 00	Riprap, Boulders, Stone, and Bedding - 18" Double Stacked Boulder Wall at the unit price of \$ <u>8,155.00</u> per Lump Sum.	1 LS	\$ <u>8,155.00</u>
31 37 00	Riprap, Boulders, Stone, and Bedding - 36" Boulder Wall at the unit price of \$ <u>11,100.00</u> per Lump Sum.	1 LS	\$ <u>11,100.00</u>
31 37 00	Riprap, Boulders, Stone, and Bedding - Landscape Boulders at the unit price of \$ <u>6,850.00</u> per Lump Sum.	1 LS	\$ <u>6,850.00</u>
31 37 00	Riprap, Boulders, Stone, and Bedding - Brownstone Stairs at the unit price of \$ <u>15,800.00</u> per Lump Sum.	1 LS	\$ <u>15,800.00</u>
31 37 00	Riprap, Boulders, Stone, and Bedding - Brownstone Stepping Stones at the unit price of \$ <u>9,845.00</u> per Lump Sum.	1 LS	\$ <u>9,845.00</u>
32 11 16	Aggregate Base Course at the unit price of \$ <u>37,100.00</u> per Lump Sum.	1 LS	\$ <u>37,100.00</u>
32 13 13	Concrete Walks, Curbs, and Miscellaneous Flatwork at the unit price of \$ <u>51,950.00</u> per Lump Sum.	1 LS	\$ <u>51,950.00</u>
32 15 40	Crushed Stone Paving at the unit price of \$ <u>10,380.00</u> per Lump Sum.	1 LS	\$ <u>10,380.00</u>
32 17 23	Pavement Markings at the unit price of \$ <u>1,600.00</u> per Lump Sum.	1 LS	\$ <u>1,600.00</u>
32 92 20	Native Seeding at the unit price of \$ <u>30,235.00</u> per Lump Sum.	1 LS	\$ <u>30,235.00</u>

Item No.	Description and Price	Estimated Quantity	Estimated Cost
33 44 00	Storm Sewerage at the unit price of \$ <u>21,755.00</u> per Lump Sum.	1 LS	\$ <u>21,755.00</u>
33 55 00	Potholing at the unit price of \$ <u>475.00</u> per Hour.	8 HOURS	\$ <u>3,800.00</u>

Bid Items Total Amount (01 11 00 through 33 55 00 (Thirty-Three [33]) total bid items) \$ 518,380.00
Textura ® Fee from table on Page BF-3 (based on Bid Items Total Amount) \$ 3,250.00

Bid Items Total Amount plus Textura® Fee equals Total Bid Amount \$ 521,630.00

Total Bid Amount: Five hundred twenty-one thousand six hundred thirty and no cents
Dollars (\$ <u>521,630.00</u>)

If the Manager mails a written Notice of Apparent Low Bidder, addressed to the Bidder's business address stated on this Bid Form, the Undersigned Bidder shall, in accordance with the Contract Documents, be ready to, and shall, within five (5) days after the date of the Notice: (i) execute the attached form of Contract in conformity with this bid; (ii) furnish the required proofs of insurance; and (iii) furnish the required bond or bonds in the sum of the full amount of this bid, executed by a surety company acceptable to the Manager.

The The Hartford Fire Insurance, a corporation of the State of Connecticut hereby offered as Surety on said bond. If such surety is not approved by the Manager, another and satisfactory surety company shall be furnished.

Enclosed with this bid is a bid guarantee, as defined in the attached Instructions to Bidders, in the amount of 5%. The Undersigned Bidder agrees that the entire amount of this bid guarantee is to be paid to and become the property of the City as liquidated damages, and not as a penalty, if: (i) the bid is considered to be the best by the City; (ii) the City notifies the Undersigned Bidder that it is the Apparent Low Bidder; and (iii) the Undersigned Bidder fails to execute the Contract in the form prescribed or to furnish the required bond and proofs of insurance, within five (5) days after the date of such notification.

The following persons, firms or corporations are interested with the Undersigned Bidder in this bid:

Name: _____ Name: _____

Address: _____ Address: _____

If there are no such persons, firms, or corporations, please so state in the following space:

There are no such persons, firms, or corporations



DENVER
OFFICE OF ECONOMIC
DEVELOPMENT

**List of Proposed
MWBE
Bidders, Subcontractors,
Suppliers (Manufacturers) or
Brokers**

Office of Economic Development
Division of Small Business Opportunity
Compliance Unit
201 W. Colfax Ave. Dept. 907
Denver, CO 80202
Phone: 720-913-1999
D&BO@denvergov.org

City & County of Denver Contract No.: _____

The undersigned Bidder proposes to utilize all listed firms. The following MWBE(s) firms listed are CURRENTLY certified by the City and County of Denver. Only the level of MWBE participation listed at the bid opening will count toward satisfaction of the project goal. Only bona fide commissions may be counted for Brokers. MWBE prime bidders must detail their bid information below. Please copy and attach this page to list additional MWBE.

Prime Bidder

Business Name:

Address:

Contact Person:

Type of Service:

Dollar Amount: \$:

Percent of
Project:

Certified MWBE Prime Bidder

Business Name:

Address:

Contact Person:

Type of Service:

Dollar Amount: \$:

Percent of
Project:

Subcontractors, Suppliers Manufacturers or Brokers (check one box)

<input type="checkbox"/> Subcontractor (✓)	<input checked="" type="checkbox"/> Supplier (✓)	<input type="checkbox"/> Manufacturer (✓)	<input type="checkbox"/> Broker (✓)
--	--	---	-------------------------------------

Business Name: JDR Company

Address: 895 Sheridan Blvd., Lakewood

Type of Service: Landscape

Contact Person: Juan DeRobles

Dollar Amount: \$: 78,165.00

Percent of
Project: 14.98

<input type="checkbox"/> Subcontractor (✓)	<input checked="" type="checkbox"/> Supplier (✓)	<input type="checkbox"/> Manufacturer (✓)	<input type="checkbox"/> Broker (✓)
--	--	---	-------------------------------------

Business Name: Phoenix Masonry

Address: 16200 Washington St., Thornton

Type of Service: Masonry

Contact Person: Steve Crook

Dollar Amount: \$: 21,945.00

Percent of
Project: 4.2

<input type="checkbox"/> Subcontractor (✓)	<input type="checkbox"/> Supplier (✓)	<input type="checkbox"/> Manufacturer (✓)	<input type="checkbox"/> Broker (✓)
--	---------------------------------------	---	-------------------------------------

Business Name:

Address:

Type of Service:

Contact Person:

Dollar Amount: \$:

Percent of
Project:

Rev 031816JE

Subcontractors, Suppliers Manufacturers or Brokers (check one box)				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Business Name:				
Address:			Type of Service:	
Contact Person:			Dollar Amount: \$:	Percent of Project:
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Business Name:				
Address:			Type of Service:	
Contact Person:			Dollar Amount: \$:	Percent of Project:
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Business Name:				
Address:			Type of Service:	
Contact Person:			Dollar Amount: \$:	Percent of Project:
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Business Name:				
Address:			Type of Service:	
Contact Person:			Dollar Amount: \$:	Percent of Project:
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Business Name:				
Address:			Type of Service:	
Contact Person:			Dollar Amount: \$:	Percent of Project:
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Business Name:				
Address:			Type of Service:	
Contact Person:			Dollar Amount: \$:	Percent of Project:
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Business Name:				
Address:			Type of Service:	
Contact Person:			Dollar Amount: \$:	Percent of Project:
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Rev 031816JE

The undersigned Bidder hereby certifies that the aforementioned subcontractors and suppliers have full knowledge that their names have been offered as subcontractors and suppliers for the work, and the Bidder further certifies that the dollar amount of work to be performed by the aforementioned M/WBE(s) was furnished to the Bidder prior to the bid opening. The undersigned Bidder agrees that after the bid opening, it shall submit to the City an executed and completed W/MBE "Letter of Intent" in three working days (3) on each of its M/WBE subcontractors. The "Letter of Intent" form is contained in the Contract Documents.

The undersigned Bidder acknowledges the right of the City to reject any or all bids submitted, to waive informalities in bids and to re-advertise this Project for bids.

The undersigned certifies that it has carefully checked all works and figures and all statements made in these Bid Forms.

This bid is submitted upon the declaration that neither, I (we), nor, to the best of my (our) knowledge, none of the members of my (our) firm or company have either directly or indirectly entered into any agreement, participated in any collusion or otherwise taken any action in restraint of free competitive bidding in connection with this bid.

Business Address of Bidder: 760 Nile Street

City, State, Zip Code: Golden, CO 80401

Telephone Number of Bidder: 303-278-8100 Fax No. 303-278-0231

Social Security or Federal Employer ID Number of Bidder: 84-1269045

Name and location of the last work of this kind herein contemplated upon which the Bidder was engaged:

For information relative thereto, please refer to:

Name: Matt Worland

Title: President

Address: 760 Nile St., Golden CO 80401

The undersigned acknowledges receipt, understanding, and full consideration of the following addenda to the Contract Documents:

Addenda Number #1 Date 5/14/19

Addenda Number _____ Date _____

Addenda Number _____ Date _____

Dated this 23 day of May, 20 19.

Signature of Bidder:

If an Individual: _____ doing business
as _____.

If a Partnership: _____
by: _____ General Partner.

If a Corporation: GoodLand Construction, Inc.
a Colorado Corporation,
by: [Signature], its President.

Attest:
Secretary [Signature]



If a Joint Venture, signature of all Joint Venture participants

Firm: _____

Corporation (), Partnership () or () Limited Liability Company

By: _____ (If a Corporation)
Attest: _____
Title: _____ Secretary (Corporate Seal)

Firm: _____

Corporation (), Partnership () or () Limited Liability Company

By: _____ (If a Corporation)
Attest: _____
Title: _____ Secretary (Corporate Seal)

Firm: _____

Corporation (), Partnership () or () Limited Liability Company

By: _____ (If a Corporation)
Attest: _____
Title: _____ Secretary (Corporate Seal)



DENVER
OFFICE OF ECONOMIC
DEVELOPMENT

Office of Economic Development
Division of Small Business Opportunity
Compliance Unit
201 W. Colfax Ave. Dept. 907
Denver, CO 80202
Phone: 720-913-1999
DSBO@denvergov.org

COMMITMENT TO MWBE PARTICIPATION

The undersigned has satisfied the MWBE participant requirements in the following manner (Please check the appropriate box):

The Bidder/Proposer is committed to the minimum 19 % MWBE utilization on the project, and will submit Letters of Intent (LOI) for each subcontractor/subconsultant listed in the Bid Forms as follows:

Hard Bids: Three (3) business days after the bid opening.

Request for Proposals/Qualifications: With the proposal when due.

Compliance Plans: With each task/work order

The Bidder/Proposer is unable to meet the project goal of _____% MWBE, but is committed to a minimum of _____% MWBE utilization on the project. The Bidder/Proposer understands that they must submit a detailed statement of their good faith effort under sealed bid procedures, as a matter of responsiveness, or with initial proposals, under contract negotiation procedures; or no later than **three (3)** days after bid opening as a matter of responsibility as in accordance with DRMC Section 28-62 and 28-67 of Ordinance 85 to the Division of Small Business Opportunity.

The Bidder/Proposer is a certified MWBE in good standing with the City and is committed to self-perform a minimum of _____% of the work on the contract.

Bidder/Proposer (Name of Firm): GoodLand Construction, Inc.

Firm's Representative (Please print): Matt Worland

Signature (Firm's Representative): 

Title: President

Address: 760 Nile Street

City: Golden

State: CO

Zip: 80401

Phone: 303-278-8100

Fax: 303-278-0231

Email: matt@goodlandconstruction.com

A copy of the MWBE Certification letter must be attached to each Letter of Intent (LOI).



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DEVELOPMENT

Office of Economic Development
Division of Small Business Opportunity
Compliance Unit
201 West Colfax Ave., Dept. 907
Denver, CO 80202
Phone: 720-913-1999

LETTER OF INTENT (LOI)
INSTRUCTIONS FOR COMPLETION & SUBMISSION:

- All lines must be completed or marked N/A for Not Applicable
- Certification Letter must be submitted with LOI
- Submit the attached completed checklist with this letter
- Email to dobo@denvergov.org.
- FOR RFPs and RFQs: LOIs should be included with Submittal

Contract No.: 201950021		Project Name: Genesee Park Base Camp					
A. The Following Section Is To Be Completed by the Bidder/Consultant This Letter of Intent Must be Signed by the Bidder/Consultant and M/WBE, SBE, EBE or DBE							
Name of Bidder/Consultant: GoodLand Construction, Inc.				Self-Performing: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Phone: 303-278-8100	
Contact Person: Matt Worland			Email: matt@goodlandconstruction.com			Fax: 303-278-0231	
Address: 760 Nile Street			City: Golden		State: CO	Zip: 80401	
B. The Following Section is To Be Completed by the M/WBE, SBE, EBE or DBE, at any Tier This Letter of Intent Must be Signed by the M/WBE, SBE, EBE or DBE and Bidder/Consultant							
Name of Certified Firm: J.D.R. Company				Phone: 303-936-4260			
Contact Person: Juan DeRobles			Email: jdrc@questoffice.net		Fax: 303-936-0144		
Address: 895 Sheridan Blvd.			City: Lakewood		State: CO	Zip: 80214	
Please check the designation which applies to the certified firm.		M/WBE (v)	<input checked="" type="checkbox"/>	SBE (v)	<input type="checkbox"/>	EBE (v)	<input type="checkbox"/>
Indirect Utilization: If this M/WBE, SBE, EBE or DBE is not a direct first tier subcontractor/subconsultant, supplier or broker to the Bidder/ Consultant, please indicate the name of the subcontractor/subconsultant, supplier or broker which is utilizing the participation of this firm:							
A Copy of the M/WBE, SBE, EBE or DBE Letter of Certification must be Attached							
Identify the scope of the work to be performed or supply item that will be provided by the M/WBE/SBE/DBE. <u>On unit price bids only, identify which bid line items the M/WBE/SBE/EBE/DBEs scope of work or supply corresponds to.</u> 015639, 015713, 313700, 321540, 329220							
<input checked="" type="checkbox"/>	Subcontractor/Subconsultant (v)		<input type="checkbox"/>	Supplier (v)		<input type="checkbox"/>	Broker (v)
Bidder intends to utilize the aforementioned M/WBE, SBE, EBE or DBE for the Work/Supply described above. The cost of the work and percentage of the total subcontractor M/WBE, SBE, EBE or DBE bid amount is:							
\$ 78,165.00					14.98 %		
Consultant intends to utilize the aforementioned M/WBE, SBE, EBE or DBE for the Work/Supply described above. The percentage of the work of the total sub consultant M/WBE, SBE, EBE or DBE will perform is:							
If the fee amount of the work to be performed is requested, the fee amount, is:					\$		
Bidder/Consultant's Signature:						Date: 5/28/19	
Title: President							
M/WBE, SBE, EBE or DBE or Self-Performing Firm's Signature:						Date: 5/28/19	
Title: Secretary Treasurer							
If the above named Bidder/Consultant is not determined to be the successful Bidder/Consultant, this Letter of Intent shall be null and void.							



DENVER
OFFICE OF ECONOMIC
DEVELOPMENT

Office of Economic Development
Division of Small Business Opportunity
Compliance Unit
201 West Colfax Ave., Dept. 907
Denver, CO 80202
Phone: 720-913-1999

LETTER OF INTENT (LOI)
INSTRUCTIONS FOR COMPLETION & SUBMISSION:

- All lines must be completed or marked N/A for Not Applicable
- Certification Letter must be submitted with LOI
- Submit the attached completed checklist with this letter
- Email to dabo@denvergov.org
- FOR RFPs and RFQs: LOIs should be included with Submittal

Contract No.: 201950021		Project Name: Genesee Park Base Camp					
A. The Following Section is To Be Completed by the Bidder/Consultant This Letter of Intent Must be Signed by the Bidder/Consultant and M/WBE, SBE, EBE or DBE							
Name of Bidder/Consultant: GoodLand Construction, Inc.				Self-Performing: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Phone: 303-278-8100	
Contact Person: Matt Worland			Email: matt@goodlandconstruction.com			303-278-0231	
Address: 760 Nile Street			City: Golden		State: CO	Zip: 80401	
B. The Following Section is To Be Completed by the M/WBE, SBE, EBE or DBE, at any Tier This Letter of Intent Must be Signed by the M/WBE, SBE, EBE or DBE and Bidder/Consultant							
Name of Certified Firm: Phoenix Masonry				Phone: 303-252-0993			
Contact Person: Steve Cook			Email: steve@phoenix-masonry.net		Fax: 303-255-9281		
Address: 16200 Washington St.			City: Thornton		State: CO	Zip: 80023	
Please check the designation which applies to the certified firm.		M/WBE (✓)	X	SBE (✓)	EBE (✓)	DBE (✓)	
Indirect Utilization: If this M/WBE, SBE, EBE or DBE is not a direct first tier subcontractor/subconsultant, supplier or broker to the Bidder/ Consultant, please indicate the name of the subcontractor/subconsultant, supplier or broker which is utilizing the participation of this firm:							
A Copy of the M/WBE, SBE, EBE or DBE Letter of Certification must be Attached							
Identify the scope of the work to be performed or supply item that will be provided by the M/WBE/SBE/DBE. <u>On unit price bids only, identify which bid line items the M/WBE/SBE/EBE/DBEs scope of work or supply corresponds to.</u> 044313.13							
X	Subcontractor/Subconsultant (✓)		Supplier (✓)			Broker (✓)	
Bidder intends to utilize the aforementioned M/WBE, SBE, EBE or DBE for the Work/Supply described above. The cost of the work and percentage of the total subcontractor M/WBE, SBE, EBE or DBE bid amount is:							
\$ 21,945.00					4.2 %		
Consultant intends to utilize the aforementioned M/WBE, SBE, EBE or DBE for the Work/Supply described above. The percentage of the work of the total sub consultant M/WBE, SBE, EBE or DBE will perform is: %							
If the fee amount of the work to be performed is requested, the fee amount, is:						\$	
Bidder/Consultant's Signature:					Date: 5/28/19		
Title: President							
M/WBE, SBE, EBE or DBE or Self-Performing Firm's Signature:					Date: 5/28/19		
Title: President							
If the above named Bidder/Consultant is not determined to be the successful Bidder/Consultant, this Letter of Intent shall be null and void.							

Letter of Intent (LOI) Checklist

All lines must be completed or marked N/A for Not Applicable

Submit the attached completed checklist with this letter.

Completed ✓	
<input type="checkbox"/>	Project Number & Project Name
<input type="checkbox"/>	Section A: Name of Bidder/Consultant, Contact Person, Address, City, State, Zip, Phone, Email
<input type="checkbox"/>	Section B: Name of Certified Firm, Contact Person, Address, City, State, Zip, Phone, Email
<input type="checkbox"/>	Designation checked for MBE/WBE, SBE, EBE or DBE
<input type="checkbox"/>	Indirect Utilization: Name of subcontractor/subconsultant, supplier or broker is indicated if using the participation of a 2 nd tier subcontractor/subconsultant, supplier or broker.
<input type="checkbox"/>	Scope of work performed or item supplied by M/WBE, SBE, EBE or DBE
<input type="checkbox"/>	Line items performed, if line-item bid.
<input type="checkbox"/>	Copy of M/WBE, SBE, EBE or DBE Letter of Certification Attached
<input type="checkbox"/>	Designation checked for Subcontractor/Subconsultant, Supplier or Broker
	If project is a hard bid...
<input type="checkbox"/>	Bidder has indicated dollar amount for value of work going to Subcontractor/ Subconsultant, Supplier or Broker
<input type="checkbox"/>	Bidder has indicated percentage for value of work going to Subcontractor/ Subconsultant, Supplier or Broker
	If project is an RFP/RFQ...
<input type="checkbox"/>	Consultant has indicated percentage for value of work going to Subcontractor/ Subconsultant, Supplier or Broker Name & contact name for MWBE.
<input type="checkbox"/>	Fee amount if fee amount of work to be performed is requested.
<input type="checkbox"/>	Bidder/Consultant's Signature, Title & Date
<input type="checkbox"/>	M/WBE, SBE, EBE or DBE Firm's Signature, Title and Date

Select One ✓	SUBMITTED VIA... For Construction Hard Bids ONLY, Bidders are strongly urged to deliver the LOI via one of the methods below. (The preferred method is to scan/email completed forms to email address below. Delivery to any other point cannot be guaranteed timely delivery.)
<input type="checkbox"/>	Email to DSBO@denvergov.org

The complete and accurate information that is required for the Letter of Intent is based on the following sections of the Ordinance 85: Section 28-63 and Section 28-68. Failure to complete this information on the Letter of Intent (LOI) may automatically deem a bid or proposal non-responsive.



Joint Venture Affidavit

The Undersigned swears that the foregoing statements are correct and include all material information necessary to identify and explain the terms and operation of our joint venture and the intended participation by each joint venturer in the undertaking. Further, the Undersigned covenant and agree to provide the City current, complete, and accurate information regarding actual joint venture work and the payment thereof and any proposed changes in any of the joint venture arrangements and to permit the audit and examination of the books, records, and files of the joint venture, by authorized representatives of the City or Federal funding agency, if applicable. Any material misrepresentation will be grounds for terminating any contract which may be awarded and for initiating action under Federal or State laws concerning false statements.

Name of Firm: _____

Print Name: _____

Title _____

Signature: _____

Date: _____

Notary Public

County of _____

State of _____

My Commission Expires: _____

Subscribed and sworn before me this

_____ day of _____, 20_____

Notary Seal

Notary Signature: _____

Notary Commission #: _____

Address: _____

Name of Firm: _____

Print Name: _____

Title _____

Signature: _____

Date: _____

Notary Public

County of _____

State of _____

My Commission Expires: _____

Subscribed and sworn before me this

_____ day of _____, 20_____

Notary Seal

Notary Signature: _____

Notary Commission #: _____

Address: _____



**JOINT VENTURE
ELIGIBILITY FORM**

Joint Venture means an association of two (2) or more business enterprises to constitute a single business enterprise to perform a City construction or professional design and construction services contract for which purpose they combine their property, capital, efforts, skills and knowledge, and in which each joint venturer is responsible for a distinct, clearly defined portion of the work of the contract, performs a commercially useful function, and whose share in the capital contribution, control, management responsibilities, risks and profits of the joint venture are equal to its ownership interest. Joint ventures must have an agreement in writing specifying the terms and conditions of the relationships between the joint venturers and their relationship and responsibility to the contract.

The Division of Small Business Opportunity (DSBO) requires the following information be provided from participants of a prospective joint venture, to assist DSBO in evaluating the proposed joint venture. This Joint Venture Eligibility form and the Joint Venture Affidavit apply if SBEs, EBEs, MBEs, WBEs or DBEs participate in this joint venture.

Please return this form, the Joint Venture Affidavit, and a copy of your Joint Venture Agreement to: Division of Small Business Opportunity, 201 West Colfax Avenue, Denver, CO 80202, at least **ten (10) working days** prior to bid opening or proposal.

If you have questions regarding this process, please contact DSBO at 720-913-1899.

Joint Venture Information

Name:		Contact Person:	
Address:			
City:	State:	Zip:	Phone:

Joint Venture Participants

Name:		Contact Person:	
Address:			
City:	State:	Zip:	Phone:

% Ownership:	Certifying Entity:	Type Certification & Date: (S/E/M/W or DBE)
--------------	--------------------	---

Type of Work for which Certification was granted:

Name:		Contact Person:	
Address:			
City:	State:	Zip:	Phone:

% Ownership:	Certifying Entity:	Type Certification & Date: (S/E/M/W or DBE)
--------------	--------------------	---

Type of Work for which Certification was granted:

General Information

SBE/EBE/MBE/WBE/DBE Initial Capital Contributions: \$ _____ %

Future capital contributions (explain requirements) (attach additional sheets if necessary):

Source of Funds for the SBE/EBE/MBE/WBE/DBE Capital Contributions:

Describe the portion of the work or elements of the business controlled by the SBE/EBE/MBE/WBE or DBE: (attach additional sheets if necessary)

Describe the portion of the work or elements of the business controlled by non-SBE/EBE/MBE/WBE or DBE: (attach additional sheets if necessary)

JOINT VENTURE ELIGIBILITY FORM

General information

Describe the SBE/EBE/MBE/WBE or DBE's involvement in the overall management of the joint venture (e.g., participation on a management committee or managing board voting rights, etc.) (attach additional sheets if necessary)

Describe the SBE/EBE/MBE/WBE or DBE's share in the profits of the joint venture:

Describe the SBE/EBE/MBE/WBE or DBE's share in the risks of the joint venture:

Describe the roles and responsibilities of each joint venture participant with respect to managing the joint venture (use additional sheets if necessary):

a. SBE/EBE/MBE/WBE or DBE joint venture participant:

b. Non- SBE/EBE/MBE/WBE or DBE joint venture participant:

Describe the roles and responsibilities of each joint venture participant with respect to operation of the joint venture (use additional sheets if necessary):

a. SBE/EBE/MBE/WBE or DBE joint venture participant:

b. Non- SBE/EBE/MBE/WBE or DBE joint venture participant:

Which firm will be responsible for accounting functions relative to the joint venture's business?

Explain what authority each party will have to commit or obligate the other to insurance and bonding companies, financing institutions, suppliers, subcontractors, and/or other parties?

Please provide information relating to the approximate number of management, administrative, support and non-management employees that will be required to operate the business and indicate whether they will be employees of the S/E/MWBE/DBE, non- S/E/MWBE/DBE or joint venture:

	Non- SBE/EBE/MWBE/DBE	SBE/EBE/MWBE/DBE	Joint Venture
Management			
Administrative			
Support			
Hourly Employees			

JOINT VENTURE ELIGIBILITY FORM

General Information

Please provide the name of the person who will be responsible for hiring employees for the joint venture.

Who will they be employed by?

Are any of the proposed joint venture employees currently employees of any of the joint venture partners?	<input type="checkbox"/>	Yes (✓)	<input type="checkbox"/>	No (✓)
---	--------------------------	------------	--------------------------	-----------

If yes, please list the number and positions and indicate which firm currently employs the individual(s), (use additional sheets if necessary)

Number of employees	Position	Employed By

Attach a copy of the proposed joint venture agreement, promissory note or loan agreement (if applicable), and any and all written agreements between the joint venture partners.

List all other business relationships between the joint venture participants, including other joint venture agreements in which the parties are jointly involved.

If there are any significant changes in or pertaining to this submittal, the joint venture members must immediately notify the Division of Small Business Opportunity.

COMP-FRM-015

**CITY AND COUNTY OF DENVER
DEPARTMENT OF PUBLIC WORKS**

BID BOND

KNOW ALL MEN BY THESE PRESENTS:

THAT Goodland Construction, Inc., 760 Nile Street, Golden, CO 80401, as Principal, and Hartford Fire Insurance Company, a corporation organized and existing under and by virtue of the laws of the State of CT, and authorized to do business within the State of Colorado, as Surety, are held and firmly bound unto the City and County of Denver, Colorado, as Obligee, in full and just sum of Five Percent of Total Amount Bid Dollars, (\$ ---5%---), lawful money of the United States, for the payment of which sum, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents:

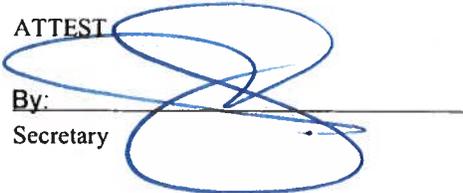
WHEREAS, the said Principal is herewith submitting its bid, dated May 23, 2019, for the construction of: **Contract No. 201950021, GENESEE PARK BASE CAMP**, as set forth in detail in the Contract Documents for the City and County of Denver, Colorado, and said Obligee has required as a condition for receiving said bid that the Principal deposit specified bid security in the amount of not less than five percent (5%) of the amount of said bid, as it relates to work to be performed for the City, conditioned that in event of failure of the Principal to execute the Contract, for such construction and furnish required Performance and Payment Bond if the contract is offered him that said sum be paid immediately to the Obligee as liquidated damages, and not as a penalty, for the Principal's failure to perform.

The condition of this obligation is such that if the aforesaid Principal shall, within the period specified therefore, on the prescribed form presented to him for signature, enter into a written contract with the Obligee in accordance with his bid as accepted and give Performance and Payment Bond with good and sufficient surety or sureties, upon the form prescribed by the Obligee, for the faithful performance and the proper fulfillment of said Contract, or in the event of withdrawal of said bid within the time specified, or upon the payment to the Obligee of the sum determined upon herein, as liquidated damages and not as penalty, in the event the Principal fails to enter into said contract and give such Performance and Payment Bond within the time specified, then this Obligation shall be null and void, otherwise to remain in full force and effect.

Signed, sealed and delivered this 23rd day of May, 2019.

ATTEST

By: _____
Secretary



Goodland Construction, Inc.

Principal

By



Title

PRESIDENT



Hartford Fire Insurance Company

Surety

By


Nicole L. McCollam, Attorney-in-Fact

[SEAL]

POWER OF ATTORNEY

Direct Inquiries/Claims to:

THE HARTFORD
 BOND, T-12
 One Hartford Plaza
 Hartford, Connecticut 06155
 Bond.Claims@thehartford.com

call: 888-266-3488 or fax: 860-757-5835

KNOW ALL PERSONS BY THESE PRESENTS THAT:

Agency Name: IMA INC
 Agency Code: 34-340140

- Hartford Fire Insurance Company, a corporation duly organized under the laws of the State of Connecticut
- Hartford Casualty Insurance Company, a corporation duly organized under the laws of the State of Indiana
- Hartford Accident and Indemnity Company, a corporation duly organized under the laws of the State of Connecticut
- Hartford Underwriters Insurance Company, a corporation duly organized under the laws of the State of Connecticut
- Twin City Fire Insurance Company, a corporation duly organized under the laws of the State of Indiana
- Hartford Insurance Company of Illinois, a corporation duly organized under the laws of the State of Illinois
- Hartford Insurance Company of the Midwest, a corporation duly organized under the laws of the State of Indiana
- Hartford Insurance Company of the Southeast, a corporation duly organized under the laws of the State of Florida

having their home office in Hartford, Connecticut, (hereinafter collectively referred to as the "Companies") do hereby make, constitute and appoint, up to the amount of Unlimited :

Jennifer L. Clampert, Robert L. Cohen, Sarah Finn, Michael Lischer Jr., Nicole L. McCollam, Kristen L. McCormick, Robert J. Reiter, Jessica Jean Rini, Sheryll Shaw, Brandi J. Tetley of DENVER, Colorado

their true and lawful Attorney(s)-in-Fact, each in their separate capacity if more than one is named above, to sign its name as surety(ies) only as delineated above by , and to execute, seal and acknowledge any and all bonds, undertakings, contracts and other written instruments in the nature thereof, on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

In Witness Whereof, and as authorized by a Resolution of the Board of Directors of the Companies on May 6, 2015 the Companies have caused these presents to be signed by its Senior Vice President and its corporate seals to be hereto affixed, duly attested by its Assistant Secretary. Further, pursuant to Resolution of the Board of Directors of the Companies, the Companies hereby unambiguously affirm that they are and will be bound by any mechanically applied signatures applied to this Power of Attorney.



John Gray

John Gray, Assistant Secretary

M. Ross Fisher

M. Ross Fisher, Senior Vice President

STATE OF CONNECTICUT }
 COUNTY OF HARTFORD } ss. Hartford

On this 5th day of January, 2018, before me personally came M. Ross Fisher, to me known, who being by me duly sworn, did depose and say: that he resides in the County of Hartford, State of Connecticut; that he is the Senior Vice President of the Companies, the corporations described in and which executed the above instrument; that he knows the seals of the said corporations; that the seals affixed to the said instrument are such corporate seals; that they were so affixed by authority of the Boards of Directors of said corporations and that he signed his name thereto by like authority.



CERTIFICATE

Kathleen T. Maynard

Kathleen T. Maynard
 Notary Public
 My Commission Expires July 31, 2021

I, the undersigned, Assistant Vice President of the Companies, DO HEREBY CERTIFY that the above and foregoing is a true and correct copy of the Power of Attorney executed by said Companies, which is still in full force effective as of May 23, 2019.

Signed and sealed at the City of Hartford.



Kevin Heckman

Kevin Heckman, Assistant Vice President



Office of Economic Development
 Division of Small Business Opportunity
 201 W. Colfax Ave, Dept. 907
 Denver, CO 80202
 p: 720.913.1999
 f: 720.913.1809
www.denvergov.org/dsbo

Diversity and Inclusiveness * in City Solicitations Information Request Form

Type in your response, print out, sign and date; or print out and complete manually. Please print legibly.

Denver Executive Order No. 101 establishes strategies between the City and private industry to use diversity and inclusiveness to promote economic development in the City and County of Denver and to encourage more businesses to compete for City contracts and procurements. The Executive Order requires, among other things, the collection of certain information regarding the practices of the City's contractors and consultants toward diversity and inclusiveness and encourages/requires City agencies to include diversity and inclusiveness policies in selection criteria where legally permitted in solicitations for City services or goods.

Answer each question below. Missing or incomplete responses will be recorded as "no", "not applicable", or "none". A proposal or response to a solicitation by a contractor/consultant that does not include this completed form shall be deemed non-responsive and rejected.

Business Email Address: matt@goodlandconstruction.com

Please include the Email address of the contact person facilitating this solicitation for the City and County of Denver: pw.procurement@denvergov.org

Agency Name:

- | | | |
|---|--|--|
| <input type="checkbox"/> Arts and Venue | <input type="checkbox"/> Purchasing Division | <input type="checkbox"/> Sheriff Department |
| <input type="checkbox"/> Auditor Office | <input type="checkbox"/> Human Services | <input type="checkbox"/> Technology Services |
| <input type="checkbox"/> Community Planning | <input type="checkbox"/> Economic Development | <input type="checkbox"/> Other |
| <input type="checkbox"/> Denver International Airport | <input type="checkbox"/> Parks and Recreation | |
| <input type="checkbox"/> Environmental Health | <input type="checkbox"/> Police Department | |
| <input type="checkbox"/> Fire Department | <input checked="" type="checkbox"/> Public Works | |

Project Name: Genesee Park Base Camp

BID / RFP No.: 201950021

Name of Contractor/Consultant: GoodLand Construction, Inc.

What industry is your business? General Contractor

Address: 760 Nile Street
 Golden, CO 80401

Business Phone No.: 303-278-8100

Business Facsimile No.: 303-278-0231

OED - Executive Order No. 101
 Diversity and Inclusiveness in City Solicitations Information Request Form
 Rev. 12/29/2015

1. How many employees does your company employ?

- 1-10 51-100
 11-50 over 100

1.1. How many of your company's employees are:

Full-time 100% Part-Time _____

2. Do you have a Diversity and Inclusiveness Program? Yes No

If **No**, and your company size is less than 10 employees continue to question 11.
Complete and sign the form.

If **Yes**, does it address:

- 2.1 Employment and retention? Yes No
2.2 Procurement and supply chain activities? Yes No Not Applicable
2.3 Customer service? Yes No Not Applicable

3. Provide a detailed narrative of your company's diversity and inclusiveness principles and programs. This may include, for example, (i) diversity and inclusiveness employee training programs, equal opportunity policies, and the budget amount spent on an annual basis for workplace diversity; or (ii) diversity and inclusiveness training and information to improve customer service.

We have a section in our policy manual that addresses equal opportunity employment, our employee application addresses EEO, our EEO Officer Jim Pokorny has done specified training programs and all of our construction sites have the necessary EEO awareness posters displayed

4. Does your company regularly communicate its diversity and inclusiveness policies to employees?

If **Yes**, how does your company regularly communicate its diversity and Inclusiveness policies to employees? (select all that apply)

- Employee Training
 Pamphlets
 Public EEO postings
 Other
 Not Applicable

5. If you responded that you do not have a diversity and inclusiveness program, describe any plans your company may have to adopt such a program.

6. How often do you provide training in diversity and inclusiveness principles?

- Monthly Annually
 Quarterly Not Applicable Other _____

6.1 What percentage of the total number of employees generally participate?

- 0 - 25% 51 - 75%
 26 - 50% 76 - 100% Not Applicable

7. State how you achieve diversity and inclusiveness in supply and procurement activities. This may include, for example, narratives of training programs, equal opportunity policies, diversity or inclusiveness partnership programs, mentoring and outreach programs, and the amount and description of budget spent on an annual basis for procurement and supplier diversity and inclusiveness.

NA

8. Do you have a diversity and inclusiveness committee? Yes No

8.1 If Yes, how often does it meet?

- Monthly Annually No Committee
 Quarterly Other _____

8.2 If you responded that you do not have a diversity and inclusiveness committee, describe any plans your company may have to establish such a committee.

We don't have any plans

9. Do you have a budget for diversity and inclusiveness efforts? Yes No

10. Does your company integrate diversity and inclusion competencies into executive/manager performance evaluation plans? Yes No

11. Would you like information detailing how to implement a Diversity and Inclusiveness program? Yes No

If yes, please email XO101@denvergov.org.

I attest that the information represented herein is true, correct and complete, to the best of my knowledge.

Signature of Person Completing Form

5/23/19

Date

 Matt Worland
Printed Name of Person Completing Form

NOTE: Attach additional sheets or documentation as necessary for a complete response.

*"Diversity and inclusiveness program" means a program that invites values, perspectives and contributions of people from diverse backgrounds, and integrates diversity into its hiring and retention policies, training opportunities, and business development methods to provide an equal opportunity for each person to participate, contribute, and succeed within the organization's workplace. "Diversity" encompasses a wide variety of human differences, including differences such as race, age, gender, gender identity, sexual orientation, ethnicity, physical disabilities, appearance, historically underutilized and disadvantaged persons, as well as social identities such as religion, marital status, socio-economic status, lifestyle, education, parental status, geographic background, language ability, and veteran status."

CITY AND COUNTY OF DENVER

STATE OF COLORADO



DENVER
THE MILE HIGH CITY

DEPARTMENT OF PUBLIC WORKS

Bid Documents Package

Contract Number: 201950021



Genesee Park Base Camp

April 29, 2019

CITY AND COUNTY OF DENVER
DEPARTMENT OF PUBLIC WORKS
201950021

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DENVER
THE MILE HIGH CITY
CITY AND COUNTY OF DENVER
DEPARTMENT OF PUBLIC WORKS

STATEMENT OF QUANTITIES

<u>Item No.</u>	<u>Description</u>	<u>Estimated</u>	<u>Quantity</u>
01 11 00	General Conditions	1	LS
01 56 39	Tree Retention and Protection	1	LS
01 57 13	Erosion and Sedimentation Control	1	LS
02 41 00	Demolition	1	LS
03 41 00	Precast Concrete - Concrete Prep Tables	2	EA
03 41 00	Precast Concrete - Curb Stops	9	EA
04 43 13.13	Anchored Stone Masonry Veneer	6	EA
05 53 13	Metal Fabrications	1	LS
12 87 50	Prefabricated Picnic Shelter Installation	1	LS
12 87 60	Vault Toilet Site Prep	2	EA
12 93 00	Site Furnishings - Picnic Tables Standard	4	EA
12 93 00	Site Furnishings - Picnic Tables Accessible	2	EA
12 93 00	Site Furnishings - Log Benches	20	EA
13 93 00	Site Furnishings - Handicap Parking Signs	1	LS
31 11 00	Clearing and Grubbing	1	LS
31 11 00	Clearing and Grubbing - Stump Removal 12"-18"	19	EA
31 11 00	Clearing and Grubbing - Stump Removal less than 12"	16	EA
31 20 00	Earth Moving	1	LS
31 37 00	Riprap, Boulders, Stone, and Bedding - Stacked Brownstone Walls and Seating	1	LS



DENVER
THE MILE HIGH CITY
CITY AND COUNTY OF DENVER
DEPARTMENT OF PUBLIC WORKS

STATEMENT OF QUANTITIES

<u>Item No.</u>	<u>Description</u>	<u>Estimated</u>	<u>Quantity</u>
31 37 00	Riprap, Boulders, Stone, and Bedding - Soil Rip Rap - Type L	1	LS
31 37 00	Riprap, Boulders, Stone, and Bedding - Soil Rip Rap - Type M	1	LS
31 37 00	Riprap, Boulders, Stone, and Bedding - 18" Double Stacked Boulder Wall	1	LS
31 37 00	Riprap, Boulders, Stone, and Bedding - 36" Boulder Wall	1	LS
31 37 00	Riprap, Boulders, Stone, and Bedding - Landscape Boulders	1	LS
31 37 00	Riprap, Boulders, Stone, and Bedding - Brownstone Stairs	1	LS
31 37 00	Riprap, Boulders, Stone, and Bedding - Brownstone Stepping Stones	1	LS
32 11 16	Aggregate Base Course	1	LS
32 13 13	Concrete Walks, Curbs, and Miscellaneous Flatwork	1	LS
32 15 40	Crushed Stone Paving	1	LS
32 17 23	Pavement Markings	1	LS
32 92 20	Native Seeding	1	LS
33 44 00	Storm Sewerage	1	LS
33 55 00	Potholing	8	HOUR

**CITY AND COUNTY OF DENVER
DEPARTMENT OF PUBLIC WORKS**

**NOTICE FOR INVITATION FOR BIDS
FOR CONTRACT NO. 201950021**

GENESEE PARK BASE CAMP

**BID SCHEDULE:
11:00 a.m., Local Time
MAY 23, 2019**

Sealed bids will be received in Room 6.G.7, 201 W. Colfax Ave., Denver, CO 80202, beginning at 10:30 a.m., no later than 11:00 a.m., on bid day. All properly delivered bids will then be publicly opened and read aloud.

Bids submitted prior to 10:30 a.m. on the specified bid opening date/time shall be presented at the Office of Contract Administration, Attention: Public Works Contract Administration, 201 W. Colfax Ave., Department 614, Denver, CO 80202.

Prior to submitting a bid, the bidder shall consult the Contractor's Bulletin Board located at 201 W. Colfax Ave., 2nd Floor, Denver, CO 80202 and/or www.work4denver.com.

GENERAL STATEMENT OF WORK:

This project will improve vehicle access, parking, and add recreation amenities to the Experiential Center located along Stapleton Drive in Genesee Mountain Park. Recreation amenities include two vault toilets, a shade pavilion, a log bench amphitheater area, picnic tables, fire pit area, and ADA accessible concrete walkways connecting to the pavilion and toilets. Roadway improvements to the existing aggregate roadway include adding a drop-off area and 7 formalized parking spaces along the roadway. Two concrete ADA parking spaces will be installed with an access aisle between.

ESTIMATED CONSTRUCTION COST:

The estimated cost of construction for this project is between \$429,624.90 and \$525,097.10.

TEXTURA CONSTRUCTION PAYMENT MANAGEMENT:

Bidders are required, when preparing a bid, to agree it shall use the Textura® Construction Payment Management System ("Textura") to request payment from the City and to pay subcontractors. All certified subcontractors or suppliers who are listed for participation towards any assigned program goal must be paid via Textura. All fees associated with Textura are to be paid by the awarded Contractor. Bidders shall use the pricing scale provided in Instructions to Bidders to price the Textura service appropriately. For details on the company and service, contact the Textura® Corporation at 866-TEXTURA or www.texturacorp.com.

DOCUMENTS AND BID INFORMATION AVAILABLE:

Contract Documents complete with Technical Specifications and, if applicable, construction drawings will be available on the first day of publication at: www.work4denver.com. To download digital Contract Documents at a cost of \$15.00 per download, reference eBid Document Number #6309606. Contact QuestCDN at 952-233-1632 or info@questcdn.com for assistance.

PRE-BID CONFERENCE:

A pre-bid conference will be held for this Project at 11:00 a.m., local time, on May 7, 2019. This meeting will take place at the Webb Building, 201 W. Colfax Ave., Denver, CO 80202 in conference room 4.I.4. A non-mandatory visit will be held at the project site after the pre-bid conference. This will be the only opportunity to visit the project site prior to bid opening.

DEADLINE TO SUBMIT QUESTIONS: May 13, 2019 at 10:00 a.m., local time.

MINORITY AND WOMAN BUSINESS ENTERPRISE PARTICIPATION:

Construction, reconstruction and remodeling contracts made and entered into by the City and County of Denver are subject to Article III, Divisions 1 and 3 of Chapter 28 of the Denver Revised Municipal Code, (Sections 28-31 to 28-36 and 28-52 to 28-90 D.R.M.C) and all Minority and Woman Business Enterprise and Equal Employment Opportunity Rules and Regulations adopted by the Director of the Division of Small Business Opportunity.

Article III, Division 3 of Chapter 28 of the D.R.M.C. directs the Director of the Division of Small Business Opportunity to establish a project goal for expenditures on construction, reconstruction, and remodeling work contracted by the City and County of Denver. The specific goal for this project is:

19% Minority and Woman Business Enterprise (M/WBE) Participation

Project goals must be met with certified participants as set forth in Section 28-60, D.R.M.C. or through the demonstration of a sufficient good faith effort under Section 28-62 D.R.M.C. For compliance with good faith requirements under Section 28-62(b), **the M/WBE percentage solicitation level required for this project is 100%.**

The Director of the Division of Small Business Opportunity urges all participants in City construction, reconstruction and remodeling projects to assist in achieving these goals.

MISCELLANEOUS:

Contracts for construction, reconstruction, and remodeling are subject to the City prevailing wage rate requirements established pursuant to Section 20-76, D.R.M.C.

City contracts are subject to payment of City Minimum Wage established pursuant to Section 20-82 through 20-84 D.R.M.C.

As its best interest may appear, the City and County of Denver reserves the right to reject any or all bids and to waive informalities in bids.

A modified version of this Notice of Invitation for Bids and the project's Statement of Quantities is available on the City and County of Denver's website at: www.work4denver.com.

Publication Dates: April 29, 30, and May 1, 2019

Published In: The Daily Journal

CITY AND COUNTY OF DENVER
DEPARTMENT OF PUBLIC WORKS
201950021

INSTRUCTIONS TO BIDDERS

IB-1 INSTRUCTION TO BIDDERS

These Instructions to Bidders are a part of the Contract Documents and are intended to serve as a guide to bidders. They are general in nature and may be amended or supplemented as needed to support any one specific invitation to bid. Each bidder shall prepare its bid in strict compliance with all requirements of the Contract Documents and by careful application of these instructions.

IB-2 BIDDING

The copy of the Contract Documents contains the Bid Form and Submittal Package for this Project, which must be used to submit a bid hereunder. The bidder must fully complete, execute and submit this Bid Form and Submittal Package, along with any other specified components of the Contract Documents, as its bid for the referenced Project.

A bidder is not required to submit as part of its bid the entire set of Contract Documents distributed by the City pursuant to the Notice of Invitation for Bids, if the bidder executes and submits the Bidder Acknowledgment Form included with the Bid Form and Submittal Package as part of its bid. However, each bidder, by submitting its bid, shall be conclusively presumed to have received and reviewed all of the information contained in the Contract Documents as this term is further defined herein.

Each bid must be enclosed in a sealed envelope, must be addressed to the Manager and must show on the face of the envelope the full name of the bidder, the City Project number, and descriptive title of the Project for which the bid is made.

The advertisement for Notice of Invitation for Bids will identify where and when the bid must be delivered.

IB-3 CONTRACT DOCUMENTS AS PUBLISHED BY CITY

Each bidder shall be responsible for, and shall be deemed to have received, all the information contained in the Contract Documents as distributed by the City pursuant to the Notice of Invitation for Bids, including addenda, whether or not such bidder has reviewed all or part of the Contract Documents in either its hard copy form or in any other format. If organizations or companies other than the City or its design professional distribute the City's Contract Documents for review by prospective bidders, whether in hard copy or via electronic or other media, neither the City nor its design professional shall be responsible for the content, completeness or accuracy of any information distributed or transmitted by any such organization or company.

IB-4 COMPLETING AND SIGNING THE BID FORMS

The bidder must complete the Bid Form by legibly writing or printing in ink, in words and figures as required, all the bidder's prices offered for the Work to be performed. All blank spaces, which require a response of the bidder, must be properly completed in full. If in the process of evaluating a bid, words and figures, as written on the Bid Form by the bidder, do not agree, the written words will govern.

For Bid Forms requiring unit price bids, the bidder shall write in the Bid Form spaces provided a unit price for each item for which a quantity is given and shall also write the product of each unit price and the quantity specified in the "Amount" or "Total" space provided.

Each bidder must sign the Bid Form and give the bidder's current business address. If an individual, the signature must be of the individual offering the bid; if a partnership, the signature must be that of a general partner; and if a corporation, both the president and the secretary must sign and the seal of the corporation must be affixed. Signatures of other persons may be acceptable if the bid contains sufficient evidence, satisfactory to the City in its sole discretion, to indicate that the other persons are authorized to bind the bidder.

IB-5 UNACCEPTABLE BIDS

The City will not accept bids from Bidders not prequalified with the Department of Public Works (if prequalification is required for this project), in arrears to the City upon debt or contract, or which are defaulters (as surety or otherwise) upon any obligation to the City.

IB-6 INFORMAL AND UNBALANCED BIDS

Any alteration, interlineations, erasure, omission, deletion or addition by the bidder to the Bid Form and Submittal Package or other parts of the Contract Documents submitted with the Bid Form and Submittal Package, as originally issued to the bidder, shall render the accompanying bid informal and may constitute cause for rejection.

Any unauthorized addition, conditional or alternate bids, failure to provide a unit price, lump sum amount or authorized alternate item specified or other irregularities of any kind which tend to render the bid incomplete, indefinite or ambiguous shall render the bid informal and may constitute cause for rejection.

Bids that are unbalanced so that each item does not reasonably carry its own proportion of cost or that contain inadequate or unreasonable prices for any item may be rejected. Bids, which have not acknowledged all addenda to the Contract Documents issued for this bid, may also be rejected.

The right is reserved by the City to reject any or all bids and to waive any informalities where it is deemed by the City to be in the best interests of the City to do so.

IB-7 ONLY ONE BID ACCEPTED

The City will accept only one bid for the same work from any one bidder. This includes bids that may be submitted under different names by one business enterprise.

IB-8 BID GUARANTEE

As a guarantee of good faith on the part of the bidder, each bid must be accompanied by a bid guarantee, consisting of either a certified or cashier's check made payable without condition to the order of the City and County of Denver or a bid bond written by an approved corporate surety in favor of the City and County of Denver. If the bid of a bidder is acceptable and the bidder is notified by the Manager that it is considered to be the Apparent Low Bidder and said bidder fails to execute a contract in the form prescribed or to furnish a performance and payment bond with a legally responsible and approved surety or to furnish the required evidence of insurance or satisfy all conditions precedent to contract execution within five (5) days after such notice is made by the City, said bid guarantee shall be forfeited to the City as liquidated damages and not as a penalty.

The bid guarantee shall be in the amount of five percent (5%) of the total bid unless otherwise specified in the Notice of Invitation for Bids and on the form appearing in the Contract Documents in the Bid Form and Submittal Package. Failure to submit a properly executed bid guarantee, on the form provided herein may, in the City's sole discretion, constitute cause for rejection.

Following award and execution of the Contract by the Apparent Low Bidder, or earlier in the sole discretion of the City, bid guarantees of all but the Apparent Low Bidder will be returned. When the Apparent Low Bidder executes the Contract and delivers to the City satisfactory performance and payment bonds, required insurance documentation, and has satisfied all conditions precedent to contract execution by the City, and after approval, if any, by the Council of the City of the proposed Contract with the Apparent Low Bidder, the bid guarantee of the Apparent Low Bidder shall be returned. Such return shall be made within one hundred twenty (120) days from date bids are opened unless otherwise specified in the Special Contract Conditions.

IB-9 SITE INSPECTION AND INVESTIGATIONS

A non-mandatory site visit to inspect the project site is scheduled immediately following the pre-bid conference. This will be the only opportunity to inspect the project site prior to bid opening. Although the bidder is not required to make such an inspection before bidding, for purposes of the Contract it shall be conclusively presumed that by failing to make such an inspection, the bidder has waived the right to later claim additional compensation or time extensions for conditions which would have been evident had the site been inspected.

Drawings and Technical Specifications, defining the Work to be done, were prepared on the basis of interpretation by the design professionals of information derived from investigations of the work site. Such information and data are subject to sampling errors, and the interpretation of the information and data depends to a degree on the judgment of the design professional. In view of this, the bidder is invited to make such additional investigations as the bidder's judgment dictates the need for such investigations. Information about the degree of difficulty of the Work to be done cannot totally be derived from either the Drawings or Technical Specifications or from the Manager or his representatives.

Since the bid information cannot be guaranteed, the Contractor shall have assumed the risks attendant to successful performance of the Work and shall never make claim for additional compensation or time extensions on the grounds that the nature or amount of work to be done was not understood by the bidder at the time of the bidding.

IB-10 INCONSISTENCIES

Any seeming inconsistencies or ambiguities between different provisions of the Contract Documents or any point which the bidder believes requires a decision or interpretation by the City must be inquired into by the bidder by addressing a formal written communication to the Manager of Public Works and sending or delivering it to the offices of the Division of Public Works advertising this Project for bid at least forty-eight (48) hours, excluding Saturdays, Sundays, and holidays, before the time set for the opening of bids

Information about the decision or interpretation made in response to any inquiry will be posted on the Contractor's Bulletin Board (refer to IB-12 CONTRACTOR'S BULLETIN BOARD, for the location of the Contractor's Bulletin Board). If the matter raised requires, in the sole discretion of the Manager, that an addendum to the bid documents be issued, such addendum will be published and each bidder shall be required to acknowledge the addendum by signing and identifying it in the Bid Form when submitting the bid.

After bids are opened, all bidders must abide by the formal response of the Manager, as to any interpretation. The City shall not be bound and the bidder shall not rely on any oral communication, interpretation clarification or determination of the Contract Documents prior to bid opening.

IB-11 WITHDRAWAL OF BID

A bidder may withdraw its bid at any time prior to the time for receipt of bids set forth in the Notice of Invitation for Bids by making written request upon the Manager of Public Works. After such time, no bid may be withdrawn or modified.

Such request must be signed by the persons authorized to bind the bidder as defined in IB-3, COMPLETING AND SIGNING BID FORMS.

IB-12 CONTRACTOR'S BULLETIN BOARD

It shall be conclusively presumed that the bidder has, before submitting any bid, read and shall take full responsibility for all addenda, posted decisions, and other information relevant to the bid posted by the City on the Contractor's Bulletin Board. The Contractor's Bulletin Board is located at 201 W. Colfax, 2nd Floor, Denver, CO 80202, in the Wellington E. Webb Municipal Office Building.

IB-13 PRE-BID MEETING

Bidders are urged to attend the pre-bid meeting(s) scheduled for this Project. Attendance is not mandatory; however, bidders will be held responsible for all information presented at such meeting(s).

IB-14 ADDENDA

As its best interests may require, the City may issue addenda to the Contract Documents. Such addenda shall be posted on the Contractor's Bulletin Board and made available to all persons having purchased a set of Contract Documents as set forth in the Notice of Invitation for Bids contained herein. All bidders must acknowledge receipt of all addenda on the Bid Form at the time of submission of the bid.

IB-15 BID OPENING

Bidders are invited to be present at the bid opening. Unless otherwise suspended, delayed or canceled by posted notice from the Manager, bid opening will occur at the time and place designated in the Notice of Invitation for Bid.

IB-16 EVALUATION OF BIDS AND BASIS OF BID SELECTION

Bids will be evaluated after being read in open meeting at the place designated for such bid opening. All low bidders' bids will be reviewed for responsiveness to the requirements of the Contract Documents and whether or not the bids contain irregularities which could give any bidder an unfair advantage.

Selection will be made on the basis of the lowest, total, responsive, qualified bid, which bid shall include the total base bid set forth on the Bid Form, plus the total of any alternates set forth on the Bid Form and selected by the City during evaluation. Alternates, if any are included in the bid, will be selected in the priority shown on the Bid Form, subject to the limits of available funds. Bid selection will be subject to all requirements and special bidder qualifications contained herein and subject to approval of such resulting Contract in accordance with the Charter and Revised Municipal Code of the City and County of Denver. In addition to all other specified requirements, the City will correct arithmetical errors in all bids and corrected totals only will be considered as the basis of selection.

Upon concluding that the bid is, in fact, the lowest, total, responsive bid to the bidding conditions and that of a responsible, qualified bidder, the City will notify the Apparent Low Bidder.

As its best interests may appear, the City and County of Denver reserves the right to waive informalities in bids, to reject any and all bids and to rebid the Project.

IB-17 NOTICE TO APPARENT LOW BIDDER

The Notice to Apparent Low Bidder, a form of which is included in the Contract Special Conditions Section of the Contract Documents, is issued by the City directly to the selected bidder and informs the bidder that the Manager intends to seek approval of the execution of the Contract by the City in accordance with the Charter and Revised Municipal Code of the City and County of Denver. Specifically, it informs the bidder of its obligations with respect to execution of the Contract and instructs the bidder on how to proceed toward execution of the Contract. The City reserves the right to notify the Apparent Low Bidder, at any time within one hundred twenty (120) days from the date of the opening of the bids, that approval to contract with the Apparent Low Bidder shall be sought in accordance with the Charter and Revised Municipal Code of the City and County of Denver.

In accordance with the terms and conditions contained in the Bid Form and Submittal Package and any additional requirements set forth in the Notice to Apparent Low Bidder or elsewhere in the Contract Documents, the Apparent Low Bidder shall execute the Contract Form contained in the Contract Documents made available by the City for execution in the appropriate number of counterparts. The Apparent Low Bidder shall return the fully executed Contract Document sets, along with any supplemental documents required herein, to the City and shall comply with all other conditions precedent to Contract execution within five (5) days of the date of issuance of the Notice to Apparent Low Bidder by the City. Failure to comply with each of these requirements within five (5) days of the date of issuance of the Notice to Apparent Low Bidder by the City shall render the bid nonresponsive and may constitute cause for rejection.

Issuance of such Notice shall not, however, constitute a commitment on the part of the City or create any rights in the Apparent Low Bidder to any contract with the City.

IB-18 EXECUTION OF CONTRACT

The process of executing a contract requires action by both the apparent low bidder and the City. After it notifies the Apparent Low Bidder, the City will prepare the Contract Documents by incorporating all of the documents submitted by the Apparent Low Bidder into one or more executable copies. Upon notification that contracts documents are ready for execution the Apparent Low Bidder shall execute the contract documents. At this time, the successful bidder shall also provide certain supplemental documents for incorporation into the Contract Documents. These supplemental documents shall include: the properly executed Certificate of Insurance Forms evidencing the apparent low bidder's satisfactory compliance with the insurance requirements set forth in the Contract Documents; a properly executed Payment and Performance Bond Form and appropriate Power of Attorney evidencing the Apparent Low Bidder's satisfactory compliance with the bonding requirements set forth in the Contract Documents; and documentation of compliance with any other conditions precedent to execution of the Contract by the City set forth in the Contract Documents. The insurance and bond forms contained in the Contract Special

Conditions Section of the Contract Documents must be used in satisfying these supplemental document requirements.

These documents are then delivered to the City within the prescribed time period for examination of the documents to determine whether or not the Contractor has correctly executed the Contract and has correctly provided the required supplemental documents and that these documents are satisfactorily and properly completed. From here, all of the documents are forwarded to the City Attorney who will, if the insurance and bonding offered is acceptable and if all other elements of the Contract Documents are in order, recommend that the Manager and the Mayor approve the documents and, when required by the City Charter, prepare an ordinance for submittal to City Council authorizing the execution of the Contract. The City Attorney shall in all applicable instances submit the proposed contract and ordinance to City Council. After City Council approval, the Contract shall be reviewed by the City Attorney and routed for execution by the Mayor, the Clerk for attestation and the Auditor for countersignature and registration. When the total process of contract execution is complete, a Notice to Proceed will be issued and a single executed copy of the Contract will be delivered to the Contractor. Any work performed or a material purchased prior to the issuance of Notice to Proceed is at the Contractor's risk.

IB-19 BONDING REQUIREMENTS

In accordance with the provisions of General Contract Conditions, Title 15, PERFORMANCE AND PAYMENT BONDS, the minimum bonding requirements for this Contract are set forth in the form **CITY AND COUNTY OF DENVER PERFORMANCE AND PAYMENT BOND** contained in the Special Conditions Section of the Contract Documents. Upon receipt of Notice to Apparent Low Bidder, the apparent low bidder must cause this form bond to be purchased, executed and furnished, along with appropriate Powers of Attorney and a surety authorization letter (in form similar to the one attached), to the City in accordance with the instructions contained herein.

IB-20 INSURANCE REQUIREMENTS

The minimum insurance requirements for this Contract are set forth in the Special Conditions Section of the Contract Documents. Bidders are urged to consider, in preparing a bid hereunder, that each condition, requirement or specification set forth in the form certificate must be complied with by the Contractor and all subcontractors performing Work on the Project, unless such requirements are specifically accepted in writing by the City's Risk Management Office. The Contractor must either include all subcontractors performing work hereunder as insureds under each required policy or furnish a separate certificate for each subcontractor. In either case, the Contractor shall insure that each subcontractor complies with all of the coverage requirements.

IB-21 PERMITS AND LICENSES

All permits, licenses and approvals required in the prosecution of the work shall be obtained and paid for by the Contractor.

IB-22 PREVAILING WAGE REQUIREMENTS

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

Date bid or request for qualifications/proposals was advertised: April 29, 2019.

Prevailing wage and fringe rates will adjust on, and only on, the anniversary of the date the Contract was fully executed. Unless expressly provided for in this Agreement, Contractor will receive no additional compensation for increases in prevailing wages or fringe benefits.

Contractor shall provide the Auditor with a list of all subcontractors providing any services under the contract.

Contractor shall provide the Auditor with electronically-certified payroll records for all covered workers employed under the contract.

Contractor shall prominently post at the work site the current prevailing wage and fringe benefit rates. The posting must inform workers that any complaints regarding the payment of prevailing wages or fringe benefits may be submitted to the Denver Auditor by calling 720-913-5000 or emailing auditor@denvergov.org.

If Contractor fails to pay workers as required by the Prevailing Wage Ordinance, Contractor will not be paid until documentation of payment satisfactory to the Auditor has been provided. The City may, by written notice, suspend or terminate work if Contractor fails to pay required wages and fringe benefits.

IB-23 PAYMENT OF CITY MINIMUM WAGE

Contractor shall comply with, and agrees to be bound by, all requirements, conditions, and City determinations regarding the City's Minimum Wage Ordinance, Sections 20-82 through 20-84 D.R.M.C, including, but not limited to, the requirement that every covered worker shall be paid no less than the City Minimum Wage in accordance with the foregoing D.R.M.C. Sections.

Instances in which a worker is covered by both Prevailing Wage rate requirements and City Minimum Wage rate requirements, Contractor shall pay every covered worker the greater of the two.

The services being requested in this solicitation may involve services that are covered pursuant to Division 3.75 of Article IV of Chapter 20 of the Denver Revised Municipal Code ("D.R.M.C."), which is designed to address the issue of wage equity and cost of living affordability in the City & County of Denver. Contractor agrees that any contract with the City shall include a requirement that Contractor will comply with the provisions of D.R.M.C. §§20-82 through 20-84, including, but not limited to, paying all covered workers no less than the City Minimum Wage for all covered services rendered in connection with the Contract. Additionally, Contractor agrees that the contract shall require compliance with all current and future federal and state laws and City ordinances.

IB-24 TAX REQUIREMENTS

General. Bidders are referred to the General Contract Condition 323, TAXES, as to taxes to which they may be subject in performing the Work under this Contract, including but not limited to sales and use taxes and the Denver Occupational Privilege Tax. The following instructions are to be considered along with the General Contract Conditions and not in lieu of them.

Sales and Use Tax. Construction and building materials sold to contractors and subcontractors for use on structures, roads, streets, highways, and other public works owned by the City and County of Denver are exempt from state, RTD, and Cultural Facilities District sales and use taxes. However, such materials will be subject to sales and use taxes imposed by the City and County of Denver.

It is the responsibility of the Contractor and its subcontractors to apply to the Colorado Department of Revenue ("CDOR") for a certificate, or certificates, of exemption indicating that their purchase of construction or building materials is for a public project, and to deliver to the City copies of such applications as soon as possible after approval by the CDOR. Bidders shall not include in their bid amounts the exempt state, RTD, and Cultural Facilities District Sales and Use Taxes.

Denver Occupational Privilege Tax. Any employee working for a contractor, or a subcontractor, who earns over \$500 working in Denver during a calendar month, is subject to the payment of the Employee Occupational Privilege Tax. The Contractor and any subcontractor must pay the Business Occupational Privilege Tax for each of its employees who are subject to such tax.

IB-25 DIVERSITY AND INCLUSIVENESS IN CITY SOLICITATIONS

Each bidder shall, as a condition of responsiveness to this solicitation, complete and return the "Diversity and Inclusiveness in City Solicitations Information Request Form" with their Bid.

Using the "Diversity and Inclusiveness in City Solicitations Information Request Form" provided, please state whether you have a diversity and inclusiveness program for employment and retention, procurement

and supply chain activities, or customer service and provide the additional information requested on the form. The information provided on the "Diversity and Inclusiveness in City Solicitations Information Request Form" will provide an opportunity for City contractors to describe their own diversity and inclusiveness practices. Contractors are not expected to conduct intrusive examinations of its employees, managers, or business partners in order to describe diversity and inclusiveness measures. Rather, the City simply seeks a description of the contractor's current practices, if any.

Diversity and Inclusiveness information provided by City contractors in response to City solicitations for services or goods will be collated, analyzed, and made available in reports consistent with City Executive Order No. 101. However, no personally identifiable provided by or obtained from contractor's will be in such reports.

IB-26 MINORITY AND WOMAN BUSINESS ENTERPRISE (M/WBE) REQUIREMENTS

Article III, Divisions 1 and 3 of Chapter 28, Denver Revised Municipal Code (D.R.M.C.), designated as Sections 28-31 – 28-36 and 28-52 – 28-90 D.R.M.C. and referred to in these Bid Documents as the "M/WBE Ordinance" and any Rules or Regulations promulgated pursuant thereto apply to this Project and are incorporated into these Bid Documents by reference. Generally, the M/WBE Ordinance provides for the adoption of a good faith goals program, to be administered by the Division of Small Business Opportunity (DSBO), devised to provide increased bidding opportunities for Minority and Woman Business Enterprises (M/WBEs). As such, each bidder must comply with the terms and conditions of the M/WBE Ordinance in making its bid and, if awarded the Contract, in performing all Work thereunder. A bidder's failure to comply with the M/WBE Ordinance, any Rules or Regulations promulgated pursuant thereto, or any additional requirement contained herein shall render the bid non-responsive and shall constitute cause for rejection. Failure by the contractor awarded the contract to comply with M/WBE Ordinance requirements during the performance of the contract is a material breach of the contract, which may result in the in the imposition of sanctions on the Contractor, as deemed appropriate by DSBO. Copies of the M/WBE Ordinance and its accompanying Rules and Regulations are available for the use and review of bidders from DSBO. In order to comply with the bid requirements of the M/WBE Ordinance, a bidder shall either meet the established project goal or, in the alternative, demonstrate that the bidder has made sufficient good faith efforts to meet the goal in accordance with the M/WBE Ordinance.

Meeting Established Goal

In preparing a bid to meet the established Project goal, bidders should consider the following instructions relating to compliance with the M/WBE Ordinance:

1. Under the M/WBE Ordinance, the Director of DSBO ("Director") is directed to establish project goals for expenditures on construction, reconstruction, and remodeling work performed for the City and County of Denver. The specific goal for this project is stated in the Notice of Invitation for Bids bound herein.
2. In preparing its bid, each bidder shall list on the Bid Form pages entitled "List of Proposed MWBE Bidders, Subcontractors, Suppliers, Manufacturers, Manufacturers' Representatives or Brokers" the name, address, work description/supply, committed level of participation and other required information for each M/WBE of any tier which the bidder intends to use in performing the work on this Project. **Only the M/WBEs identified and the precise levels of participation listed for each on the Bid Form page, at the time of bid opening, will be considered in determining whether the bidder has met the designated participation goal. Additional, revised or corrected participation submitted after bid opening will not be considered.** M/WBE bidders may count self-performance or joint venture activity in meeting the M/WBE project goal, but only for the scope of work performed as a commercially useful function and at a percentage level the M/WBE will be performing itself.
3. Any agreement between a bidder or proposer and an MBE or WBE in which the bidder or proposer requires that the MBE or WBE not provide subcontracting quotations to other bidders or proposers is prohibited and shall render a bidder's bid or proposer's proposal nonresponsive. D.R.M.C. 28-63(f)
4. If a bidder/proposer is participating in a joint venture with a certified M/WBE firm, complete the Joint Venture Eligibility Form and Joint Venture Affidavit contained in this bid document/RFP.

Submit the aforementioned forms with the firm's Joint Venture Agreement, to the DSBO Director, **at least 10 working days prior to the proposal submittal**. The Joint Venture must be approved prior to the bid opening or proposal submittal by the DSBO Director. Approval by the DSBO Director includes determining the amount the Joint Venture will count towards meeting the project goal.

5. All M/WBEs listed on the Bid Form must be properly certified by the City on or before the date bids are opened in order to count towards meeting the designated goal. DSBO maintains an M/WBE Directory ("Directory"), which is a current listing of M/WBEs that have been certified by the City. A copy of the DSBO Directory is located at DSBO web site at <https://www.denvergov.org/dsbo>. Bidders are encouraged to use the Directory to assist in locating M/WBEs for the work and supplies required on the Project. Bidders are reminded that changes may be made to the Directory at anytime in accordance with the City's M/WBE Ordinance and procedures established to administer this program and a current copy of the Directory must always be used in preparing a bid. M/WBE certification or listing in the Directory is not a representation or warranty by the City as to the qualifications of any listed M/WBE.
6. In accordance with the provisions of the M/WBE Ordinance, DSBO will evaluate each bid to determine the responsiveness of the bid to the requirements of the M/WBE Ordinance. In determining whether a bidder's committed level of participation meets or exceeds the stated M/WBE goal, DSBO shall base its calculation of applicable amounts and percentages on the total base bid amount, not including any listed alternates, of each bid as follows:
 - a. The bid information provided by the agency will be used to determine the total base bid amount of each bid. Each bidder's total base bid amount will be multiplied by the M/WBE percentage established for the project to determine the exact dollar amount of required M/WBE participation for the Project. This amount will then be compared against the exact dollar amounts for the M/WBE committed for participation by the bidder. If the total dollar amount of participation listed meets or exceeds the established M/WBE dollar amount goal listed, then DSBO will determine that the goal has been met.
 - b. In addition, DSBO will determine the exact commitment percentage for each listed M/WBE by dividing the dollar amount listed for each M/WBE by the total base bid dollar amount submitted by the bidder. These individual percentages, when totaled for all listed M/WBE, will establish the total committed percentage level of M/WBE participation that the bidder must comply with during the life of the contract. In all cases, the committed percentage level of M/WBE participation must equal or exceed the assigned M/WBE goal for the Project.
 - c. In providing the exact dollar amount of participation for each listed M/WBE, a bidder should take care never to round up in determining whether or not the total of these amounts meets or exceeds the established percentage goal. The goal must be met or exceeded by dollar amounts and percentages in order for DSBO to determine that the bidder has met or exceeded the applicable M/WBE goal.
 - d. As previously mentioned, compliance with the M/WBE goal will be determined on the base bid alone. If a bid contains alternates, participation contained in any alternate will not count towards satisfaction of the Project goal. However, should any designated alternate be selected by the City for inclusion in the contract ultimately awarded, the M/WBE goal percentage level submitted at bid time, on the base bid, will also apply to the selected alternates and must be maintained for the life of the contract on the total contract amount, including any alternate work. Thus, even though such participation will not be considered in evaluating bids, bidders are urged to consider participation in preparing bids for designated alternates.
 - d. On projects where force account or allowance bid items have been included, bidders must meet the M/WBE goal percentage based upon the total base bid, including all such items that are submitted to the City. However, when a force account or allowance is designated

by the City to be either performed or purchased from a specific company, the bidder may back out the dollar amount of the force account or allowance from the total base bid and meet the M/WBE goal on the remaining reduced amount.

- e. On bids which, at the time of bid opening, are equal to or exceed Five Million Dollars (\$5,000,000.00), including any alternates which may be selected, only sixty percent (60%) of the value of the commercially useful function performed by M/WBE suppliers shall count toward satisfaction of the Project goal. On Projects under Five Million (\$5,000,000.00) the value of the commercially useful function of M/WBE supplier(s) will count at a one hundred percent (100%) level. Manufacturer's representatives and packagers shall be counted in the same manner as brokers.
 - f. In utilizing the M/WBE participation of a Broker only the bona fide commissions earned by such Broker for its performance of a commercially useful function will count toward meeting the Project goals. The bidder must separate the bona fide brokerage commissions from the actual cost of the supplies or materials provided to determine the actual dollar amount of participation that can be counted towards meeting the goal.
7. On or before the third (3rd) working day after bid opening, all of the Bidders are required to submit an executed "Letter of Intent" for each M/WBE listed on the Bid Form as a joint venture member, subcontractor, supplier, manufacturer, manufacturers' representative or broker of any tier. **An MBE or WBE Prime Bidder needs to submit a Letter of Intent for itself for self performed work**, and must identify their level of participation on the designated M/WBE participation page bound herein. A Letter of Intent shall be submitted only for the M/WBEs listed at the time of bid opening, since this is the only participation that will be counted toward satisfaction of the project goal. A form for the M/WBE Letter of Intent is included with the Bid Form. The M/WBE Letter of Intent is a written communication from the Bidder to the City evidencing an understanding that the Bidder has or will enter into a contractual relationship with the M/WBE or that its subcontractor(s) and supplier(s), manufacturer(s), manufacturers' representative(s) and broker(s) will do so. Each M/WBE Letter of Intent shall be accompanied by a copy of the City and County of Denver's M/WBE certification letter for each proposed M/WBE identified at bid time. Bidders are urged to carefully review these Letters before submission to the City to ensure that they are properly completed and executed by the appropriate parties.

Good Faith Effort.

In preparing a bid to demonstrate a good faith effort, bidders should consider the following instructions relating to compliance with the M/WBE Ordinance:

- 1. If the bidder or proposer has not fully met the project goal as provided in section 28-60, then it shall demonstrate that it has made good faith efforts to meet such goal. The bidder or proposer shall furnish to the director, within three (3) working days after bid opening by the City or on or before the time of the final project-specific proposal submitted to and authorized by the City pursuant to a competitive selection process, or bid selection by a private owner, a detailed statement of its good faith efforts to meet the project goal set by the director. This statement shall address each of the items in subsection (b) and any additional criteria that the director may establish by rule or regulation consistent with the purposes of this division 3. Good faith efforts must be demonstrated to be meaningful and not merely for formalistic compliance with this Division 3. The scope and intensity of the efforts will be considered in determining whether the bidder or proposer has achieved a good faith effort.
- 2. The statement of good faith efforts shall include a specific response and verification with respect to each of the following good faith effort categories, which may be further defined by rule or regulation. A bidder or proposer may include any additional information it believes may be relevant. Failure of a bidder or proposer to show good faith efforts as to any one (1) of the following categories shall render its overall good faith effort showing insufficient and its bid or proposal non-responsive:
 - a. If prebid or preselection meetings are scheduled by the City at which MBEs and WBEs may be informed of subcontracting or joint venture opportunities under a proposed contract to be bid, or procured pursuant to the competitive selection

process, attendance at such prebid or preselection meetings is not mandatory; however, bidders and proposers are responsible for the information provided at these meetings.

- b. The bidder or proposer must solicit through all reasonable and available means, the interest of all MBEs and WBEs certified in the scopes of work of the contract. The bidder or proposer must solicit the interest of such MBEs and WBEs within sufficient time, prior to the bid opening or date of final project-specific proposal in the case of a competitive selection process, to allow such MBEs and WBEs to respond to the solicitation. The bidder or proposer must determine with certainty if the MBEs and WBEs are interested by demonstrating appropriate steps to follow up initial solicitations.
 - c. The bidder or proposer must select portions of the work of the contract to be performed by MBEs and WBEs in order to increase the likelihood that the project goal will be achieved. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate MBE and WBE participation as subcontractors or joint venturers, and for bidder or proposer self-performed work, as suppliers, manufacturers, manufacturer's representatives and brokers, all reasonably consistent with industry practice, even when the bidder or proposer would otherwise prefer to perform these work items with its own forces. The bidder or proposer must identify what portions of the contract will be self-performed and what portions of the contract will be opened to solicitation of bids, proposals and quotes from MBE and WBEs. All portions of the contract not self-performed must be solicited for MBE and WBE participation. The ability or desire of a bidder or proposer to perform the work of a contract with its own forces does not relieve the bidder or proposer of the responsibility to meet the project goal or demonstrate good faith efforts to do so.
 - d. The bidder or proposer, consistent with industry practice, must provide MBEs and WBEs at a clearly stated location with timely, adequate access to and information about the plans, specifications, and requirements of the contract, including bonding and insurance requirements, if any, to assist them in responding to a solicitation.
 - e. The bidder or proposer must negotiate in good faith with interested MBEs and WBEs and provide written documentation of such negotiation with each such MBE or WBE.
 - f. For each MBE or WBE which contacted the bidder or proposer or which the bidder or proposer contacted or attempted to subcontract or joint venture with, consistent with industry practice, the bidder or proposer must supply a statement giving the reasons why the bidder or proposer and the MBE or WBE did not succeed in negotiating a subcontracting, supplier, manufacturer, manufacturer's representative, broker or joint venture agreement, as applicable.
3. The bidder or proposer must provide verification that it rejected each non-utilized MBE and WBE because the MBE or WBE did not submit the lowest bid or it was not qualified. Such verification shall include a verified statement of the amounts of all bids received from potential or utilized subcontractors, suppliers, manufacturers, manufacturer's representatives, brokers or joint venturers on the contract, whether or not they are MBEs or WBEs. In making such a determination of not being qualified, the bidder or proposer shall be guided by the definition of qualified in section 28-54(42), but evidence of lack of qualification must be based on factors other than solely the amount of the MBE's or WBE's bid. For each MBE or WBE found not to be qualified by the bidder or proposer, the verification shall include a statement giving the bidder's or proposer's reasons for its conclusion. A bidder's or proposer's industry standing, or group memberships may not be the cause of rejection of an MBE or WBE. A bidder or proposer may not reject an MBE or WBE as being unqualified without sound reasons based on a reasonably thorough investigation and assessment of the MBE's or WBE's capabilities and expertise.
 4. If requested by a solicited MBE or WBE, the bidder or proposer must make reasonable efforts to assist interested MBEs and WBEs in obtaining bonding, lines of credit, or insurance as required by

the City or by the bidder or proposer, provided that the bidder or proposer need not provide financial assistance toward this effort.

5. If requested by a solicited MBE or WBE, the bidder or proposer must make reasonable efforts to assist interested MBEs and WBEs in obtaining necessary and competitively priced equipment, supplies, materials, or related assistance or services for performance under the contract, provided that the bidder or proposer need not provide financial assistance toward this effort.
6. The bidder or proposer must use the DSBO MBE/WBE directories to identify, recruit, and place MBEs and WBEs.
7. In determining whether a bidder or proposer has satisfied good faith efforts as to a project goal, the success or failure of other bidders or proposers on the contract in meeting such project goal may be considered.

Continuing Commitments.

In accordance with the provisions of the M/WBE Ordinance, the bidder agrees that it is committed to meeting either the M/WBE participation goal or the M/WBE participation set forth in its statement of good faith. This commitment must be expressly indicated on the "Commitment to MWBE SBE Participation" form included with the Bid Form. This commitment includes the following understandings:

1. The bidder understands it must maintain M/WBE goals throughout the performance of the Contract pursuant to the requirements set out in D.R.M.C. 28-72.
2. The bidder understands that it must establish and maintain records and submit regular reports, as required, which will allow the City to assess progress in achieving the M/WBE participation goal.
3. The bidder understands that if change orders or any other contract modifications are issued under the contract, the bidder shall have a continuing obligation to immediately inform DSBO in writing of any agreed upon increase or decrease in the scope of work of such contract, upon any of the bases discussed in Section 28-73 of the M/WBE Ordinance, regardless of whether such increase or decrease in scope of work has been reduced to writing at the time of notification.
4. The bidder understands that if change orders or other contract modifications are issued under the contract, that include an increase in scope of work of a contract for construction, reconstruction, or remodeling, whether by amendment, change order, force account or otherwise which increases the dollar value of the contract, whether or not such change is within the scope of work designated for performance by an M/WBE at the time of contract award, such change orders or contract modification shall be immediately submitted to DSBO for notification purposes. Those amendments, change orders, force accounts or other contract modifications that involve a changed scope of work that cannot be performed by existing project subcontractors or by the contractor shall be subject to a goal for M/WBEs equal to the original goal on the contract which was included in the bid. The contractor shall satisfy such goal with respect to such changed scope of work by soliciting new M/WBEs in accordance with Section 28-73 of the M/WBE Ordinance as applicable, or the contractor must show each element of modified good faith set out in Section 28-75(c) of the M/WBE Ordinance. The contractor shall supply to the director the documentation described in Section 28-75(c) of the M/WBE Ordinance with respect to the increased dollar value of the contract.

All bidders are charged with knowledge of and are solely responsible for complying with each and every provision of the M/WBE Ordinance in making a bid and, if awarded, in performing the work described in the Contract Documents. Failure to comply with these provisions could constitute cause for rejection of a bid or subject the selected contractor to sanctions set forth in the M/WBE Ordinance. These instructions are intended only to generally assist the bidder in preparing and submitting a compliant bid. Should any questions arise regarding specific circumstances, bidders must consult the M/WBE Ordinance or contact the Project's designated DSBO representative at (720) 913-1999.

IB- 27 DISCLOSURE OF INFORMATION

All submissions and other materials provided or produced pursuant to this Invitation for Bids may be subject to the Colorado Open Records Law, C.R.S. 24-72-201, et seq. As such, bidders are urged to review these

disclosure requirements and any exceptions to disclosure of information furnished by another party and, prior to submission of a bid to the City, appropriately identify materials that are not subject to disclosure. In the event of a request to the City for disclosure of such information, the City shall advise the bidder of such request to give the bidder an opportunity to object to the disclosure of designated confidential materials furnished to the City. In the event of the filing of a lawsuit to compel such disclosure, the City will tender all such material to the court for judicial determination of the issue of disclosure and each bidder agrees to intervene in such lawsuit to protect and assert its claims of privilege against disclosure of such material. Each bidder further agrees to defend, indemnify and save and hold harmless the City, its officers, agents and employees, from any claim, damages, expense, loss or costs arising out of the bidder's intervention to protect and assert its claims of privilege against disclosure under the Open Records Law including, but not limited to, prompt reimbursement to the City of all reasonable attorney fees, costs and damages that the City may incur directly or may be ordered to pay by such court.

IB-28 PAYMENT PROCEDURE REQUIREMENTS

Bidder recognizes and agrees that it shall be required to use the Textura® Construction Payment Management System (“Textura”) for this Project to request payment from the City and to pay subcontractors. All certified subcontractors or suppliers who are listed for participation towards any assigned program goal must be paid via Textura. All fees associated with Textura are to be paid by the bidder for billings for work performed. Bidders are required, when preparing a bid, to enter the price of Textura on the line provided for the service. The fee is all inclusive of all subcontractor, project and subscription fees associated with Textura. The bidder will calculate the fee based on their total bid (not including any alternates, if applicable) and the table below, and then include it on the line item provided in the bid form labeled “Textura® Construction Payment Management System Fee”. This expense becomes part of the contract and billable to the City. All costs including, but not limited to, costs associated with training, entering data, and/or utilizing Textura other than the Textura Construction Payment Management System Fee are overhead and shall not be reimbursed by the City. Bidder will be responsible for any tax on the Textura fee. As with other taxes, the City will not reimburse bidder for this cost and therefore this cost should be included in bidder's bid. Textura will invoice the awarded bidder directly.

Project Value	Project Fee (GC + Sub Usage)
\$100,000 – 249,999.99	\$780
\$250,000 - \$499,999.99	\$1,625
\$500,000 - \$999,999.99	\$3,250
\$1,000,000 - \$2,999,999.99	\$5,850
\$3,000,000 - \$4,999,999.99	\$9,100
\$5,000,000 - \$9,999,999.99	\$12,220
\$10,000,000 - \$19,999,999.99	\$20,345
\$20,000,000 - \$49,999,999.99	\$32,500
\$50,000,000 - \$99,999,999.99	\$48,750
\$100,000,000 - \$199,999,999.99	\$69,095
\$200,000,000 - \$299,999,999.99	\$85,345
\$300,000,000 - \$399,999,999.99	\$109,720
\$400,000,000 - \$499,999,999.99	\$142,220
\$500,000,000 - \$999,999,999.99	\$162,500
\$1,000,000,000 - \$1,999,999,999.99	\$345,345
\$2,000,000,000 - \$4,999,999,999.99	\$650,000
\$5,000,000,000 - \$9,999,999,999.99	\$1,015,625
\$10,000,000,000 or greater	\$1,503,125

IB-29 GENERAL BIDDING INFORMATION

Bidders are instructed to contact the Contract Administrator designated below for this Project for pre-bid, post-bid and general City bidding information. Bidders can also visit www.work4denver.com for information, both general and project specific. The Contract Administrator assigned to this project is Ryan Carroll who can be reached via email at pw.procurement@denvergov.org.

**RULES AND REGULATIONS
REGARDING
EQUAL EMPLOYMENT OPPORTUNITY**

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

RULE I - DEFINITIONS

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

RULE II - NOTICE OF HEARING

When results of conciliation efforts are unsatisfactory to the Manager and he is informed in accordance with Article III, Division 2 of Chapter 28 of the Revised Municipal code that a contractor or subcontractor has apparently failed to meet affirmative action and equal employment opportunity requirements after a reasonable period of notice to correct deficiencies, the Manager will, prior to imposition of any sanctions, afford the general contractor a hearing in order to determine whether the contractor or his subcontractors have failed to comply with the affirmative action and equal employment opportunity requirements of Article III, Division 2 of Chapter 28 of the Revised Municipal Code or of the contract. Written notice of such hearing shall be delivered personally or sent by certified mail, return receipt requested, to the contractor and to any subcontractor involved, at least ten (10) days prior to the date scheduled for the hearing.

RULE III - HEARING

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

REGULATIONS

REGULATION NO. 1 - ORDINANCE:

The Rules and Regulations of the Manager shall be inserted in the bidding specifications for every contract for which bidding is required.

REGULATION NO. 2 - EXEMPTIONS:

Each contract and subcontract, regardless of the dollar amount, shall be subject to affirmative action requirements unless specifically exempted in writing individually by the Manager. Exemptions apply only to "affirmative action" in equal employment opportunity, and are not to be construed as condonation in any manner of "discrimination" or "discriminatory practices" in employment because of race, color, creed, sex, age, national origin, religion, marital status, political opinion or mental or physical handicap.

REGULATION NO. 3 - DIRECTOR OF CONTRACT COMPLIANCE:

The Director of the Division of Small Business Opportunity shall perform the duties assigned to such official by Article III, Division 2 Chapter 28 of the Revised Municipal Code and by the Manager. (1) The Director of the Division of Small Business Opportunity or designated representatives shall inform bidders and contractors of affirmative action procedures, programs, and goals in accordance with the Ordinance at pre-bid and pre-construction conference; (2) make regular on-site inspections; (3) supply contractors and subcontractors with report forms to be completed by them when requested, and furnished to the Director of the Division of Small Business Opportunity; and (4) review payroll records, employment records and practices of general contractors and their subcontractors and suppliers during the performance of any contract. The Director of the Division of Small Business Opportunity shall promptly report apparent affirmative action deficiencies to the Manager.

REGULATION NO. 4 - GOALS AND TIMETABLES:

In general, goals and timetables should take into account anticipated vacancies and the availability of skills in the market place from which employees should be drawn. In addition, where discrimination in employment by a general contractor or any of his subcontractors is indicated, a corrective action program will take into account the need by the general contractor and his subcontractors to correct past discriminatory practices and reach goals of minority manpower utilization on a timely basis through such recruiting and advertising efforts as are necessary and appropriate.

REGULATION NO. 5 - AWARD OF CONTRACTS:

It shall be the responsibility of the Director of the Division of Small Business Opportunity to determine the affirmative action capability of bidders, contractors and subcontractors and to recommend to the Manager the award of contracts to those bidders, contractors and subcontractors and suppliers who demonstrate the ability and willingness to comply with the terms of their contract.

REGULATION NO. 6 - PUBLICATION AND DUPLICATION:

Copies of these Rules and Regulations as amended by the Manager from time to time, shall as soon as practicable and after Notice being published will be made a part of all City Contracts.

REGULATION NO. 7 - NOTICE TO PROCEED:

Prior to issuance of the Notice to Proceed, a sign-off will be required of the Director of the Division of Small Business Opportunity or his designee.

REGULATION NO. 8 - CONTRACTS WITH SUBCONTRACTORS:

To the greatest extent possible, the contractor shall make a good faith effort to contract with minority contractors, subcontractors and suppliers for services and supplies by taking affirmative actions, which include but are not limited to the following:

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

REGULATION NO. 9 - AGENCY REFERRALS:

It shall be no excuse that the union with which the contractor or subcontractor has an agreement providing for referral, exclusive or otherwise, failed to refer minority employees.

REGULATION NO. 10 - CLAUSES:

The Manager shall include the appropriate clauses in every contract and the contractor shall cause to be inserted in every subcontract the appropriate clauses:

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

All amendments to the appendices shall be included by reference.

REGULATION NO. 11 - SHOW CAUSE NOTICES:

When the Manager has reasonable cause to believe that a contractor has violated Article III, Division 2 of Chapter 28 of the Denver Revised Municipal Code, he may issue a notice requiring the contractor to show cause, within fifteen (15) days why enforcement procedures, or other appropriate action to insure compliance, should not be instituted.

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

1. APPENDIX E: The Bid Conditions - Affirmative Action Requirements - Equal Employment Opportunity as amended and published by the U.S. Department of Labor Employment Standards Administration, Office of Federal Contract Compliance, shall be inserted verbatim for bidding specification for every non-exempt contract involving the use of Federal funds.
2. APPENDIX F: The Bid Conditions - Affirmative Action Requirements - Equal Employment Opportunity as published by the Department of Public Works, City and County of Denver, shall be inserted verbatim as bidding specifications for every non-exempt contract using City funds.

CITY AND COUNTY OF DENVER
DEPARTMENT OF PUBLIC WORKS
201950021

APPENDIX A

**CITY AND COUNTY OF DENVER EQUAL OPPORTUNITY CLAUSE -
ALL CONTRACTS**

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

The applicant further agrees to be bound by the above equal opportunity clauses with respect to its own employment practices when it participates in City contracts. The Contractor agrees to assist and cooperate actively with the Manager and the Director in obtaining compliance of subcontractors and suppliers with the equal opportunity clause and the rules, regulations and relevant orders of the Manager, and will furnish the Manager and the Director such information as they may require for the supervision of compliance, and will otherwise assist the Manager and Director in the discharge of the City's primary responsibility for securing

compliance. The Contractor further agrees to refrain from entering into any contract or contract modification subject to Article III, Division 2 of Chapter 28 of the Revised Municipal Code with a contractor debarred from, or who has not demonstrated eligibility for, City contracts.

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

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

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

CITY AND COUNTY OF DENVER
DEPARTMENT OF PUBLIC WORKS
201950021

APPENDIX F

AFFIRMATIVE ACTION REQUIREMENTS

EQUAL EMPLOYMENT OPPORTUNITY

For All Non-Exempt Construction Contracts to Be Awarded by the
City and County of Denver, Department of Public Works.

NOTICE

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

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

/s/ _____

Manager of Public Works
City and County of Denver

A. REQUIREMENTS - AN AFFIRMATIVE ACTION PLAN:

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

1. GOALS AND TIMETABLES:

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

GOALS FOR MINORITY PARTICIPATION FOR EACH TRADE	GOALS FOR FEMALE PARTICIPATION FOR EACH TRADE
From January 1, 1982 to Until Further Notice	From January 1, 1982 to Until Further Notice
21.7% - 23.5%	6.9%

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

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

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

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

2. SPECIFIC AFFIRMATIVE ACTION STEPS:

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

- a. The Contractor should have notified minority and female organizations when employment opportunities were available and should have maintained records of the organization's response.

- b. The Contractor should have maintained a file of the names and addresses of each minority and female referred to it by any individual or organization and what action was taken with respect to each such referred individual, and if the individual was not employed by the Contractor, the reasons. If such individual was sent to the union hiring hall for referral and not referred back by the union or if referred, not employed by the Contractor, the file should have documented this and their reasons.
- c. The Contractor should have promptly notified the Department of Public Works, and the Division of Small Business Opportunity when the union or unions with which the Contractor has collective bargaining agreements did not refer to the contractor a minority or female sent by the contractor, or when the Contractor has other information that the union referral process has impeded efforts to meet its goals.
- d. The Contractor should have disseminated its EEO policy within its organization by including it in any employee handbook or policy manual; by publicizing it in company newspapers and annual reports and by advertising such policy at reasonable intervals in union publications. The EEO policy should be further disseminated by conducting staff meetings to explain and discuss the policy; by posting of the policy; and by review of the policy with minority and female employees.
- e. The Contractor should have disseminated its EEO policy externally by informing and discussing it with all recruitment sources; by advertising in news media, specifically including minority and female news media; and by notifying and discussing it with all subcontractors.
- f. The Contractor should have made both specific and reasonably recurrent written and oral recruitment efforts. Such efforts should have been directed at minority and female organizations, schools with substantial minority and female enrollment, and minority and female recruitment and training organizations within the Contractor's recruitment area.
- g. The Contractor should have evidence available for inspection that all tests and other selection techniques used to select from among candidates for hire, transfer, promotion, training, or retention are being used in a manner that does not violate the OFCCP Testing Guidelines in 41 CFR Part 60-3.
- h. The Contractor should have made sure that seniority practices and job classifications do not have a discriminatory effect.
- i. The Contractor should have made certain that all facilities are not segregated by race.
- j. The Contractor should have continually monitored all personnel activities to ensure that its EEO policy was being carried out including the evaluation of minority and female employees for promotional opportunities on a quarterly basis and the encouragement of such employees to seek those opportunities.
- k. The Contractor should have solicited bids for subcontracts from available minority and female subcontractors engaged in the trades covered by these Bid Conditions, including circulation of minority and female contractor associations.

NOTE: The Director and the Division of Small Business Opportunity will provide technical assistance on questions pertaining to minority and female recruitment sources, minority and female community organizations, and minority and female news media upon receipt of a request for assistance from a contractor.

3. NON - DISCRIMINATION:

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

4. COMPLIANCE AND ENFORCEMENT:

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

B. CONTRACTORS SUBJECT TO THESE BID CONDITIONS:

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

1. Where the Office of Contract Compliance finds that a contractor failed to comply with the requirements of Article III, Division 2 of Chapter 28 of the Revised Municipal Code or the implementing regulations and the obligations under these Bid Conditions, and so informs the Manager, the Manager shall take such action and impose such sanctions, which include suspension, termination, cancellation, and debarment, as may be appropriate under the Ordinance and its regulations. When the Manager proceeds with such formal action it has the burden of proving that the Contractor has not met the goals contained in these Bid Conditions. The Contractor's failure to meet its goals shall shift to it the requirement to come forward with evidence to show that it has met the good faith requirements of these Bid Conditions.
2. The pendency of such proceedings shall be taken into consideration by the Department of Public Works in determining whether such contractor can comply with the requirements of Article III, Division 2 of Chapter 28 of the Revised Municipal Code, and is therefore a "responsible prospective contractor".
3. The Division of Small Business Opportunity shall review the Contractor's employment practices during the performance of the contract. If the Division of Small Business Opportunity determines that the Contractor's Affirmative Action Plan is no longer an acceptable program, the Director shall notify the Manager.

C. OBLIGATIONS APPLICABLE TO CONTRACTORS:

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

D. GENERAL REQUIREMENTS:

Contractors are responsible for informing their subcontractors in writing regardless of tier, as to their respective obligations. Whenever a Contractor subcontracts a portion of work in any trade covered by these Bid Conditions, it shall include these Bid Conditions in such subcontracts and each subcontractor shall be bound by these Bid Conditions to the full extent as if it were the prime contractor. The Contractor

shall not, however, be held accountable for the failure of its subcontractors to fulfill their obligations under these Bid Conditions. However, the prime contractor shall give notice to the Director of any refusal or failure of any subcontractor to fulfill the obligations under these Bid Conditions. A subcontractor's failure to comply will be treated in the same manner as such failure by a prime contractor.

1. Contractors hereby agree to refrain from entering into any contract or contract modification subject to Article III, Division 2, Chapter 28 of the Revised Municipal Code with a contractor debarred from, or who is determined not to be a "responsive" bidder for the City and County of Denver contracts pursuant to the Ordinance.
2. The Contractor shall carry out such sanctions and penalties for violation of these Bid Conditions and the Equal Opportunity Clause including suspension, termination and cancellation of existing subcontracts and debarment from future contracts as may be ordered by the Manager pursuant to Article III, Division 2, Chapter 28 of the Revised Municipal Code and its implementing regulations.
3. Nothing herein is intended to relieve any contractor during the term of its contract from compliance with Article III, Division 2, Chapter 28 of the Revised Municipal Code, and the Equal Opportunity Clause of its contract with respect to matters not covered in these Bid Conditions.
4. Contractors must keep such records and file such reports relating to the provisions of these Bid Conditions as shall be required by the Office of Contract Compliance.
5. Requests for exemptions from these Bid Conditions must be made in writing, with justification, to the Manager of Public Works, 201 W. Colfax, Dept. 608, Denver, Colorado 80202, and shall be forwarded through and with the endorsement of the Director.

**CITY AND COUNTY OF DENVER
DEPARTMENT OF PUBLIC WORKS
201950021**

CONTRACT NO. 201950021

Genesee Park Base Camp

CONTRACT

THIS CONTRACT AND AGREEMENT, made and entered into by and between the City and County of Denver, a municipal corporation of the State of Colorado, hereinafter referred to as the "City," party of the first part, and **201950021**, hereinafter referred to as the "Contractor," party of the second part,

**GOODLAND CONSTRUCTION, INC.
760 Nile Street
Golden, CO 80401**

WITNESSETH, commencing on **April 29, 2019**, and for at least three (3) days the City advertised that sealed bids would be received for furnishing all labor, tools, supplies, equipment, materials, and everything necessary and required for the following:

CONTRACT NO. 201950021

Genesee Park Base Camp

WHEREAS, bids pursuant to said advertisement have been received by the Manager of Public Works, who has recommended that a Contract for said work be made and entered into with the above named Contractor who was the lowest, responsive, qualified bidder therefore, and

WHEREAS, said Contractor is now willing and able to perform all of said work in accordance with said advertisement and its bid.

NOW THEREFORE, in consideration of the compensation to be paid the Contractor, the mutual agreements hereinafter contained, and subject to the terms hereinafter stated, it is mutually agreed as follows:

1. CONTRACT DOCUMENTS

It is agreed by the parties hereto that the following list of documents, instruments, technical specifications, plans, drawings and other materials which are attached hereto and bound herewith, incorporated herein by reference or otherwise referenced in these documents constitute and shall be referred to either as the "Contract Documents" or the "Contract," and all of said documents, instruments, technical specifications, Plans, Drawings and other materials taken together as a whole constitute the Contract between the parties hereto, and they are as fully a part of this agreement as if they were set out verbatim and in full herein:

*Advertisement of Notice of Invitation for Bids
Instructions to Bidders
Commitment to M/WBE Participation
Article III, Divisions 1, 2, and 3 of Chapter 28, D.R.M.C.
Bid Bond
Addenda (as applicable)*

Equal Employment Opportunity Provisions (Appendix A and Appendix F)
Bid Form
Contract Form
General Contract Conditions
Special Contract Conditions
Performance and Payment Bond
Notice to Apparent Low Bidder
Notice to Proceed
Contractor's Certification of Payment Form
Final/Partial Lien Release Form
Certificate of Contract Release
Change Orders (as applicable)
Federal Requirements (as applicable)
Prevailing Wage Rate Schedule(s)
Technical Specifications
Contract Drawings
Accepted Shop Drawings

2. SCOPE OF WORK

The Contractor agrees to and shall furnish all labor, tools, supplies, equipment, materials and everything necessary for and required to do, perform and complete all of the Work described, drawn, set forth, shown and included in said Contract Documents.

3. TERMS OF PERFORMANCE

The Contractor agrees to undertake the performance of the Work under this Contract within ten (10) days after being notified to commence work by issuance of a Notice to Proceed in substantially the form contained herein from the Manager and agrees to fully complete said Work within **120** (One hundred and twenty calendar days) consecutive calendar days from the effective date of said Notice, plus such extension or extensions of time as may be granted in accordance with the provisions of the General Contract Conditions and any applicable Special Contract Conditions.

4. TERMS OF PAYMENT

The City agrees to pay the Contractor for the performance of all of the Work required under this Contract, and the Contractor agrees to accept as the Contractor's full and only compensation therefore, such sum or sums of money as may be proper in accordance with the price or prices set forth in the Contractor's Bid Form hereto attached and made a part hereof for **bid item numbers 01 11 00 through 33 55 00 (Thirty-Three [33] total bid items)**, the total estimated cost thereof being **Five Hundred, Twenty-One Thousand, Six Hundred, Twenty-Nine Dollars and Eighty-Six Cents(\$521,629.86)**. Adjustments to said Contract Amount and payment of amounts due hereunder shall be made in accordance with the provisions of the General Contract Conditions and any applicable Special Contract Conditions.

5. NO DISCRIMINATION IN EMPLOYMENT

In connection with the performance of work under this contract, the Contractor may not refuse to hire, discharge, promote or demote, or discriminate in matters of compensation against any person otherwise qualified, solely because of race, color, religion, national origin, gender, age, military status, sexual orientation, gender identity or gender expression, marital status, or physical or mental disability. The Contractor shall insert the foregoing provision in all subcontracts.

6. COMPLIANCE WITH M/WBE REQUIREMENT

This Contract is subject to all applicable provisions of Divisions 1 and 3 of Article III, of Chapter 28, Denver Revised Municipal Code (D.R.M.C.), designated as Sections 28-31 – 28-36 and 28-52 – 28-90 D.R.M.C. and referred to in this Contract as the "M/WBE Ordinance". Without limiting the general applicability of the foregoing, the Contractor acknowledges its continuing duty, pursuant to Sections 28-72, 28-73 and 28-75 of the D.R.M.C., to maintain throughout the duration of this Contract, compliance with the level of minority and Woman business enterprise participation, upon which the City approved the award of this Contract to the Contractor and the Contractor further acknowledges that failure to maintain such participation commitments or otherwise comply with the requirements of the M/WBE Ordinance shall subject the Contractor to sanctions in accordance with Section 28-77 of the D.R.M.C. Nothing contained in this

provision or in the M/WBE Ordinance shall negate the City's right to prior approval of subcontractors, or substitutes therefore, under this Contract

7. WAGE RATE REQUIREMENTS

In performance of all Work hereunder, the Contractor agrees to comply with and be bound by all requirements and conditions of the City's Payment of Prevailing Wages Ordinance, Sections 20-76 through 20-79, D.R.M.C. and any determinations made by the City pursuant thereto as well as the City's Minimum Wage Protections Sections 20-82 through 20-84 D.R.M.C. and any determinations made by the City pursuant thereto. In the event a covered worker falls under both ordinances, Contractor shall pay the greater of the two rates.

8. APPLICABILITY OF LAWS

The Agreement between the Contractor 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 by or in accordance with the laws of the State of Colorado and the Charter, Revised Municipal Code, Rules, Regulations, Executive Orders and fiscal rules of the City. As such, the Contractor shall at all times comply with the provisions of the Charter, Revised Municipal Code, Rules, Regulations, Executive Orders and fiscal rules of the City, and those State of Colorado and Federal Laws, Rules and Regulations, which in any manner limit, control or apply to the actions or operations of the Contractor, any subcontractors, employees, agents or servants of the Contractor 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. The Charter and Revised Municipal Code of the City and County of Denver, as the same may be amended from time to time, are hereby expressly incorporated into this Agreement as if fully set out herein by this reference.

9. APPROPRIATION

The amount of money, which has been appropriated and encumbered for the purpose of this contract, to date, is equal to or in excess of the Contract Amount. The Manager, upon reasonable written request, will advise the Contractor in writing of the total amount of appropriated and encumbered funds, which remain available for payment for all Work under the Contract.

The issuance of any change order or other form or order or directive by the City which would cause the aggregate payable under the contract to exceed the amount appropriated for the contract is expressly prohibited. In no event shall the issuance of any change order or other form of order or directive by the City be considered valid or binding if it requires additional compensable work to be performed, which work will cause the aggregate amount available under the Contract to exceed the amount appropriated and encumbered for this Contract, unless and until such time as the Contractor has been advised in writing by the Manager that a lawful appropriation, sufficient to cover the entire cost of such additional work, has been made.

It shall be the responsibility of the Contractor to verify that the amounts already appropriated for this Contract are sufficient to cover the entire cost of such work, and any work undertaken or performed in excess of the amount appropriated is undertaken or performed in violation of the terms of this contract, without the proper authorization for such work, and at the Contractor's own risk.

10. APPROVALS

In the event this Contract calls for the payment by the City of five hundred thousand dollars (\$500,000.00) or more, approval by the Board of Councilmen of the City and County of Denver, acting by ordinance, in accordance with Section 3.2.6 of the Charter of the City and County of Denver, is and shall be an express condition precedent to the lawful and binding execution and effect and performance of this contract.

11. ASSIGNMENT

The Contractor shall not assign any of its rights, benefits, obligations or duties under this Contract except upon the prior written consent and approval of the Manager to such assignment.

12. DISPUTES RESOLUTION PROCESS

It is the express intention of the parties to this Contract that all disputes of any nature whatsoever regarding the Contract including, but not limited to, any claims for compensation or damages arising out of breach or default under this Contract, shall be resolved by administrative hearing pursuant to the provisions of Section 56-106, D.R.M.C., or, as applicable, Section 28-33 D.R.M.C. for Minority and Woman Business Enterprise

disputes. The Contractor expressly agrees that this dispute resolution process is the only dispute resolution mechanism that will be recognized by the parties for any claims put forward by the Contractor, notwithstanding any other claimed theory of entitlement on the part of the Contractor or its subcontractors or suppliers.

13. CONTRACT BINDING

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

14. 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.

15. SEVERABILITY

It is understood and agreed by the parties hereto that, if any part, term, or provision of this Contract, except for the provisions of this Contract 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 Contract did not contain the particular part, term or provision held to be invalid.

16. ELECTRONIC SIGNATURES AND ELECTRONIC RECORDS:

Contractor consents to the use of electronic signatures by the City. The Agreement, and any other documents requiring a signature hereunder, may be signed electronically by the City 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.

Contract Control Number:
Contractor Name:

PWADM-201950021-00
GOODLAND CONSTRUCTION INC

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:

Attorney for the City and County of Denver

By:

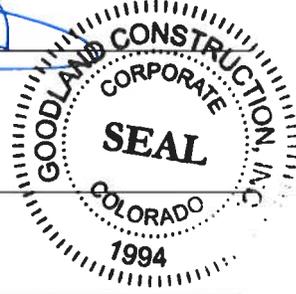
By:

By:

Contract Control Number:
Contractor Name:

PWADM-201950021-00
GOODLAND CONSTRUCTION INC

By: [Signature]



Name: MATT WORLAND
(please print)

Title: PRESIDENT
(please print)

ATTEST: [if required]

By: [Signature]

Name: Jim Pokorny
(please print)

Title: SEE / TRS
(please print)

**CITY AND COUNTY OF DENVER
DEPARTMENT OF PUBLIC WORKS**

General Contract Conditions

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CITY AND COUNTY OF DENVER
DEPARTMENT OF PUBLIC WORKS
201950021

SPECIAL CONTRACT CONDITIONS

SC-1 CONSTRUCTION SPECIFICATIONS

Except as amended herein or in the attached Technical Specifications, all Work performed under the terms of this Contract shall be governed by the applicable provisions of the following latest editions:

City and County of Denver:

Standard Specifications for Construction, GENERAL CONTRACT CONDITIONS,
2011 Edition.

Transportation Standards and Details for the Engineering Division

City and County of Denver Traffic Standard Drawings

Wastewater Management Division

– *Standard Detail Drawings*

– *Public Works Wastewater Capital Projects Management Standard Construction Specifications*

Colorado Department of Transportation:

Standard Specifications for Road and Bridge Construction
(Sections 200 through 700 of the 2011 Edition)

Federal Highway Administration:

Manual on Uniform Traffic Control Devices for Streets & Highways (MUTCD)

Building & Fire Codes:

Building Code of the City and County of Denver

(International Building Code 2015 Series, City and County of Denver Amendments 2016)

National Fire Protection Association Standards

(As referenced in the Building Code of the City and County of Denver)

The aforementioned City and County of Denver documents are available for review at the Capital Projects Management Office, 201 W. Colfax Ave., Dept. 506, (5th floor), Denver, CO 80202. The *Standard Specifications for Construction, GENERAL CONTRACT CONDITIONS* is available at: <https://www.denvergov.org/content/denvergov/en/contract-administration/contractor-resources.html>.

Transportation Standards and Details for the Engineering Division and the Wastewater Management Division – *Standard Detail Drawings*, are available at <http://www.denvergov.org>.

The “*Colorado Department of Transportation Standard Specifications for Road and Bridge Construction*” is available for review on CDOT’s website at <http://www.coloradodot.info/> and can be purchased from the Colorado Department of Transportation.

The *Manual on Uniform Traffic Control Devices for Streets & Highways* is available for review at the Federal Highway Administration Website at: www.fhwa.dot.gov, The FHWA website also contains purchasing information.

SC-2 DEPUTY MANAGER / CITY ENGINEER

General condition 109 DEPUTY MANAGER is hereby deleted in its entirety and replaced with the following:

The "Deputy Manager" means the official who reports directly to the Manager and exercises supervisory responsibility in the City agency defined in Title 2 herein that is responsible for the Project. The Manager hereby designates the City Engineer as the Deputy Manager for purposes of this Contract. The City Engineer shall have responsibility for this Project and shall undertake all duties, responsibilities, rights and authority, including specific actions and decisions, delegated to the Deputy Manager under the various terms and conditions of this Contract.

SC-3 ENGINEERING DIVISION / CITY ENGINEER

The Engineering Division is a unit of the Department of Public Works and is supervised by the City Engineer, who is subordinate to the Manager of Public Works. This Division is responsible for the planning, design, construction, operation and maintenance of all of the City's transportation facilities and the planning, design and construction of all of the City's wastewater facilities, except for the City's Municipal Airport System. All other references to the Transportation Division or the Deputy Manager of Public Works for Transportation are deleted and replaced with references to the Engineering Division and City Engineer, respectively.

SC-4 WASTEWATER MANAGEMENT DIVISION

The Wastewater Management Division is a unit of the Department of Public Works and is supervised by the Deputy Manager of Public Works for Wastewater Management, who is subordinate to the Manager of Public Works. This Division is responsible for the operation and maintenance of the City's wastewater facilities.

SC-5 CITY DELEGATION OF AUTHORITY

With reference to General Contract Condition 109, DEPUTY MANAGER and General Contract Condition 212, CITY'S CONTRACT ADMINISTRATION LINE OF AUTHORITY, the Manager hereby designates the City Engineer as the City official responsible for those certain actions and decisions designated as the responsibility of the Deputy Manager under the General Conditions and delegates to the City Engineer the authority necessary to undertake those responsibilities under this Contract. The Director shall have supervisory responsibility over the Project Manager. Additionally, Contractor questions concerning the Plans and Technical Specifications shall be directed to:

Denver Department of Public Works / Engineering Division,

Project Manager
Brad Eckert

Telephone
(720) 913-0708

Consultant
Logan Simpson

Name
Jana D. McKenzie

Telephone
(970) 449-4100 ext: 4803

SC-6 LIQUIDATED DAMAGES

Should the Contractor fail to complete all Work within the Contract Time allocated under the Contract Form at Paragraph 3, TERMS OF PERFORMANCE, the Contractor shall become liable to the City and County of Denver for liquidated damages, and not as a penalty, at the rate of \$1,000.00 for each Day that the Contractor exceeds the time limits herein specified, all in accordance with provisions of General Contract Condition 602, LIQUIDATED DAMAGES; ADMINISTRATIVE COSTS; ACTUAL DAMAGES.

Representative hourly rates for the City administrative costs described in General Contract Condition 602.2 shall be as follows for this Project:

Project Manager	\$69 per hour
Project Engineer	\$63 per hour
Inspector	\$49 per hour
Surveying, if necessary	\$100 per hour

SC-7 SUBCONTRACTS

In accordance with General Contract Condition 501, SUBCONTRACTS, no limit shall apply to that percentage of the Work, which may be sublet providing that the subcontractors receive prior approval in accordance with General Contract Condition 502, SUBCONTRACTOR ACCEPTANCE.

SC-8 RESERVED

SC-9 PAYMENTS TO CONTRACTORS

The application for payment shall be submitted through Textura® Corporations Construction Management Website. Contractor recognizes and agrees that it shall be required to use the Textura Construction Payment Management System for this Project to request payment from the City and to pay subcontractors. All certified subcontractors or suppliers who are listed for participation towards any assigned program goal must be paid via Textura®. Contractor further agrees that, to the fullest extent possible within Textura, the City shall be entitled to all non-Confidential records, reports, data and other information related to the project that are available to Contractor through Textura, including, but not limited to, information related to Contractor and subcontractor billings. To that end, Contractor agrees it will activate any available settings within Textura necessary to grant the City access to such non-Confidential information related to the contract and the project. Applications for payment shall be based on the Contract Unit Prices or the approved Schedule of Values described in GC 903.1

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

<u>Agency/Firm</u>	<u>Name</u>	<u>Telephone</u>
Public Works	Todd Johnson	(720) 865-3120

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

1. The estimate of Work completed shall be based on the approved schedule of values or unit prices, as applicable, and the percent of the Work complete.
2. Each Application for Payment shall include each and every independent subcontractor's payroll information including pay dates and pay amounts.
3. The Contractor shall also submit to the Auditor and other appropriate officials of the City in a timely fashion, information required by General Contract Condition 1004, REPORTING WAGES PAID.
4. Applications for Payment must be accompanied by completed Partial or Final Claim Release Form, as appropriate, from EACH subcontractor and supplier, **AND** the Contractors' Certification of Payment Form (CCP), unless an exception is approved pursuant to General contract condition 907.

The forms, Final/Partial Release and Certificate of Payment (Subcontractor/Supplier) and the Contractor's Certification of Payment (CCP), both of which must be used are attached below. If subcontractor or supplier payments are disbursed via Textura® CPM, those systems generated Release and CCP forms are acceptable.

DEPARTMENT OF PUBLIC WORKS
Engineering Division

FINAL/PARTIAL RELEASE AND CERTIFICATE OF PAYMENT
(SUBCONTRACTOR/SUPPLIER)

(PROJECT NO. and NAME)

Date: _____, 20__.

(NAME OF CONTRACTOR)

Subcontract #: _____.

(NAME OF SUBCONTRACTOR/SUPPLIER)

Subcontract Value: \$ _____.

Last Progress Payment: \$ _____.

Date: _____.

Total Paid to Date: \$ _____.

Date of Last Work: _____.

Check Applicable Box:
 MBE WBE

The Undersigned hereby certifies that all costs, charges or expenses incurred by the undersigned or on behalf of the undersigned for any work, labor or services performed and for any materials, supplies or equipment provided on the above referenced Project or used in connection with the above referenced Subcontract (the "Work Effort") have been duly paid in full.

The Undersigned further certifies that each of the undersigned's subcontractors and suppliers that incurred or caused to be incurred, on their behalf, costs, charges or expenses in connection with the undersigned's Work Effort on the above referenced Project have been duly paid in full.

In consideration of \$ _____ representing the Last Progress Payment referenced above and in further consideration of the Total Paid to Date, also referenced above, and other good and valuable consideration received and accepted by the undersigned this ____ day of _____, 20__, the Undersigned hereby releases and discharges the City and County of Denver (the "City"), the above referenced City Project, the City's premises and property and the above referenced Contractor from all claims, liens, rights, liabilities, demands and obligations, whether known or unknown, of every nature arising out of or in connection with the performance of the work effort.

As additional consideration for the payments referenced above, the undersigned agrees to defend, indemnify and save and hold harmless the City, its officers, employees, agents and assigns and the above-referenced Contractor from and against all costs, losses, damages, causes of action, judgments under the subcontract and expenses arising out of or in connection with any claim or claims against the City or the Contractor which arise out of the Undersigned's performance of the Work Effort and which may be asserted by the Undersigned or any of its suppliers or subcontractors of any tier or any of their representatives, officers, agents, or employees.

It is acknowledged that this release is for the benefit of and may be relied upon by the City and the referenced Contractor.

The foregoing shall not relieve the undersigned of any obligation under the provisions of the Undersigned's subcontract, as the subcontract may have been amended, which by their nature survive completion of the Undersigned's work effort including, without limitation, warranties, guarantees, insurance requirements and indemnities.

STATE OF COLORADO) ss.
CITY OF _____)

(Name of Subcontractor)

Signed and sworn before me this
day of _____, 20__.

By: _____

Notary Public/Commissioner of Oaths
My Commission Expires

Title: _____



Instructions for Completing the Contractor/Consultant Certification of Payment Form

Office of Economic Development
Division of Small Business Opportunity
Compliance Unit
201 W. Colfax Ave. Dept. 807
Denver, CO 80202
Phone: 720-913-1999
DSBO@denvergov.org

Note: The attached Contractor/Consultant Certification of Payment form must be completed by the Contractor/ Subconsultant and all subcontractors/subconsultant or suppliers used on the project at any tier and submitted with each pay application. The Contractor/Consultant is responsible for the accuracy of all information provided and is required to have each subcontractor/subconsultant or supplier fill out the appropriate forms. Please be sure to complete all information requested at the top of the form, including the name of the person who prepared this form.

If you reproduce this form, you must continue to list each of the originally listed firms, as well as any additional firms used during the performance period of the contract. Please complete an additional CCP if there is second tiering involved.

If you have any questions, please call the Compliance Unit of DSBO at 720.913.1999.

Instructions for Completing the Contractor/Consultant Certification of Payment Form, per Column

Contractor/Subcontractor or Subconsultant/Supplier Name: In the space provided, list all subcontractors/ subconsultants and suppliers used on the project. For all M/W/S/E/DBEs use the exact name listed in the DSBO Directory.

M/W/S/E/DBE/NON: For each name listed, indicate whether the entity is a certified M/W/S/E/DBE.

Column A: Provide the contract amount, as listed at bid time, for the Contractor/Consultant and each subcontractor/subconsultant or supplier.

Column B: Provide the percentage portion of each listed subcontractor/subconsultant or supplier contract amount (Column A) compared to the total original contract amount in (I).

Column C: Provide the original contract amount (Column A) for each subcontractor/subconsultant or supplier plus any awarded alternate and/or change order amounts applicable. If an alternate/change order does not apply to the listed firm, re-enter the original contract amount (Column A).

Column D: Provide the percent portion of each listed subcontractor/subconsultant or supplier contract amount (Column C) compare to the current total contract amount in (II).

Column E: Provide the amount requested for work performed or materials supplied by each listed subcontractor/subconsultant or supplier for this pay application. The sum of the items in this column should equal the estimated amount requested for this pay application.

Column F: Provide the amount paid to each subcontractor/subconsultant or supplier on the previous pay application. Enter the previous pay application number in the column heading. The sum of the items listed in this column should equal the warrant amount paid to the Contractor/Consultant on the previous pay application. The amounts paid to the subcontractor/subcontractor or suppliers should be the actual amount of each check issued.

Column G: Provide the net paid to date for the Contractor/Subconsultant and each listed subcontractor/subconsultant or supplier.

Column H: Provide the percent portion of the net paid to date (Column G) for the Contractor/Subconsultant and each listed subcontractor/subconsultant or supplier of the current total contract amount in (II).

Rev 031816

SC-10 CONTRACT FORMS

In accordance with the terms and conditions of the Contract Documents, the City requires the use of certain form documents in complying with or satisfying various obligations, notifications and conditions in contracting with the City or performing Work hereunder. These form documents are referenced by title throughout the Contract Documents for mandatory use as directed. The following are the forms that shall be detached and utilized in accordance with the Contract Documents:

1. Performance and Payment Bond
2. Performance and Payment Bond Surety Authorization Letter (Sample)
3. Final/Partial Lien Release.

The following are forms that will be issued by the City during construction:

1. Notice to Apparent Low Bidder (Sample)
2. Notice to Proceed (Sample)
3. Certificate of Contract Release (Sample)

SC-11 CONSTRUCTION INSPECTION BY THE CITY

General Condition 1701, CONSTRUCTION INSPECTION BY THE CITY, is modified as follows:

.1 Persons who are employees of the City or who are under contract to the City or the City as lessee will be assigned to inspect and test the Work. These persons may perform any tests and observe the Work to determine whether or not designs, materials used, manufacturing and construction processes and methods applied, and equipment installed satisfy the requirements of the drawings and specifications, accepted Shop Drawings, Product Data and Samples, and the General Contractor's warranties and guarantees. The General Contractor shall permit these inspectors unlimited access to the Work and provide means of safe access to the Work, which cost shall be included as a Cost of the Work without any increase to the Guaranteed Maximum Price. In addition, General Contractor shall provide whatever access and means of access are needed to off-site facilities used to store or manufacture materials and equipment to be incorporated into the Work and shall respond to any other reasonable request to further the inspector's ability to observe or complete any tests. Such inspections shall not relieve the General Contractor of any of its quality control responsibilities or any other obligations under the Contract. All inspections and all tests conducted by the City are for the convenience and benefit of the City. These inspections and tests do not constitute acceptance of the materials or Work tested or inspected, and the City may reject or accept any Work or materials at any time prior to the inspections pursuant to G.C. 2002, whether or not previous inspections or tests were conducted by the inspector or a City representative.

.2 Building Inspection will perform building code compliance inspections for structures designed for human occupancy. It is the General Contractor's responsibility to schedule and obtain these inspections. If a code compliance inspection results in identification of a condition which will be at variance to the Contract Documents, the General Contractor shall immediately notify the Project Manager and confirm such notification with formal correspondence no later than forty-eight (48) hours after the occurrence.

.3 When any unit of government or political subdivision, utility or Railroad Corporation is to pay a portion of the cost of the Work, its respective representatives shall have the right to inspect the Work. This inspection shall not make any unit of government or political subdivision, utility or Railroad Corporation a party to the Contract, and shall not interfere with the rights of either party.

SC-12 DISPOSAL OF NON-HAZARDOUS WASTE AT DADS

In accordance with the Landfill Agreement made between the City and Waste Management of Colorado, Inc., bidders will be required to haul dedicated loads (non-hazardous entire loads of waste) to the Denver-Arapahoe Disposal Site ("DADS") for disposal. DADS is located at Highway 30 and Hampden Avenue in Arapahoe County, Colorado. The City will pay all fees associated with such disposal but the bidder shall be responsible for the costs of transporting the loads. Non-hazardous waste is defined as those substances and materials not defined or classified as hazardous by the Colorado Hazardous Waste Commission pursuant to C.R.S. §25-15-101(6), as amended from time to time, and includes construction debris, soil and asbestos. Bidders shall not use Gun Club Road between I-70 and Mississippi Avenue as a means of access to DADS.

SC-13 PROHIBITION ON USE OF CCA-TREATED WOOD PRODUCTS

The use of any wood products pressure-treated with chromated copper arsenate (CCA) is prohibited. Examples of CCA-treated wood products include wood used in play structures, decks, picnic tables, landscaping timbers, fencing, patios, walkways and boardwalks.

SC-14 WAIVER OF: PART 8 OF ARTICLE 20 OF TITLE 13, COLORADO REVISED STATUTES.

The Contractor specifically waives all the provisions of Part 8 of Article 20 of Title 13, Colorado Revised Statutes regarding defects in the Work under this Construction Contract.

SC-15 ATTORNEY'S FEES

Colorado Revised Statute 38-26-107 requires that in the event any person or company files a verified statement of amounts due and unpaid in connection with a claim for labor and materials supplied on this project, the City shall withhold from payments to the Contractor sufficient funds to insure the payment of any such claims. Should the City and County of Denver be made a party to any lawsuit to enforce such unpaid claims or any lawsuit arising out of or relating to such withheld funds, the Contractor agrees to pay to the City its costs and a reasonable attorney's fee which cost shall be included as a Cost of the Work.

Because the City Attorney Staff does not bill the City for legal services on an hourly basis, the Contractor agrees a reasonable fee shall be computed at the rate of one hundred dollars per hour of City Attorney time.

SC-16 INSURANCE

General Condition 1601 is hereby deleted in its entirety and replaced with the following:

(1) **General Conditions:** Contractor agrees to secure, at or before the time of execution of this Agreement, the following insurance covering all operations, goods or services provided pursuant to this Agreement. Contractor shall keep the required insurance coverage in force at all times during the term of the Agreement, or any extension thereof, during any warranty period, and for eight (8) years after termination of the Agreement. The required insurance shall be underwritten by an insurer licensed or authorized to do business in Colorado and rated by A.M. Best Company as "A-"VIII or better. Each policy shall contain a valid provision or endorsement requiring notification to the City in the event any of the required policies be canceled or non-renewed before the expiration date thereof. Such written notice shall be sent to the parties identified in the Notices section of this Agreement. Such notice shall reference the City contract number listed on the signature page of this Agreement. Said notice shall be sent thirty (30) days prior to such cancellation or non-renewal unless due to non-payment of premiums for which notice shall be sent ten (10) days prior. If such written notice is unavailable from the insurer, contractor shall provide written notice of cancellation, non-renewal and any reduction in coverage to the parties identified in the Notices section by certified mail, return receipt requested within three (3) business days of such notice by its insurer(s) and referencing the City's contract number. If any policy is in excess of a deductible or self-insured retention, the City must be notified by the Contractor. Contractor shall be responsible for the payment of any deductible or self-insured retention. The insurance coverages specified in this Agreement are the minimum requirements, and these requirements do not lessen or limit the liability of the Contractor. The Contractor shall maintain, at its own expense, any additional kinds or amounts of insurance that it may deem necessary to cover its obligations and liabilities under this Agreement.

(2) **Proof of Insurance:** Contractor shall provide a copy of this Agreement to its insurance agent or broker. Contractor may not commence services or work relating to the Agreement prior to placement of coverage. Contractor certifies that the certificate of insurance attached as part of the Contract Documents, preferably an ACORD certificate, complies with all insurance requirements of this Agreement. The City requests that the City's contract number be referenced on the Certificate. The City's acceptance of a certificate of insurance or other proof of insurance that does not comply with all insurance requirements set forth in this Agreement shall not act as a waiver of Contractor's breach of this Agreement or of any of the City's rights or remedies under this Agreement. The City's Risk Management Office may require additional proof of insurance, including but not limited to policies and endorsements.

(3) **Additional Insureds:** For Commercial General Liability and Auto Liability, Contractor and subcontractor's insurer(s) shall name the City and County of Denver, its elected and appointed officials, employees and volunteers as additional insured.

(4) **Waiver of Subrogation:** For all coverages, Contractor's insurer shall waive subrogation rights against the City.

(5) **Subcontractors and Subconsultants:** All subcontractors and subconsultants (including independent contractors, suppliers or other entities providing goods or services required by this Agreement) shall be subject to all of the requirements herein and shall procure and maintain the same coverages required of the Contractor. Contractor shall include all such subcontractors as additional insured under its policies (with the exception of

Workers' Compensation) or shall ensure that all such subcontractors and subconsultants maintain the required coverages. Contractor agrees to provide proof of insurance for all such subcontractors and subconsultants upon request by the City.

(6) **Workers' Compensation/Employer's Liability Insurance:** Contractor shall maintain the coverage as required by statute for each work location and shall maintain Employer's Liability insurance with limits of \$100,000 per occurrence for each bodily injury claim, \$100,000 per occurrence for each bodily injury caused by disease claim, and \$500,000 aggregate for all bodily injuries caused by disease claims. Contractor expressly represents to the City, as a material representation upon which the City is relying in entering into this Agreement, that none of the Contractor's officers or employees who may be eligible under any statute or law to reject Workers' Compensation Insurance shall effect such rejection during any part of the term of this Agreement, and that any such rejections previously effected, have been revoked as of the date Contractor executes this Agreement.

(7) **Commercial General Liability:** Contractor shall maintain a Commercial General Liability insurance policy with limits of \$1,000,000 for each occurrence, \$1,000,000 for each personal and advertising injury claim, \$2,000,000 products and completed operations aggregate, and \$2,000,000 policy aggregate.

(8) **Business Automobile Liability:** Contractor shall maintain Business Automobile Liability with limits of \$1,000,000 combined single limit applicable to all owned, hired and non-owned vehicles used in performing services under this Agreement

(9) **Additional Provisions:**

- (a) For Commercial General Liability, the policies must provide the following:
 - (i) That this Agreement is an Insured Contract under the policy;
 - (ii) Defense costs in excess of policy limits;
 - (iii) A severability of interests or separation of insureds provision (no insured vs. insured exclusion); and
 - (iv) A provision that coverage is primary and non-contributory with other coverage or self-insurance maintained by the City.
- (b) For claims-made coverage:
 - (i) The retroactive date must be on or before the contract date or the first date when any goods or services were provided to the City, whichever is earlier
- (c) Contractor shall advise the City in the event any general aggregate or other aggregate limits are reduced below the required per occurrence limits. At their own expense, and where such general aggregate or other aggregate limits have been reduced below the required per occurrence limit, the Contractor will procure such per occurrence limits and furnish a new certificate of insurance showing such coverage is in force.

SC-17 GREENPRINT DENVER REQUIREMENTS

In accordance with the City and County of Denver Executive Order 123: Greenprint Denver Office and Sustainability Policy, as amended, Contractor shall adhere to sections of Executive Order 123 pertinent to the construction of the built environment. This includes but is not limited to: all construction and renovation of buildings shall follow instructions and memorandum for high performance buildings; horizontal projects shall include the use of fly ash concrete and recycled aggregate where possible; and, all projects shall recycle construction and demolition waste, and install materials that contain recycled content whenever possible using the U.S. Green Building Council Leadership in Energy and Environmental Design (LEED) as guidance. Non-hazardous solid waste that is eligible for reuse or recycling is not subject to the DADS disposal requirement defined in SC-12.

A completed "Greenprint Denver Closeout Form for Construction Projects" shall be delivered to the Project Manager as a submittal requirement of Final Acceptance.

<http://www.denvergov.org/constructioncontracts/Home/ContractorResources/tabid/443154/Default.aspx>

**CITY AND COUNTY OF DENVER
DEPARTMENT OF PUBLIC WORKS**

PERFORMANCE AND PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned Goodland Construction, Inc., 760 Nile Street,
Golden, CO 80401
a corporation organized and existing under and by virtue of the laws of the State of Colorado
hereafter referred to as the "Contractor", and Hartford Fire Insurance Company
a corporation organized and existing under and by virtue of the laws of the State of Connecticut
and authorized to transact business in the State of Colorado, as Surety, are held and firmly bound unto the CITY AND
COUNTY OF DENVER, a municipal corporation of the State of Colorado, hereinafter referred to as the "City", in the
penal sum of Five Hundred Twenty One Thousand Six Hundred Twenty Nine and 86/100
Dollars (\$ 521,629.86),
lawful money of the United States of America, for the payment of which sum, well and truly to be made, we bind ourselves
and our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents;

THE CONDITION OF THE FOREGOING OBLIGATION IS SUCH THAT:

WHEREAS, the above bounden Contractor has entered into a written contract with the aforesaid City for furnishing all labor and tools, supplies, equipment, superintendence, materials and everything necessary for and required to do, perform and complete the construction of **CONTRACT NO. 201950021 GENESEE PARK BASE CAMP**, Denver, Colorado, and has bound itself to complete the project within the time or times specified or pay liquidated damages, all as designated, defined and described in the said Contract and Conditions thereof, and in accordance with the Plans and Technical Specifications therefore, a copy of said Contract being made a part hereof;

NOW, THEREFORE, if the said Contractor shall and will, in all particulars well and truly and faithfully observe, perform and abide by each and every Covenant, Condition and part of said Contract, and the Conditions, Technical Specifications, Plans, and other Contract Documents thereto attached, or by reference made a part thereof and any alterations in and additions thereto, according to the true intent and meaning in such case, then this obligation shall be and become null and void; otherwise, it shall remain in full force and effect;

PROVIDED FURTHER, that if the said Contractor shall satisfy all claims and demands incurred by the Contractor in the performance of said Contract, and shall fully indemnify and save harmless the City from all damages, claims, demands, expense and charge of every kind (including claims of patent infringement) arising from any act, omission, or neglect of said Contractor, its agents, or employees with relation to said work; and shall fully reimburse and repay to the City all costs, damages, and expenses which it may incur in making good any default based upon the failure of the Contractor to fulfill its obligation to furnish maintenance, repairs or replacements for the full guarantee period provided in the Contract Documents, then this obligation shall be null and void; otherwise it shall remain in full force and effect;

PROVIDED FURTHER, that if said Contractor shall at all times promptly make payments of all amounts lawfully due to all persons supplying or furnishing it or its subcontractors with labor and materials, rental machinery, tools or equipment used or performed in the prosecution of work provided for in the above Contract and that if the Contractor will indemnify and save harmless the City for the extent of any and all payments in connection with the carrying out of such Contract, then this obligation shall be null and void; otherwise it shall remain in full force and effect;

PROVIDED FURTHER, that if the said Contractor fails to duly pay for any labor, materials, team hire, sustenance, provisions, provender, gasoline, lubricating oils, fuel oils, grease, coal, or any other supplies or materials used or consumed by said Contractor or its subcontractors in performance of the work contracted to be done, or fails to pay any person who supplies rental machinery, tools or equipment, all amounts due as the result of the use of such machinery, tools or equipment in the prosecution of the work, the Surety will pay the same in any amount not exceeding the amount of this obligation, together with interest as provided by law;

PROVIDED FURTHER, that the said Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract, or to contracts with others in connection with this project, or the work to be performed thereunder, or the Technical Specifications and Plans accompanying the same, shall in any way affect its obligation on this bond and it does hereby waive notice of any change, extension of time, alteration or addition to the terms of the Contract, or contracts, or to the work, or to the Technical Specifications and Plans.

IN WITNESS WHEREOF, said Contractor and said Surety have executed these presents as of this _____ day of _____, 20__.

Attest:

By: _____
Secretary



Goodland Construction, Inc.
Contractor

President

Flatford Fire Insurance Company
Surety

By: _____
Attorney-In-Fact
Nicole L. McCollam

(Accompany this bond with Attorney-in-Fact's authority from the Surety to execute bond, certified to include the date of the bond).

APPROVED AS TO FORM:
Attorney for the City and County of
Denver

By: _____

Assistant City Attorney

APPROVED FOR THE CITY AND COUNTY OF
DENVER

By: _____

MAYOR

By: _____

EXECUTIVE DIRECTOR OF PUBLIC WORKS

u



POWER OF ATTORNEY

Direct Inquiries/Claims to:

THE HARTFORD
 BOND, T-12
 One Hartford Plaza
 Hartford, Connecticut 06155
Bond.Claims@thehartford.com

call: 888-266-3488 or fax: 860-757-5835

KNOW ALL PERSONS BY THESE PRESENTS THAT:

Agency Name: IMA INC
 Agency Code: 34-340140

- Hartford Fire Insurance Company**, a corporation duly organized under the laws of the State of Connecticut
- Hartford Casualty Insurance Company**, a corporation duly organized under the laws of the State of Indiana
- Hartford Accident and Indemnity Company**, a corporation duly organized under the laws of the State of Connecticut
- Hartford Underwriters Insurance Company**, a corporation duly organized under the laws of the State of Connecticut
- Twin City Fire Insurance Company**, a corporation duly organized under the laws of the State of Indiana
- Hartford Insurance Company of Illinois**, a corporation duly organized under the laws of the State of Illinois
- Hartford Insurance Company of the Midwest**, a corporation duly organized under the laws of the State of Indiana
- Hartford Insurance Company of the Southeast**, a corporation duly organized under the laws of the State of Florida

having their home office in Hartford, Connecticut, (hereinafter collectively referred to as the "Companies") do hereby make, constitute and appoint, up to the amount of Unlimited :

Jennifer L. Clampert, Robert L. Cohen, Sarah Finn, Michael Lischer Jr., Nicole L. McCollam, Kristen L. McCormick, Robert J. Reiter, Jessica Jean Rini, Sheryll Shaw, Brandi J. Tetley of DENVER, Colorado

their true and lawful Attorney(s)-in-Fact, each in their separate capacity if more than one is named above, to sign its name as surety(ies) only as delineated above by , and to execute, seal and acknowledge any and all bonds, undertakings, contracts and other written instruments in the nature thereof, on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

In Witness Whereof, and as authorized by a Resolution of the Board of Directors of the Companies on May 6, 2015 the Companies have caused these presents to be signed by its Senior Vice President and its corporate seals to be hereto affixed, duly attested by its Assistant Secretary. Further, pursuant to Resolution of the Board of Directors of the Companies, the Companies hereby unambiguously affirm that they are and will be bound by any mechanically applied signatures applied to this Power of Attorney.



John Gray

John Gray, Assistant Secretary

M. Ross Fisher

M. Ross Fisher, Senior Vice President

STATE OF CONNECTICUT }
 COUNTY OF HARTFORD } ss. Hartford

On this 5th day of January, 2018, before me personally came M. Ross Fisher, to me known, who being by me duly sworn, did depose and say: that he resides in the County of Hartford, State of Connecticut; that he is the Senior Vice President of the Companies, the corporations described in and which executed the above instrument; that he knows the seals of the said corporations; that the seals affixed to the said instrument are such corporate seals; that they were so affixed by authority of the Boards of Directors of said corporations and that he signed his name thereto by like authority.



CERTIFICATE

Kathleen T. Maynard

Kathleen T. Maynard
 Notary Public
 My Commission Expires July 31, 2021

I, the undersigned, Assistant Vice President of the Companies, DO HEREBY CERTIFY that the above and foregoing is a true and correct copy of the Power of Attorney executed by said Companies, which is still in full force effective as of Signed and sealed at the City of Hartford.



Kevin Heckman

Kevin Heckman, Assistant Vice President



PROTECTING ASSETS.
MAKING A DIFFERENCE.

PERFORMANCE AND PAYMENT BOND
SURETY AUTHORIZATION

FAX NUMBER: 720-913-3183
TELEPHONE NUMBER 720-913-3267

Assistant City Attorney
201 West Colfax Avenue, Dept 1207
Denver, Colorado 80202

Re: Goodland Construction, Inc.

Contract No. 201950021
Project Name: Genesee Park Base Camp
Contact Amount: Five Hundred Twenty-One Thousand Six Hundred Twenty-Nine
and 86/100 Dollars (\$521,629.86)
Performance and Payment Bond No.: 34BCSHV9959

Dear Assistant City Attorney,

The Performance and Payment Bonds covering the above captioned project were executed by this agency, through Hartford Fire Insurance Company on June 21, 2019.

We hereby authorize the City and County of Denver, Department of Public Works, to date all bonds and powers of attorney to coincide with the date of the contract.

If you should have any additional questions or concerns, please don't hesitate to give me a call at 303-615-7419.

Thank you,

Sincerely,

A handwritten signature in blue ink that reads "Nicole L. McCollam".

Nicole L. McCollam
Surety Account Manager



NOTICE OF APPARENT LOW BIDDER
(SAMPLE)

Current Date

To: 201950021
201950021
201950021

Gentlemen:

The MANAGER OF PUBLIC WORKS has considered the Bids submitted on May 23, 2019 for work to be done and materials to be furnished in and for:

PROJECT No. 201950021 GENESEE PARK BASE CAMP

as set forth in detail in the Contract Documents for the City and County of Denver, Colorado. It appears that your Bid is fair, equitable, and to the best interest of the City and County; therefore, said Bid is hereby accepted at the bid price contained herein, subject to execution of the Contract Documents and your furnishing the items specified below, the total cost thereof (Contract Amount Written), (Contract Amount Numeric).

It will be necessary for you to appear forthwith at the office of the Department of Public Works, Finance and Administration, 201 W. Colfax Ave. Dept 614, Denver, Colorado 80202, to receive the said Contract Documents, execute the same and return them to the Department of Public Works, Finance and Administration, within the time limit set forth in the Bid Proposal.

In accordance with the requirements set forth in the Contract Documents, you are required to furnish the following documents:

- a. Insurance Certificates: General Liability and Automotive Liability, Workman's Compensation and Employer Liability; or any other coverage required by the contract; and
- b. One original plus four copies of the Power of Attorney relative to Performance and/or Payment Bond;

All construction Contracts made and entered into by the City and County of Denver are subject to Affirmative Action and Equal Opportunity Rules and Regulations, as adopted by the Manager of Public Works, and each contract requiring payment by the City of one-half million dollars (\$500,000.00) or more shall first be approved by the City Council acting by ordinance and in accordance with Section 3.2.6 of the Charter of the City and County of Denver.

Prior to issuance of Notice to Proceed, all Equal Opportunity requirements must be completed. Additional information may be obtained by contacting the Director of Contract Compliance at (720-913-1700).

**NOTICE OF APPARENT LOW BIDDER
(SAMPLE)**

PROJECT NO. 201950021
Page 2

The Bid Security submitted with your Bid, will be returned upon execution of the Contract and furnishing of the Performance Bond. In the event you should fail to execute the Contract and to furnish the performance Bond within the time limit specified, said Bid Security will be retained by the City and County of Denver as liquidated damages, and not as a penalty for the delay and extra work caused thereby.

Dated at Denver, Colorado this _____ day of _____, 20____.

CITY AND COUNTY OF DENVER

By _____
Manager of Public Works

Denver Public Works/Office of the Executive Director
201 West Colfax Avenue, Dept 608 | Denver, CO 80202
www.denvergov.org/dpw
p. 720.865.8630 | f. 720.865.8795

311 | POCKETGOV.COM | DENVERGOV.ORG | DENVER 8 TV



Current Date

**NOTICE TO PROCEED
(SAMPLE)**

Name
Company
Street
City/State/Zip

CONTRACT NO. 201950021, GENESEE PARK BASE CAMP

In accordance with General Contract Condition 302 of the Standard Specifications for Construction, General Contract Conditions, 2011 Edition, you are hereby authorized and directed to proceed on _____ with the work of constructing contract number 201950021, as set forth in detail in the contract documents for the City and County of Denver.

With a contract time of _____ calendar days, the project must be complete on or before _____.

If you have not already done so, you must submit your construction schedule, in accordance with General Contract Condition 306.2.B, to the Project Manager within 10 days. Additionally, you must submit your tax exempt certificate, and copies of your subcontractors' certificates, in accordance with General Contract Condition 323.5, to the Project Manager as soon as possible. Failure to submit these certificates will delay processing of payment applications.

Sincerely,

Lesley B. Thomas
City Engineer

cc:

Denver Public Works/Office of the Executive Director
201 West Colfax Avenue, Dept 608 | Denver, CO 80202
www.denvergov.org/dpw
p. 720.865.8630 | f. 720.865.8795

311 | POCKETGOV.COM | DENVERGOV.ORG | DENVER 8 TV



Certificate of Contract Release
(SAMPLE)

Date

Name
Company
Street
City/State/Zip

RE: Certificate of Contract Release for
201950021, GENESEE PARK BASE CAMP

Received this date of the City and County of Denver, as full and final payment of the cost of the improvements provided for in the foregoing contract, _____ dollars and _____ cents (\$ _____), in cash, being the remainder of the full amount accruing to the undersigned by virtue of said contract; said cash also covering and including full payment for the cost of all extra work and material furnished by the undersigned in the construction of said improvements, and all incidentals thereto, and the undersigned hereby releases said City and County of Denver from any and all claims or demands whatsoever, regardless of how denominated, growing out of said contract.

And these presents are to certify that all persons performing work upon or furnishing materials for said improvements under the foregoing contract have been paid in full and this payment to be made is the last or final payment.

Contractor's Signature

Date Signed

If there are any questions, please contact me by telephone at (720) 913-XXXX. Please return this document via facsimile at (720) 913-1805 and mail to original to the above address.

Denver Public Works/Office of the Executive Director
201 West Colfax Avenue, Dept 608 | Denver, CO 80202
www.denvergov.org/dpw
p. 720.865.8630 | f. 720.865.8795

311 | POCKETGOV.COM | DENVERGOV.ORG | DENVER 8 TV

CITY AND COUNTY OF DENVER

STATE OF COLORADO



DENVER
THE MILE HIGH CITY

DEPARTMENT OF PUBLIC WORKS

Addenda

Contract Number: 201950021



Genesee Park Base Camp

April 29, 2019

**CITY AND COUNTY OF DENVER
DEPARTMENT OF PUBLIC WORKS**

**CONTRACT NO.: 201950021
PROJECT NAME: Genesee Park Base Camp**

ADDENDUM NO. 1 TO CONTRACT DOCUMENTS

Bidders are hereby instructed that the drawings, specifications, and other contract documents are modified, corrected, supplemented and/or superseded for the above-mentioned project as hereinafter described in the following attachments:

Site Visit Opportunity:

There will be an additional opportunity to visit the project site on Friday, May 17th, 2019 at 3:00 p.m., local time. Please meet at the gate to the project area 10 minutes prior to this time. To reach the site from Denver, head west on I-70 to the Chief Hosa Exit (253), turn right onto Moss Rock Road, followed by an immediate right onto Stapleton Road, which you will follow until you reach the gate. (You will pass the Beaver Brook Trailhead)

Questions and Answers:

1. Sheet L5.01 – Detail 7 says Brownstone Boulders will be harvested within project limits or furnished by Owner. Will the boulders be the size required or will the Contractor have to cut them to size?

A: The “Harvest within Project Limits or Furnished by Owner from Stockpile” note on Sheet L5.01 Detail 7 is an error. Contractor to provide brownstone boulders for stacked walls and seating, stairs and stepping stones.

2. A general question on all harvested boulders, if we cannot find the required amount will the balance be furnished by the City of Denver?

A: Denver to provide sufficient quantity of round large boulders for landscape boulders, 36in boulder wall and 18in double stacked boulder wall to supplement for lack of boulders found onsite.

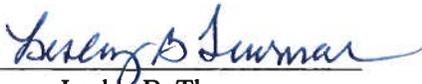
3. Sheet L5.01 – Detail 5 and per the specifications says log bench are to be constructed and supplied by Owner. Therefore, the Contractor only installs them, correct?

A: Denver to construct log benches and timber supports and deliver to site. Contractor to install benches as shown in plans.

4. Sheet C2.03 – Boulder Wall and Boulder Basin Details, does not say harvest on site and they are not mentioned in the specifications. Are we to purchase this material and what type of material is it?

A: Boulders for 36in to be found on site or will be supplied by Denver to supplement for lack of boulders found onsite. Boulders for 18in double stacked boulder basin to be found on site or will be supplied by Denver to supplement for lack of boulders found onsite. Denver will provide variety of sizes and contractor to select for appropriate size and placement to supplement material not harvested onsite.

This **ADDENDUM** shall be attached to, become a part of, and be returned with the Bid Proposal.



Lesley B. Thomas
City Engineer
5/14/19

Date

The undersigned bidder acknowledges receipt of this Addendum. The Proposal submitted herewith is in accordance with the stipulations set forth herein.

Contractor

ADDENDUM NO. 1

Date

CITY AND COUNTY OF DENVER

STATE OF COLORADO



DENVER
THE MILE HIGH CITY

DEPARTMENT OF PUBLIC WORKS

Prevailing Wage Rates

Contract Number: 201950021



Genesee Park Base Camp

April 29, 2019



TO: All Users of the City and County of Denver Prevailing Wage Schedules
FROM: Ryland Feno, Classification & Compensation Technician II
DATE: April 15, 2019
SUBJECT: Latest Change to Prevailing Wage Schedules

The effective date for this publication will be **Friday, April 12, 2019** and applies to the City and County of Denver for **HEAVY CONSTRUCTION PROJECTS** in accordance with the Denver Revised Municipal Code, Section 20-76(c).

General Wage Decision No. CO190002
Superseded General Decision No. CO20180012
Modification No. 3
Publication Date: 04/12/2019
(6 pages)

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

Attachments as listed above.

Office of Human Resources
201 W. Colfax Ave. Dept. 412 | Denver, CO 80202
p: 720.913.5751 | f: 720.913.5720
www.denvergov.org/humanresources

General Decision Number: CO190002 04/12/2019 CO2

Superseded General Decision Number: CO20180012

State: Colorado

Construction Type: Heavy

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

HEAVY CONSTRUCTION PROJECTS

Note: Under Executive Order (EO) 13658, an hourly minimum wage of \$10.60 for calendar year 2019 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least \$10.60 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2019. If this contract is covered by the EO and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must pay workers in that classification at least the wage rate determined through the conformance process set forth in 29 CFR 5.5(a)(1)(ii) (or the EO minimum wage rate, if it is higher than the conformed wage rate). The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/04/2019
1	02/01/2019
2	02/22/2019
3	04/12/2019

ASBE0028-001 07/01/2018

Rates

Fringes

Asbestos Workers/Insulator
(Includes application of
all insulating materials,
protective coverings,
coatings and finishings to
all types of mechanical

systems).....\$ 31.73 14.23

BRCO0007-004 01/01/2019

ADAMS, ARAPAHOE, BOULDER, BROOMFIELD, DENVER, DOUGLAS,
JEFFERSON AND WELD COUNTIES

	Rates	Fringes
BRICKLAYER.....	\$ 29.52	10.48

BRCO0007-006 05/01/2018

EL PASO AND PUEBLO COUNTIES

	Rates	Fringes
BRICKLAYER.....	\$ 25.88	10.34

ELEC0012-004 09/01/2018

PUEBLO COUNTY

	Rates	Fringes
ELECTRICIAN		
Electrical contract over		
\$1,000,000.....	\$ 27.70	12.30+3%
Electrical contract under		
\$1,000,000.....	\$ 24.85	12.30+3%

ELEC0068-001 06/01/2018

ADAMS, ARAPAHOE, BOULDER, BROOMFIELD, DENVER, DOUGLAS,
JEFFERSON, LARIMER, AND WELD COUNTIES

	Rates	Fringes
ELECTRICIAN.....	\$ 35.80	15.45

* ELEC0111-001 03/01/2019

	Rates	Fringes
Line Construction:		
Groundman.....	\$ 20.41	13.75%+\$6.20
Line Equipment Operator.....	\$ 28.98	13.75%+\$6.20
Lineman and Welder.....	\$ 44.92	25.25%+\$5.75

ELEC0113-002 06/01/2018

EL PASO COUNTY

	Rates	Fringes
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PLUM0058-002 07/01/2018

EL PASO COUNTY

	Rates	Fringes
Plumbers and Pipefitters.....	\$ 32.75	14.85

PLUM0058-008 07/01/2018

PUEBLO COUNTY

	Rates	Fringes
Plumbers and Pipefitters.....	\$ 32.75	14.85

PLUM0145-002 07/01/2016

MESA COUNTY

	Rates	Fringes
Plumbers and Pipefitters.....	\$ 35.17	11.70

PLUM0208-004 06/01/2016

ADAMS, ARAPAHOE, BOULDER, BROOMFIELD, DENVER, DOUGLAS,
JEFFERSON, LARIMER AND WELD COUNTIES

	Rates	Fringes
PIPEFITTER.....	\$ 37.10	16.62

SHEE0009-002 07/01/2018

	Rates	Fringes
Sheet metal worker.....	\$ 34.02	17.49

TEAM0455-002 07/01/2018

	Rates	Fringes
Truck drivers:		
Pickup.....	\$ 21.41	4.32
Tandem/Semi and Water.....	\$ 22.04	4.32

SUCO2001-006 12/20/2001

	Rates	Fringes
BOILERMAKER.....	\$ 17.60	
Carpenters:		
Form Building and Setting...	\$ 16.97	2.74
All Other Work.....	\$ 15.14	3.37

Cement Mason/Concrete Finisher...\$ 17.31	2.85
IRONWORKER, REINFORCING.....\$ 18.83	3.90
Laborers:	
Common.....\$ 11.22	2.92
Flagger.....\$ 8.91	3.80
Landscape.....\$ 12.56	3.21
Painters:	
Brush, Roller & Spray.....\$ 15.81	3.26
Power equipment operators:	
Backhoe.....\$ 16.36	2.48
Front End Loader.....\$ 17.24	3.23
Skid Loader.....\$ 15.37	4.41

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

**Office of Human Resources
Supplemental Rates
(Specific to the Denver Projects)
(Supp #74, Date: 02-03-2012)**

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

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

CITY AND COUNTY OF DENVER

STATE OF COLORADO



DENVER
THE MILE HIGH CITY

DEPARTMENT OF PUBLIC WORKS

Technical Specifications

Contract Number: 201950021



Genesee Park Base Camp

April 29, 2019



Genesee Mountain Park Outdoor Experiential Center

Project Master No:
2018-PROJMSTR-0000103

Technical Specifications

19 December 2018

Prepared by:
Logan Simpson, 213 Linden Street, Suite 300, Fort Collins, CO 80524



Olsson Associates, 1525 Raleigh Street, Suite 400, Denver, CO 80204



TECHNICAL SPECIFICATIONS

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GENESEE MOUNTAIN PARK OUTDOOR EXPERIENTIAL CENTER

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203-1597	Potholing

SECTION 01 11 00

SUMMARY OF WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. The Work specified in this contract consists of furnishing all management, supervision, labor, materials, tools, equipment, services, testing, and incidentals for the construction of the Work indicated in the Contract Documents including lump sum items and unit price items.
- B. Reference General Conditions as listed:
 - 1. Article 301 "Consideration (Contractor's Promise of Performance)".
 - 2. Article 306 "Working Hours and Schedule".
 - 3. Title 8 "Protection of Persons and Property".
 - 4. Article 804 "Protection of Municipal, Public Service, or Public Utility Systems".

1.3 SITE CONDITIONS

- A. The Contractor acknowledges satisfaction as to the nature and location of the Work, all of the general and local conditions, particularly those bearing upon availability of transportation, access to the site, disposal, handling and storage of materials, availability of labor, water, power, roads, and uncertainties of weather, or similar physical conditions at the site, the conformation and conditions of the ground, the character of equipment and facilities needed preliminary to and during work, and all other matters that can in any way affect the work or the cost thereof under this contract.
- B. The Contractor further acknowledges, by submission of a bid and on each change in work proposal, satisfaction as to the character, quality and quantity of all surface and subsurface materials and all features on top of the surface or at worksites that would be encountered from his inspection of the site and from reviewing available records of exploratory work furnished by the City. Failure by the Contractor to become acquainted with the physical conditions of the sites and all the available information will not relieve the Contractor from responsibility for properly estimating the difficulty or cost of performing the Work.
- C. The Contractor warrants that as a result of examination and investigation of all the aforesaid data and the site, that the Contractor can perform the Work in a good and workmanlike manner and to the satisfaction of the City. The City assumes no responsibility for any representations made by any of its officers or agents during or prior to the execution of this contract unless such representation is expressly stated in the contract.

1.4 DESCRIPTION OF WORK

- A. The following work items are included in these specifications: demolition; earthwork; storm drainage; gravel access roads and parking areas; concrete parking stalls, walks and other flatwork; crushed gravel trails; erosion control; topsoil and soil preparation; seeding; site furnishings;

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vault toilets; picnic shelter; food preparation table; stacked boulder walls; protection and retention of existing trees, and related work as listed in the Table of Contents of these specifications, and as shown per the Contract Drawings. The materials and installation methods specified herein are to be considered standard for all work ordered by and performed for the Department of Parks and Recreation in the construction of new facilities in the parks.

PART 2 - PRODUCTS (Not used)

PART 3 - EXECUTION

3.1 CONTRACTOR'S DUTIES

- A. Except as otherwise specified, furnish the following to the full extent required by the contract:
 - 1. Labor, superintendence, supervision and products.
 - 2. Construction equipment, tools, machinery and materials.
 - 3. Utilities required for construction and related activities.
 - 4. Other facilities and services necessary to properly execute and complete the Work, including security for worksite, testing and storage and protection of all materials awaiting incorporation into the Work, providing a safe working environment for workers, City representatives, and the public in accordance with all local, state and federal requirements.

- B. Prosecute the Work as specified and in a timely manner. Submit a schedule of Work that will be performed at times other than during the eight-hour working day of Monday through Friday, daylight hours. Submit this schedule five working days prior to the beginning of Work to the Project Manager for review and acceptance. Approval to work at night may be obtained after Contractor presents a written program outlining special precautions to be taken to control the extraordinary hazards presented by night work. That program shall include, but not limited to, supplementary lighting of work areas, availability of medical facilities, security precautions, and noise limitations.
 - 1. Noise Ordinance variances through Denver Department of Environmental Health require several weeks advance public notice and approval is not guaranteed.

3.2 COORDINATION

- A. Coordinate prosecution of the Work with those public utilities, governmental bodies, private utilities and other contractors performing work on and adjacent to the worksites. Eliminate or minimize delays in the Work and conflicts with those utilities, bodies and contractors. Schedule governmental, private utility and public utility work that relies upon survey points, lines and grades established by the Contractor to occur immediately after those points, lines and grades have been established. Confirm coordination measures for each individual case with the City in writing.

- B. In the coordination effort of work by others, the Contractor shall obtain and refer to equipment locations and other layouts, as available, to avoid interface problems.

- C. The City reserves the right to permit access to the site of the Work for the performance of work by other contractors and persons at such times that the City deems proper. The exercise of such reserved right shall in no way or to any extent relieve the Contractor from liability for loss and

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damage to the work due to or resulting from its operations or from responsibility for complete execution of the Contract. The Contractor shall cooperate with other contractors and persons in all matters requiring common effort.

3.3 CONTRACTOR USE OF WORKSITE

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

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

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

4.2 PAYMENT

- A. No separate payment will be made for work under this section including any and all necessary relocations requested by the City. The cost of the work described in this section shall be included in the Contract price.

END OF SECTION 01 11 00

SECTION 01 25 00

SUBSTITUTIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes submittal requirements for the approval of a different material, equipment, or process than is described in the Contract Documents.
 - 1. If the substitution changes the scope of work, contract cost or contract time, a Change Order is required.
 - 2. Contract Record Drawings and specifications must include all approved substitutions even if a Change Order is not issued.
- B. Reference General Conditions Article 406 “Substitution of Materials and Equipment”.

1.3 QUALITY CONTROL

- A. The substitution must provide the same quality as what it is replacing. The level of quality is defined by:
 - 1. Maintenance and operating cost.
 - 2. Reliability.
 - 3. Durability.
 - 4. Life expectancy.
 - 5. Ease of cleaning.
 - 6. Ability to be upgraded as needed.
 - 7. Ease of interacting with other systems or components.
 - 8. Ability to be repaired.
 - 9. Availability of replacement parts.
 - 10. Established history of use in similar environments.
 - 11. Performance equal or superior to that which it is replacing.

1.4 SUBMITTAL

- A. Refer to Division 01 Sections “Submittals” and “Shop and Working Contract Drawings, Product Data, and Samples” for submittal procedures.
- B. A complete Request for Substitution using the form included in Division 01 Section “Standard Forms” must be made at least sixty (60) days prior to when an order needs to be placed or a method needs to be changed.
- C. The submittal shall contain, as appropriate, detailed product data sheets for the specified items and the substitution. Samples and shop Contract Drawings shall also be submitted of the substitution as applicable. The submittal shall contain all the data required to be submitted for acceptance of the originally specified item or process.

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1.5 INFORMATION

- A. Provide the following information as applicable with the Request for Substitution on the item or process that is being requested to be substituted:
1. A complete description of the item or process.
 2. Utility connections including electrical, plumbing, HVAC, fire protection and controls.
 3. The physical dimensions and clearances.
 4. A parts list with prices.
 5. Samples of color and texture.
 6. Detailed cost comparisons of the substitution and the contract specified item or process.
 7. Manufacturer warranties.
 8. Energy consumption over a one-year period.
 9. What local organization is certified to maintain the item.
 10. Performance characteristics and production rates.
 11. A list of any license fees or royalties that must be paid.
 12. A list of all variations for the item or method specified.
 13. A list of at least three other projects of similar nature to this contract where the products or methods have been in use for at least one year including telephone number and name of the person to contact at these other projects.
 14. An analysis of the effect of the substitution on the schedule and contract cost and on the overall project as it relates to adjoining work.

1.6 SUBSTITUTION REQUEST

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

1.7 CONDITIONS

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

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required item or process are described in this request along with all cost and scheduling data.”

- C. The statement shall be signed and dated by the Contractor’s Superintendent.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

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

4.2 PAYMENT

- A. No separate payment will be made for work under this Section. The cost of the work described in this Section shall be included in the Contract price.

END OF SECTION 01 25 00

SECTION 01 29 00

MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes Pay Item descriptions for measurement and payment of Work completed.

1.3 DESCRIPTION

A. General:

1. NOTE: The Pay Item descriptions listed herein are hypothetical and will vary with each project. Do not prepare pay estimates based on these descriptions.
2. All measurements and payments will be based on work completed in strict accordance with the Drawings and specifications for the project.
3. The method of measurement and basis of payment described are for the work itemized in the Bid Form and in the sections of the specifications. Items may include work within a single section or in more than one section.
4. See the General Conditions for additional information pertaining to measurement and payment. This section is intended to supplement the General and Special Conditions.

B. Measurement:

1. Unless otherwise specified, all longitudinal measurements will be made horizontally, and computations will be based on the dimensions shown on drawings and details. No measurement will be made by weight tickets.
2. Quantities will be rounded off to the nearest whole number.
3. The Contractor shall, in the presence of the Project Manager, verify all measurements and quantities required for payment by the unit price method.
4. Contractor shall provide necessary equipment, workers, and survey personnel as required for measurements.

C. Units:

1. Measurement by Volumes: Measurement by cubic dimension using mean length, width and height or thickness. Longitudinal measurements will be made horizontally.
2. Measurements by Area: Measured by square dimensions using mean length and width or radius, measured horizontally.
3. Linear Measurement: Measured by linear dimension at the item centerline or mean chord.
4. Measured by Lump Sum or Per Each: Item inclusion as specified by the bid item description.

D. Payment:

1. Unit bid prices, as quoted in the Bid Schedule, shall constitute full compensation for labor, materials, equipment, rentals, overhead, profit and incidentals to complete all work for each pay item and for all risk, loss, damage, or expense of whatever nature arising from the nature of the work or prosecution thereof.

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2. Work or materials that are essential to the work, but for which there are no pay items, will not be measured and paid for separately, but shall be included in other items of work.
3. Payment for work listed as lump sum bid items completed under this contract shall be paid for on a lump sum fixed price basis.
4. Final payment for work governed by unit prices will be made on the basis of the measurements and quantities accepted by the Project Manager multiplied by the unit price for work which is incorporated in or made necessary by the Work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

PART 4 - MEASUREMENT AND PAYMENT

Refer to each specification section for Measurement and Payment information relative to the contents of that section.

END OF SECTION 01 29 00

SECTION 01 29 73**SCHEDULE OF VALUES**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes requirements for preparing and submitting the Schedule of Values as referenced in the General Conditions. The Schedule of Values will be built upon a breakdown of the Work using specification sections and milestones. The Work also includes the preparing and submitting of updated copies of the Schedule of Values if the Schedule of Values is affected by change orders.
 - 1. A Schedule of Stored Material is a detailed cost breakdown for permanent materials that will be temporarily stored prior to their being installed and for which the Contractor seeks partial payments. The Schedule of Stored Material will be incorporated as a part of the Schedule of Values.
 - 2. Within fourteen (14) calendar days of issuance of the Notice to Proceed, the Contractor shall submit the Schedule of Values including the Schedule of Stored Material if applicable. The Schedule of Values and Schedule of Stored Material used to prepare the work/cost breakdown for the Schedule of Values will be used for the Contractor's billings.
 - 3. Any contract allowances shall be included in the Schedule of Values. Expenditure of allowances shall be done through the use of the Allowance Authorization form. Use of this form does not increase or decrease the contract value.
- B. Reference the General Contract Conditions as listed:
 - 1. Article 902 "Payment Procedure".
 - 2. Article 903 "Schedule of Values in Lump Sum Contracts".
 - 3. Article 906 "Applications for Payment".
- C. Related Sections:
 - 1. Division 01 Section "Submittals".
 - 2. Division 01 Section "Shop and Working Drawings, Product Data, and Samples".
 - 3. Division 01 Section "Standard Forms".

1.3 DEFINITIONS

- A. Allowance: A monetary amount specified and included in the construction contract for a certain item of work whose details are not yet determined at the time of contracting.

1.4 SUBMITTAL

- A. The Schedule of Values shall be submitted in a format approved by the Project Manager.
- B. The Schedule of Values shall identify each item of work. Work items in the Schedule of Values shall represent all work and shall be referenced with the Technical Specifications section

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numbers, specification subparagraph, specification section title and the bid item number used for the Schedule of Prices and Quantities when applicable. The Schedule of Values shall address the subcontractor, fabricator or supplier furnishing the materials and or labor for each work item.

- C. Upon request by the City, the Contractor shall support values given with the data which will substantiate the correctness of the values.
- D. The Schedule of Values will be utilized only as a basis for review of the Contractor's application for progress payment on Unit Price Bids. The Schedule of Values will be utilized on a Lump Sum Bid to determine change order costs.

1.5 REVIEW AND RESUBMITTAL

- A. If review by the City indicates that changes to the Schedule of Values are required, the Contractor shall revise and resubmit the Schedule of Values.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PREPARING SCHEDULE OF VALUES

- A. Breakdown of the items used in the Schedule of Values shall include costs as follows:
 1. Delivered cost of product with applicable taxes paid.
 2. Total installation cost with overhead and profit.
 3. Breakdown costs of each lump sum item with a list of products and major operations for which the Contractor seeks to receive progress payments to recover his costs for that bid Item.
 4. Each unit price item as listed in the bid Schedule of Prices and Quantities shall list products and major operations for which the Contractor seeks to receive progress payments for that bid item.

3.2 PREPARING SCHEDULE OF VALUES OF STORED MATERIAL

- A. The Contractor shall submit with the Schedule of Values an indication of whether products will be stored on or off the worksite. The Schedule of Stored Material shall show quantities and types of products that will be stored.
- B. Material allowances consist of only the net cost of the product, the cost of delivery and unloading at the storage site, the cost of applicable sales taxes and all discounts.
- C. In no case will the cost paid for a permanent material be greater than ninety percent (90%) of the contract price for the work in which they are included.

3.3 PAYMENT FOR STORED MATERIALS

- A. Only materials that are described in the specifications and the drawings will be considered permanent materials. Permanent materials are materials that will be left in the work after the contract is completed.

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- B. Nothing in these specifications shall be interpreted as requiring the City to pay for stored materials. The Project Manager shall decide on a case-by-case basis whether stored materials shall be paid for. No payment will be made for stored materials which have not been submitted and accepted.
- C. The Contractor must, at all times, store permanent materials in accordance with manufacturer's recommendations. Any material not properly stored will not be paid for. Amounts will be deducted from payments for any stored permanent material previously paid for and subsequently found to be improperly stored or not present, based upon a physical inventory of stored permanent material.
- D. Only the neat line quantity of material needed for the finished product may be paid for.
- E. All requests for stored permanent material payment must be accompanied by paid invoices clearly showing the quantity of permanent material, the type of permanent material and discounts or rebates and the net amount paid to the supplier along with a certificate stating that the permanent material is free of any liens or judgments preventing its use by the City.
- F. All permanent material stored off site, for which payment is being requested must be insured and stored in bonded, insured warehouses.
- G. Any permanent material on which payment is requested must be in such a form that it cannot be used on work other than this contract, or stored in a manner acceptable to the Project Manager to ensure that the permanent material cannot be used on work other than this contract.

3.4 ALLOWANCE AUTHORIZATION AND PAYMENT

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

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

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

4.2 PAYMENT

- A. No separate payment will be made for work under this Section. The cost of the work described in this Section shall be included in the Contract price.

END OF SECTION 01 29 73

SECTION 01 31 13**COORDINATION**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes requirements for project and construction coordination, supervision, and administration for the Work, including but not necessarily limited to:
 - 1. Coordination.
 - 2. Administrative and supervisory personnel.
 - 3. General installation provisions.
 - 4. Cleaning and protection.
 - 5. Utilities and site work.
- B. Reference General Conditions as listed:
 - 1. Title 3 "Contractor Performance and Services".
 - 2. Article 301 "Consideration (Contractor's Promise of Performance)".
 - 3. Article 308 "Communications".
- C. Related Sections:
 - 1. Division 01 Section "Layout of Work and Surveys".
 - 2. Division 01 Section "Administration, Procedures, Codes".
 - 3. Division 01 Section "Project Meetings".

1.3 GENERAL COORDINATION

- A. General:
 - 1. The Contractor shall ensure that each entity involved in the performance of the Work shall cooperate in the overall coordination of the Work; promptly, when requested by the Contractor, furnish information concerning the entity's portion of the Work; and respond promptly and reasonably to the decisions and requests of persons designated with coordination, supervisory, administrative, or similar authority.
 - 2. The Contractor shall, where necessary, prepare memoranda for distribution to each party involved outlining special procedures required for coordination. Include such items as required notices, reports, and attendance at meetings.
 - 3. Prepare similar memoranda for the Owner and separate Contractors where coordination of their work is required.
- B. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction work. Such administrative activities include, but are not limited to, the following:
 - 1. Preparation of schedules
 - 2. Installation and removal of temporary facilities
 - 3. Delivery and processing of submittals
 - 4. Progress meetings

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5. Project close-out activities

- C. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water and materials. Salvage materials and equipment involved in performance of, but not actually incorporated in, the Work. Refer to other sections for disposition of salvaged materials that are designated as the City's property.
- D. Site Utilization: In addition to the site utilization limitations and requirements shown on the Contract Drawings and indicated by the Contract Documents, administer the allocation of available space equitably among entities needing access and space, so as to produce the best overall efficiency in the performance of the Work. Schedule deliveries so as to minimize the space and time requirements for storage of materials and equipment on the site; but do not unduly risk delays in the Work.
- E. Coordination Meetings: Include in scheduled meetings, coordination of various entities and activities as set forth in Division 01 Section "Project Meetings". Where necessary, schedule additional coordination meetings for this purpose on an as-needed basis.
- F. Layout: It is recognized that the Contract Documents are diagrammatic in showing certain physical relationships of the various elements and systems and their interfacing with other elements and systems. Establishment and coordination of these relationships is the exclusive responsibility of the Contractor. Do not scale the Contract Drawings. Layout and arrange all elements to contribute to safety, efficiency and to carry the harmony of design throughout the Work. In case of conflict or un-dimensioned locations, verify required positioning with the Project Manager. The Contractor shall provide surveying for the layout of all improvements including both horizontal and vertical control, in accordance with the requirements of Division 01 Section "Layout of Work and Surveying".
- G. Substrate Examination: The Contractor shall ensure that the subcontractor of each element of the Work examines the conditions of the substrate to receive the work, dimensions and spaces adjacent, tolerances, interfacing with other elements and services, and the conditions under which the Work will be performed. The Contractor shall require each subcontractor to notify the Contractor in writing of conditions detrimental to the proper or timely completion of the Work, and ensure that they do not proceed with the Work until unsatisfactory conditions have been corrected in a manner acceptable to the subcontractor.

1.4 COMPLETE SYSTEMS

- A. It is the intent of the Contract Documents that the system be complete and functional to provide the intended or specified performance. The Contractor shall provide all incidental items and parts necessary to achieve this requirement.

1.5 COMPATIBILITY

- A. Provide products and equipment which are compatible with other work requiring mechanical interface including connections, control devices, water, drain and other piping connections. Verify requirements and other interface requirements before ordering equipment and resolve conflicts that may arise.

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PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 GENERAL INSTALLATION PROCEDURES

- A. Require the subcontractor of each major component to inspect both the substrate and conditions under which work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.
- B. Inspect materials or equipment immediately upon delivery and again prior to installation. Reject damaged and defective items. Re-check measurements and dimensions before starting each installation.
- C. Manufacturer's Instructions: Comply with manufacturer's installation instructions and recommendations, to the extent that those instructions and recommendations are more explicit or stringent than requirements contained in Contract Documents.
- D. Installation:
 - 1. Provide attachment and connection devices and methods necessary for securing work. Secure work true to line and level. Allow for expansion and building movement.
 - 2. Install each component during weather conditions and the Work status that will ensure the best possible results. Isolate each part of the completed construction from incompatible materials as necessary to prevent deterioration.
 - 3. Coordinate work with required inspections and tests, to minimize the necessity of uncovering completed construction for that purpose.
- E. Visual Effects: Provide uniform joint widths in exposed work. Arrange joints in exposed work to obtain the best visual effect. Refer questionable choices to the Project Manager for final decision.
- F. Mounting Heights: Where mounting heights are not indicated, install individual components at standard mounting heights recognized within the industry for the particular application indicated. Refer questionable mounting height decisions to the Project Manager for final decision.

3.2 CLEANING AND PROTECTION

- A. During handling and installation, clean and protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure protection from damage or deterioration prior to achieving substantial completion.
- B. Clean and maintain completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

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PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

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

4.2 PAYMENT

- A. No separate payment will be made for work under this Section. The cost of the work described in this Section shall be included in the Contract price.

END OF SECTION 01 31 13

SECTION 01 31 19

PROJECT MEETINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes requirements for the Contractor, including his field superintendent and quality control representative, to attend meetings scheduled by the City for the collection and dissemination of information related to the subject contract.
 - 1. The Contractor will prepare the minutes of each meeting and distribute them to each of the participants.

1.3 OTHER MEETINGS

- A. The Contractor will be advised of times, dates, and places of contract meetings.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PRECONSTRUCTION MEETING

- A. A Preconstruction Meeting will be scheduled by the City after the Contract has been signed by all parties. The purpose of this meeting is to introduce the City's Representatives to their counterparts in the Contractor's organization and to establish lines of communication between the representatives and outline some of the contract requirements. The Contractor's superintendent, and quality control representative(s) shall attend this meeting.
 - 1. The Project Manager will distribute a notice of this meeting, along with an agenda of the subjects to be addressed.
 - 2. The Project Manager will explain and discuss the responsibilities and authorities of the City, the Designer, and the Project Manager's organization.
 - 3. The Project Manager will provide highlights of the following information at this meeting:
 - a. Minority Business Enterprise (MBE) and Women Business Enterprise (WBE) requirements.
 - b. Insurance, laws, codes, traffic regulations, and permit requirements of public agencies and their regulations.
 - c. Procedures for processing change orders.
 - d. Procedures for submitting shop and working drawings, product data and samples.
 - e. Monthly pay estimate cutoff dates.
 - f. Payment procedures.
 - g. Request for information procedures.
 - h. Communication procedures.
 - i. Contractor-required Daily Reports.

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- j. Scheduling and coordination requirements.
 - k. Quality Control/Quality Assurance procedures.
 - l. Environmental requirements and permits.
 - m. Milestones for Substantial Completion and Final Acceptance.
 - n. Record documents.
 - o. Project closeout requirements.
- B. The Contractor will introduce the Contractor's representatives and briefly describe each person's responsibilities. The Contractor shall provide the following:
- 1. A list of all subcontractors.
 - 2. Office, storage areas, and construction area layouts, along with temporary easements.
 - 3. Safety, first aid, emergency and security procedures, including the name and contact information for the Contractor's insurance company.
 - 4. 60-day preliminary schedule.
 - 5. Sequence of Work.
 - 6. Construction methods, general worksite layout, and haul plan.
 - 7. Housekeeping procedures.
 - 8. The Contractor's general erosion and sedimentation control plans, noise, hazardous material, air and water pollution control plans, and Quality Control Plan.
 - 9. Coordination and notification requirements for utility work.
 - 10. Deliveries and priorities of major equipment.
 - 11. Submittal schedule.
- C. Explanations provided by the City will not amend, supersede, or alter the terms or meaning of any contract document, and the Contractor shall not claim reliance on such explanations as a defense to any breach or failure by the Contractor to perform as specified in the contract.

3.2 CONSTRUCTION PROGRESS MEETINGS

- A. Progress meetings will be scheduled weekly or more often as necessary by the Project Manager to promote the competent and timely execution of the contract.
- B. The meetings will be held at the worksite or at a location selected by the Project Manager. Meetings will be chaired by the Contractor.
- C. The Contractor's personnel, as listed in Paragraph 3.1.A, above, shall attend unless otherwise agreed by the Project Manager.
- D. The Contractor's Project Manager will be responsible for publishing minutes of the meetings.
- E. At a minimum, the following items will be addressed at each meeting. The items addressed in the meeting do not waive notification or submittal requirements as required elsewhere in the contract.
- 1. Safety: Contractor shall report any safety issues.
 - 2. Quality Control:
 - a. The Contractor's Quality Control Representative shall present and discuss the Independent Testing Agency weekly test report and/or testing schedule.
 - b. The Contractor's Quality Control representative shall report on inspections by other agencies and any follow-up activity required.
 - c. The Project Manager shall present and discuss issues regarding quality control.

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3. Quality Assurance: The Project Manager shall present and discuss issues regarding quality assurance.
4. Design Activities: Open discussion.
5. Shop Drawings / Submittals / Material Procurement:
 - a. The Contractor shall provide and review the submittal schedule and provide any updated information and/or changes to the schedule.
 - b. The Contractor shall provide information on the status of submittals requiring re-submittal.
 - c. The Contractor shall review any accepted submittals that the Contractor plans to re-submit with changes.
 - d. Contractor shall provide the status of material procurement for long-lead items (long-lead items are materials and equipment that have a fabrication and/or delivery duration that exceeds 15 working days).
 - 1) This information shall be provided by the Contractor in a format satisfactory to the Project Manager and shall include, at a minimum:
 - a) Submittal/shop drawing preparation duration.
 - b) Review duration.
 - c) Fabrication duration.
 - d) Delivery duration.
 - 2) All long-lead items shall be identified with a separate activity on the approved Critical Path Method (CPM) project schedule.
6. Construction Activities: Open discussion to include coordination items with other Contractors and / or agencies.
7. Schedule:
 - a. The Contractor shall provide to the Project Manager the Contractor's three (3) week look-ahead schedule and review at the meeting the items on the schedule. The schedule shall be in bar chart format based on the approved CPM, and shall include dates of testing activities, items in progress, percentage of completion of items, responsible subcontractor for the items.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

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

4.2 PAYMENT

- A. No separate payment will be made for work under this Section. The cost of the work described in this Section shall be included in the Contract price.

END OF SECTION 01 31 19

SECTION 01 32 13**SCHEDULE**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the requirements for the preparation of a preliminary schedule, construction schedule, related narratives, and monthly progress reports, all-encompassing complete performance of contract requirements.
- B. The Contractor shall schedule and coordinate the work with their subcontractors and suppliers including use of the worksite. The Contractor shall keep the subcontractors and suppliers informed of the project construction schedule to enable the subcontractors and suppliers to plan and perform their work properly.
- C. The Contractor shall, in accordance with the requirements of the technical specifications, submit a construction schedule that shall provide for the expeditious and practicable execution of the Work.
- D. The construction schedule for the performance of the Work shall be a Critical Path Method (CPM) system in bar chart format, unless an alternate system is specifically identified in the technical specifications.
- E. Float or slack is defined as the amount of time between the early start date and the late start date or the early finish date and the late finish date of any activities in the schedule. Float or slack is not time for the exclusive use or benefit of either the Contractor or the City.
- F. At a minimum, the Contractor shall submit a monthly progress report and schedule update in accordance with the scheduling provisions or as directed by the Project Manager.
- G. The Contractor shall complete the Work within the contract time and in accordance with the most recent schedule submittal that has been approved in writing by the Project Manager.
- H. Reference the General Conditions as listed:
 - 1. Article 306 "Working Hours and Schedule".
 - 2. Article 603 "Delay Damages".
 - 3. Article 909 "Additional Withholding of Progress Payments".
 - 4. Article 1103 "Contractor Change Request".
 - 5. Article 1202 "Submittal of Claims".

1.3 PLANNING

- A. The schedule shall show total contract time, including project milestones, as indicated in the Special Conditions or elsewhere in the contract documents.

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- B. The Contractor shall prepare a work plan to complete the work within the contract time and complete those portions of work relating to each milestone date and other contract requirements.
 - 1. The Contractor shall generate a computerized Critical Path Method (CPM) schedule in the Precedence Diagram Method (PDM) format for the Work.
 - 2. The Schedule shall be submitted electronically to the Project Manager in PDF format.
 - 3. The schedule activities shall be resource loaded showing labor man hours by crafts, major construction equipment by type and value of the work.
 - 4. The value of the work shall summarize each pay item shown in the Schedule of Values and balance to their amount.
- C. In addition to the construction activities, the schedule shall include activities for furnishing materials and equipment and vendor shop drawing preparation.
 - 1. The construction schedule, a supporting narrative, and the overall progress curve shall be submitted for approval within thirty (30) days after Notice to Proceed.
 - 2. Within thirty (30) days the City will respond with approval or direction to revise and resubmit within ten days.
 - 3. Failure of the Contractor to have a construction schedule approved by the City will be considered cause for withholding progress payment(s).
- D. To the extent that the construction schedule or any revisions thereof contains anything not jointly agreed upon in writing, or fails to show anything jointly agreed upon in writing, it shall not be considered to have the approval of the City.
 - 1. Failure to include any work item required for performance of this contract shall not excuse the Contractor from completing all work within applicable completion dates, regardless of the City's approval of the schedule.
- E. Failure of the Contractor to comply with this Section will be considered cause for withholding progress payment(s) or termination for default.

1.4 SUBMITTALS

- A. Refer to Division 01 Section "Submittals" for submittal procedures. Submit the following in digital format:
 - 1. Preliminary schedule (with narrative).
 - 2. Construction schedule data and work plan (with narrative).
 - 3. Monthly progress report.
 - 4. Construction schedule change request (as needed).
 - 5. Record construction schedule.

PART 2 - PRODUCTS

2.1 PLOT AND REPORT FORMAT

- A. All sheet sizes shall be either 24 x 36-inches or 36 x 48-inches. They shall contain a title block with a minimum eighteen (18) point font showing:
 - 1. Contractor's name.
 - 2. Contract number and title.
 - 3. Plot date.
 - 4. Data date.
 - 5. Symbol definitions.

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6. List of all approved changes to the original approved schedule.
- B. Plots shall contain a time line at the top.

PART 3 - EXECUTION

3.1 PRELIMINARY SCHEDULE

- A. The Contractor shall prepare a preliminary schedule covering the first ninety (90) calendar days of the contract. This preliminary schedule shall be submitted at the Preconstruction Meeting and shall be accompanied by a narrative description of the work plan. Within fourteen (14) days, the City will respond with acceptance or direction to revise and resubmit within ten days.
- B. The preliminary schedule shall show all significant work tasks that occur in the first ninety (90) days, including planning, mobilization, shop submittals and approvals, procurement, fabrication and construction. It shall identify work items or milestones that affect or are affected by the City, other Contractor's work, utilities and other third parties, and it shall list major data submittals required by the contract.
- C. The preliminary schedule shall be accompanied by a narrative describing the Contractor's approach to mobilization, procurement and construction during the first 90 days. The narrative shall elaborate on duration, production rates, major equipment to be used, and shall identify all major assumptions used to develop the schedule.

3.2 CONSTRUCTION SCHEDULE

- A. The construction schedule shall include:
 1. Work items identified in a Work Breakdown Structure (WBS) format that corresponds with the technical specifications.
 2. The order, sequence and interdependence of all significant work items including construction, procurement, fabrication, testing, startup and inspection and delivery of critical or special materials and equipment, submittals and approvals of critical samples, shop drawings, procedures, or other documents that could have a schedule impact.
 3. Work items by the City, other Contractors, utilities and other third parties that may affect or be affected by Contractor's activities.
 4. Proper referencing of all work items to identify applicable subcontractors or other performing parties.
 5. Work items shall be resource loaded to show the direct man-hours estimated to perform the work including work by subcontractors.
 6. Include estimated quantities and production rates, hours per shift, work days per week, and types, number and capacities of major construction equipment to be used and whether the Contractor plans to work weekends or holidays.
- B. The construction schedule shall be prepared to include the data for the total contract duration, and the critical path shall be identified, including critical paths for interim completion dates. Scheduled start or completion dates imposed on the schedule by the Contractor shall be consistent with contract milestone dates. Milestone events shall be the schedule dates specified in the Special Conditions and shall be prominently identified and connected to the appropriate work item, denoting its start or completion. Work items related to any interim milestones shall be coded for that milestone.

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- C. The Contractor shall submit the following documents to the City upon completion of preparation of the construction schedule:
 - 1. A time phased plot of the CPM schedule in PDM format showing all logic ties and an electronic copy in dynamic format.
 - 2. Construction schedule reports that contain the following data for each work item: Identification, description, responsibility, duration, early start and early finish, late start and late finish, total float, and resources. The work items shall be sorted by float, early start, subcontractor or other sorts mutually agreed to. The reports shall also show the logic ties of successor and predecessor work items.
 - 3. A physical progress curve showing either manpower or other appropriate key contract items derived from the construction schedule and against which physical progress performance will be measured for schedule and payment purposes.

3.3 PROGRESS REPORTING

- A. The Contractor shall submit a monthly progress report at the end of each month following the Notice to Proceed. At the end of each month, the Contractor and the Project Manager shall agree on the progress of the work and the Contractor shall update the construction schedule accordingly. The updated construction schedule is a prerequisite to the submittal of the Contractor's application for progress payment. The schedule shall be made in accordance with Article 3.2, above. This review does not constitute an approval of the construction schedule and shall not be used for the purposes of modifying the initially approved construction schedule.
- B. The Contractor shall submit the monthly progress report consisting of a written narrative and various construction schedule reports. This report will be reviewed in a meeting between the Contractor and the Project Manager.
 - 1. The narrative report shall describe overall progress of the work, provide a critical path analysis, discuss significant problems with proposed corrective action, and show the status of major changes and any other changes in sequence of the Work.
 - 2. The construction schedule reports shall include tabular reports showing the status of resources for completed and in progress work items and for work items scheduled to start in the next thirty (30) days. The report shall include all the information outlined in paragraph 3.2.C.2, above.
 - 3. A bar chart format schedule shall be provided showing the Contractor's completion status (progress) on each work item along with plots described in paragraph 3.2.C.1, above.
 - 4. The physical progress curve shall be updated to show actual progress.
- C. The latest completion time for any work item does not fall within the time allowed by the construction schedule, the sequence of work and/or duration shall be revised by the Contractor through concurrent operations, additional manpower, additional shifts or overtime, additional equipment or alternative construction methods until the schedule produced indicates that all significant contract completion dates, occupancy dates and milestones will be met. No additional costs will be allowed if such expediting measures are necessary to meet the agreed completion date or dates except as provided elsewhere in the contract documents.

3.4 SCHEDULE CHANGES

- A. The Contractor's request for construction schedule changes shall be made on the latest approved construction schedule and shall be accompanied by a narrative description and justification for the change, and shall be submitted in accordance with the General Conditions Article 1105

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“Time Extensions” on changes in time. Minor revisions submitted at monthly progress review meetings are not considered as changes in this context.

- B. The construction schedule may be changed when one or more of the following occur:
 - 1. When a change order significantly affects the contract completion date or sequence of work items.
 - 2. When the Contractor elects to change the sequence or duration of work items affecting the critical path.
 - 3. When the City directs a change that affects a milestone date(s) specified in the Special Conditions or alters the length of a critical path.

- C. If, after submitting a request for change to the construction schedule, the Project Manager does not agree with the request, the Project Manager will schedule a meeting with the Contractor to discuss the differences. If a settlement cannot be reached on the change in the construction schedule or if the Contractor has failed to submit revisions to the network, the Project Manager has the option of providing suggested logic and/or duration times in all subsequent updating reports. The suggested logic and/or duration times will remain in effect until the change in the construction schedule is settled or until the logic and duration are superseded.
 - 1. If the Contractor has any objections to the data furnished by the Project Manager, he shall advise the Project Manager within ten (10) days in writing, fully supporting the objections with a counter plan. The revisions suggested by the Project Manager shall be used for updating reports until the Project Manager approves the counter plan.
 - 2. If the Contractor does not submit a counter plan and data within ten days after the date of the Project Manager’s suggested logic, the Contractor is deemed to concur with the Project Manager’s suggested logic/duration time changes. The Project Manager’s plan will be the basis of negotiations for any adjustment of the time and cost for performance of the Work.

3.5 CONTRACT EXTENSIONS

- A. If the Contractor is granted an extension of time for completion of any milestone or contract completion date under the provisions of the contract, the determination of the total number of extended days will be based upon the current analysis of the schedule and upon all data relevant to the extension. Such data shall be incorporated in the next monthly update of the schedule.

- B. The Contractor acknowledges and agrees that delays in work items which, according to schedule analysis do not affect any milestone dates or contract completion date shown on the CPM network at the time of the delay will not be the basis for a contract extension.

- C. Weather Delays: Impacts to the project schedule related to abnormal weather conditions will be based on General Contract Conditions Section 1105.3.

3.6 RECORD CONSTRUCTION SCHEDULE

- A. After all contract work items are complete, the Contractor shall submit an Record Construction Schedule showing actual start and finish dates for all work items and milestones.

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PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

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

4.2 PAYMENT

- A. No separate payment will be made for work under this Section. The cost of the work described in this Section shall be included in the Contract price.

END OF SECTION 01 32 13

SECTION 01 32 19

SUBMITTALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section summarizes the requirements for the submittal of documents to the City that are defined in these Specifications. It also describes the procedures for “supplemental” submittals.
- B. Reference the General Conditions as listed:
 - 1. Article 309 “Contractor Submittals and other Written Communications to the City”.
 - 2. Article 405 “Shop Drawings, Product Data, and Samples”.

PART 2 - PRODUCTS

2.1 SUBMITTAL SCHEDULE

- A. The Contractor shall provide a submittal schedule within fourteen (14) days after Notice to Proceed. The Submittal Schedule shall be directly related to the Critical Path Method (CPM) schedule, shall identify all the submittals, and shall include the following information for each submittal item:
 - 1. Specification section, contract article, or special condition.
 - 2. Specification Subparagraph.
 - 3. Item description.
 - 4. Date the submittal shall be submitted.
 - 5. Name of subcontractor or supplier.
- B. The submittal schedule shall be updated every two weeks by the Contractor and submitted with the progress payment request.

2.2 SUBMITTAL REQUIREMENTS

- A. Each submittal document shall include a title block showing the following information:
 - 1. Date of submittal and revision dates.
 - 2. Contract title and number.
 - 3. The names of Contractor, subcontractor, supplier, manufacturer and when applicable, the seal and signature of an engineer registered in the State of Colorado, for the involved discipline.
 - 4. Identification of product by either: description, model number, style number or lot number.
 - 5. Subject identification by contract drawing or specification reference.

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- B. On each submitted drawing, include a blank space on each sheet, three inches by four inches, in the lower right corner, just above the title block, in which the Project Manager may indicate the action taken.
- C. Make submissions sufficiently in advance so that the Project Manager review may be completed before any material procurement or Work represented by those submittals is scheduled to be performed.
- D. Allow a minimum cycle of ten (10) working days for review of each submittal by the City.
- E. The Contractor shall at the time of submission describe variations from the contract documents in writing, separate from the submittal document. If the Project Manager approves any such variations, an appropriate contract change order shall be issued except that, if the variation is minor and does not involve a change in price or in time of performance, a modification need not be issued. If a submission contains variations and the variation column is not marked on the transmittal form, it will not be considered for review and acceptance. Along with marking the transmittal as a variation, a description must be included which outlines all the differences including maintenance and utility services along with any cost savings from an item not containing the variation.
- F. Changes in accepted submittal documents will not be permitted unless those changes have been accepted, in writing, by the City.

2.3 SUBMITTALS

- A. All submittals shall be delivered to the Project Manager.
- B. Electronic submittals shall be submitted on a single USB Drive, email, or approved project website. Acceptable formats include:
 - 1. Adobe Acrobat. All files shall be fully compatible with Adobe Acrobat File shall have no security and bookmark every applicable submittal.
 - 2. Microsoft Office.
 - 3. AutoDesk AutoCAD 2010 or newer.
 - a. AutoCAD files shall be packaged to include related x-ref files, plot files and pen settings.
 - 4. Other files pre-approved by the Project Manager.
- C. Electronic file names: Each electronic document shall have a unique file name. File name convention shall be as follows unless otherwise agreed to by Project Manager: AAA-BBBBBB-CCC-RZ:
 - 1. AAA = sequential submittal number starting at 001.
 - 2.BBBBBB = specification section containing submittal requirements.
 - 3. CCC = sequential specification submittal number starting at 001.
 - 4. RZ = sequential revision number. RZ not required on initial submittals.
 - 5. Example A: 005-012973-002”, five submittals have been logged overall with two submittals made to Division 01 Section “Schedule of Values”.
 - 6. Example B: 009-012973-002-R3, nine submittals made overall and three revisions to submittal 012973-002.

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2.4 SUPPLEMENTAL SUBMITTALS

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

PART 3 - EXECUTION

3.1 CONTRACTOR REVIEW

- A. The Contractor shall review submittal documents, stamp and sign as reviewed and approved as complying with contract documents prior to submission to the City.

3.2 CITY REVIEW

- A. Submittal documents will be reviewed by the Project Manager for conformance to requirements of the contract drawings and specifications. Review of a separate item will not constitute review of an assembly in which the item functions. The Project Manager will withhold approval of submittals that depend on other submittals not yet submitted. Review and acceptance will not relieve the Contractor from his responsibility for accuracy of submittals, for conformity of submittal document to requirements of contract drawings and specifications, for compatibility of described product with contiguous products and the rest of the system, or for protection and completion of the contract in accordance with the contract drawings and specifications.
- B. The Project Manager will review the submittal documents for general conformance with the contract documents and mark the Action Code, sign and date the transmittal.
- C. The Action Codes have the following meanings:
 - 1. APPROVED: no corrections or resubmissions required; fabrication may proceed.
 - 2. APPROVED AS NOTED: If Contractor complies with noted corrections, fabrication may proceed, and resubmission is not required. If for any reason the Contractor cannot comply with the noted corrections, fabrication shall not proceed, and Contractor shall resubmit for additional review and comment.
 - 3. REVISE AND RESUBMIT: means that the submittal is unacceptable and must be revised and resubmitted. Fabrication shall not proceed.
 - 4. REJECTED: Submittal is not in compliance with the Contract Documents, and is not acceptable. Resubmit Contract compliant material.

3.3 CONTRACTOR RESPONSIBILITIES

- A. Coordinate each submittal document with the requirements of the Work. Ensure each submittal for a specific trade is compatible with other submittals of that trade and submittals of related trades (including producing drawings, as needed, to show the relationship of work between trades).
- B. Contractor's responsibility for errors and omissions in submittal documents and associated calculations is not relieved by the City's review, correction and acceptance of submittals.

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- C. Contractor's liability to the City, in case of variations in the submittal document from the requirements of the contract documents, is not relieved by the City's review and acceptance of submittals containing variations unless the City expressly approves the deviation in writing, in which the City describes the variation.
- D. The Contractor shall maintain a file of all approved submittal documents at the worksite. The complete file of approved submittal documents shall be turned over to the City with the Record Documents at the end of the job.
- E. Schedule impact due to resubmittal requirements is the responsibility of the Contractor.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

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

4.2 PAYMENT

- A. No separate payment will be made for work under this Section. The cost of the work described in this Section shall be included in the Contract price.

END OF SECTION 01 32 19

SECTION 01 33 23 SHOP AND WORKING DRAWINGS, PRODUCT DATA, AND SAMPLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes requirements for preparing and submitting shop and working drawings, product data, samples, and record documents required by other specifications sections.
 - 1. The Contractor shall submit all shop and working drawings, product data and samples, as defined in the General Conditions, to the Project Manager in accordance with the requirements in the specifications. The Project Manager will return one copy of the shop and working drawings, and product data to the Contractor with a written transmittal within the time periods noted in the specifications.
- B. Reference the General Conditions as listed:
 - 1. Article 111 "Final Completion".
 - 2. Article 117 "Shop Drawings".
 - 3. Article 405 "Shop Drawings, Product Data, and Samples".
 - 4. Division 01 Section "Submittals".

1.3 CHANGES

- A. Changes in products for which shop or working drawings, product data or samples have been submitted will not be permitted unless those changes have been accepted and approved in writing by the City.

PART 2 - PRODUCTS

2.1 SHOP AND WORKING DRAWINGS

- A. Include the following as they apply to the subject:
 - 1. Contract title, work order and number.
 - 2. Respective contract drawing numbers.
 - 3. Applicable specification section numbers.
 - 4. Relation to adjacent structure or materials.
 - 5. Field dimensions clearly identified as such.
 - 6. Applicable standards such as ASTM or Federal Specification number, and pertinent authority specifications or standards.
 - 7. Identification of deviations from the Contract drawings and specifications.
 - 8. Drawing name, number, and revision.
 - 9. Contractor's stamp, initialed or signed, certifying:
 - a. Verification of field measurements.
 - b. Review of submittals for compliance with contract requirements.
 - c. Compatibility of the Work shown thereon with that of affected trades.

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10. Blank space on each sheet per Division 01 Section "Submittals", paragraph 2.2.B.

- B. Drawings of equipment and other items that contain multiple parts shall include exploded views showing the relationship of parts and the description of the parts into the smallest units that may be purchased or serviced.

2.2 PRODUCT DATA

- A. Modify manufacturer's standard and/or schematic drawings to delete information which is not applicable to the contract. Supplement standard information with additional information applicable to this contract.
- B. Modify manufacturer's standard(s), diagrams, schedules, performance charts, illustrations, calculations and other descriptive data to delete information which is not applicable to the contract. Indicate dimensions, clearances, performance characteristics and capacities. Include with the submittal electrical, plumbing, HVAC and any other diagrams, as applicable.
- C. Modify erection, application and placing instructions to delete information that is not applicable to the contract or work order.
- D. Include the following:
1. Contract title, work order and number.
 2. Respective contract drawing numbers.
 3. Applicable contract technical specification section numbers.
 4. Applicable standards such as ASTM or Federal Specification number, and pertinent authority specification or standards.
 5. Identification of deviations from the Contract drawings and specifications.
 6. Contractor's stamp, initialed or signed, certifying:
 - a. Dimensional compatibility of the product with the space in which it is intended to be used.
 - b. Review of submittals for compliance with contract requirements.
 - c. Compatibility of the product with other products with which it is to perform, or which will be next to it.
 - d. The products electrical, plumbing, control and HVAC requirements conform to contract documents and the necessary utilities are provided for in the contract documents.
- E. Certificates of compliance shall be submitted for all products. The certificates shall:
1. State that the product complies with the respective specification and contract drawing requirements.
 2. Be accompanied by a certified copy of test results pertaining to the product
 3. Show the submittals date, Contractor's name and address, contract title and number, product represented and its location in the contract, producer's name, product trade name and catalog number, place of product origin, test date, testing organization's name and address, quantity of the product to be furnished and related contract drawing and specification section numbers.
 4. Be signed by an officer or another authorized representative of the producer and notarized.
 5. Submit one digital copy.
 6. Be received by the City not later than thirty (30) days before the acceptance is needed of the products for ordering.

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2.3 SAMPLES

- A. Submit samples of sizes and quantities to clearly illustrate full color range and functional characteristics of products and materials including attachment devices.
- B. Erect field samples and mock ups at the worksite as specified in the several technical specifications sections and at locations acceptable to the Project Manager. All field samples shall be erected in a location that will be readily visible throughout the life of the contract to allow comparison of the work as it progresses to the field sample.
- C. The Contractor shall verify, through appropriate inspections and tests, that the samples submitted meet the specifications and shall provide inspection and test data with the samples. The review and comments on the sample shall not relieve the Contractor of his responsibility for completion of the contract.
- D. Show the following information:
 - 1. Contract title and number.
 - 2. Respective contract drawing numbers.
 - 3. Applicable technical specification section numbers.
 - 4. Applicable standards such as ASTM or Federal Specification number.
 - 5. Identification of deviations from the Contract drawings and specifications.
 - 6. Contractor's stamp, initialed or signed, certifying:
 - a. Dimensional compatibility of the product with the space in which it is intended to be used.
 - b. Review of submittals for compliance with contract requirements.
 - c. Compatibility of the product with other products with which it is to perform, or which will be next to it.
 - 7. If multiple samples are submitted and the Project Manager is requested to make a choice, each sample shall have a unique identification number attached to it, so the returned transmittal can state the identification number of the accepted sample and the Contractor will know which one it is.

PART 3 - EXECUTION

3.1 CONTRACTOR RESPONSIBILITIES

- A. Verify field measurements, catalog numbers and similar data.
- B. The Contractor shall not start work for which submittals are required until a transmittal has been received by the Contractor showing acceptance or acceptance as noted by the Project Manager.
- C. Before making submittals ensure that products will be available in the quantities and at the times required by the contract.
- D. Submit final, corrected, digital drawings of contract and shop and working drawings showing the Work as actually installed, placed, erected and applied. Refer to Division 01 Section "Contract Closeout".

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3.2 REVIEW BY THE CITY

- A. One digital copy of the marked-up shop and working drawing and one digital copy of the product data will be returned to the Contractor by the Project Manager. Only the transmittal form, appropriately marked, and two samples will be returned on sample submittals. Contractor shall maintain one approved sample on site for the duration of the project.
- B. Contractor's responsibility for errors and omissions in submittals for compatibility will not be reduced, waived or otherwise limited by the review and acceptance of submittals by the City.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

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

4.2 PAYMENT

- A. No separate payment will be made for work under this Section. The cost of the work described in this Section shall be included in the Contract price.

END OF SECTION 01 33 23

SECTION 01 35 23**CONSTRUCTION SAFETY**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes requirements for construction safety precautions and programs by the Contractor and the basis for reviews by the Project Manager.
- B. Reference the General Conditions as listed:
 - 1. Article 801 "Safety of Persons".
 - 2. Article 802 "Protective Devices and Safety Precautions".
 - 3. Article 803 "Protection of Property and Work in Progress".

1.3 RESPONSIBILITY

- A. The General Conditions make it clear that all safety precautions during the construction process are the responsibility of the Contractor. The Contractor is responsible for the health and safety of his employees, agents, subcontractors and their employees, and other persons on the worksite; for the protection and preservation of the work and all materials and equipment to be incorporated therein; and for the worksite and the area surrounding the worksite. The Contractor shall take all necessary and reasonable precautions and actions to protect all such persons and property.
- B. This Section shall be interpreted in its broadest sense for the protection of persons and property by the Contractor and no action or omission by the Project Manager or his authorized representatives shall relieve the Contractor of any of its obligations and duties hereunder.

1.4 SUBMITTAL

- A. Refer to Division 01 Sections "Submittals" and "Shop and Working Drawings, Product Data, and Samples" for the process. A safety plan shall be submitted by the General Contractor prior to commencing any work. As part of the safety plan, the General Contractor shall submit a site-specific Lockout Tagout (LO/TO) plan for review prior to commencing any phase of work requiring de-energization, as defined by OSHA.
- B. Safety Plan: The Contractor shall provide two (2) copies of its safety plan to the Project Manager for review at least ten (10) days before on-site construction begins. The Contractor's plan must meet as a minimum all applicable federal, state and local government requirements.
 - 1. The Contractor must, as part of the Contractor's safety plan, submit one electronic file in the form of a security-free, fully bookmarked Adobe Acrobat PDF file and one body hard copy of the following information for acceptance by the Project Manager prior to construction:
 - a. Name of the Contractor's site safety representative.

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- b. If the Contractor is running multiple shifts or working more than forty (40) hours per week, the name of an assistant Contractor's safety representative who can act in the absence of the site safety representative.
- c. Twenty-four (24) hours per day emergency phone numbers of Contractor site management to be used in case of injury or accident. Provide at least four contacts.
- d. The Contractor's method of ditching and trenching excavation to be used, including how slopes will be stabilized with calculations showing the slope stability.
 - 1) The Contractor shall also show how material will be stored beside the excavation.
 - 2) Stored material will include the excavated and backfilled material.
- e. How injuries or accidents will be handled including samples of the forms used to report injuries or accidents.
- f. How employees will be handled who are unable to safely perform their duties, including how the Contractor will determine whether an employee is unable to safely perform his duties.
- g. How and when equipment will be checked to see that it is safe, that all safety guards are in place and that the equipment is being used for its designed purpose and within its rated capacity.
- h. How and when all electric devices will be checked for proper grounding and insulation.
- i. In the initial safety plan, the contractor shall identify all systems (electrical, hydraulic, steam, etc.) that will require Lockout or Tagout as defined by OSHA.
- j. No later than one (1) week prior to commencement of applicable phase of work, the Contractor shall submit a finalized, site-specific Lockout Tagout Plan for review. At a minimum, the plan shall address the following:
 - 1) Type of energized system and identification of hazards
 - 2) Type of lock and/or tag to be used and any additional mechanical controls required.
 - 3) Protocol for placing and removing tags/locks, including communication plan
 - 4) Identification of all affected personnel in the work area (by name when possible) and protocol to limit number of affected personnel in work area
 - 5) List of personnel authorized to place/remove locks and tags (by name/position)
- k. How trash and human organic waste will be disposed.
- l. How snow and ice will be removed within the project area by the Contractor.
- m. How concrete forms will be anchored to ensure their stability, including calculations showing that the forms will safely hold the maximum construction loads.
- n. How flammable materials will be stored and handled, and how any spills will be cleaned up and removed for disposal.
- o. The system that will be used to prevent fires, and if fires do occur who will be trained to fight them. Also, the firefighting equipment the Contractor will have available and how this equipment's condition will be monitored.
- p. How materials will be received, unloaded, stored, moved, and disposed of.
- q. How personnel working above ground level will be protected from falling.
- r. How people working underneath work will be protected.
- s. What will be done to protect personnel in case of severe weather.
- t. How adequate lighting will be provided and monitored.

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- u. How the safety of work platforms, man lifts, material lifts, ladders, shoring, scaffolding, etc. will be ensured relating to load capacity and the protection of personnel using or working around them.
- C. Prior to the start of any work by a contractor or subcontractor employee, the Contractor shall provide the Project Manager with a list of its employees, subcontractor's employees, and other personnel the Contractor has requested to work on site, who have signified in writing that they have been briefed on, or have read and understand, the Contractor's Safety Plan.

PART 2 - PRODUCTS

2.1 NOT USED

PART 3 - EXECUTION

3.1 IMPLEMENT CONTRACTOR'S SAFETY PLAN

- A. Implement the approved Contractor's Operational Safety Plan as described in Part 1 of this section.
- B. Implement the approved Contractor's Lockout Tagout Plan as described in Part 1 of this section.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

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

4.2 PAYMENT

- A. No separate payment will be made for work under this Section. The cost of the work described in this Section shall be included in the Contract price.

END OF SECTION 01 35 23

SECTION 01 42 10

REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section identifies primary compliance with the State, and City and County of Denver's regulatory requirements including:
 - 1. Colorado Department of Transportation (CDOT).
 - 2. Denver Department of Public Works
 - a. The Division of Wastewater Services
 - b. Right of Way Services
 - c. Construction Engineering
 - d. Traffic Engineering
- B. Construction shall be based on the latest edition of the referenced codes including additions and revisions thereto that are in effect at the time of project bidding.

1.3 BUILDING CODE

- A. All construction work shall be governed by the Building Code for the City and County of Denver, latest edition. This is based upon the International Building Code of the International Code Council with Denver Amendments to this code.

1.4 DENVER BUILDING DEPARTMENT

- A. For review and approval of all construction documents for compliance with the Denver Building Code:

City and County of Denver
Community Planning and Development
Building Inspection Division
201 West Colfax Avenue, Dept 205
Denver, Colorado 80202
Telephone 720-865-2720
Fax 720-865-2880

1.5 DENVER FIRE DEPARTMENT

- A. For review and approval of plans for compliance with the Denver Fire Department's requirements as they apply to projects for the Department of Public Works:

Denver Fire Department
745 W. Colfax Ave.
Denver, Colorado 80204

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Telephone 720-865-2833

- B. The Contractor is advised that the Denver Fire Department – Fire Prevention Bureau requires permitting for the following activities as they apply to the scope of work. The Contractor is responsible for obtaining the appropriate permits necessary to complete the work. All costs associated with this permitting and policy compliance shall be the responsibility of the Contractor. The policies all reference the International Fire Code (IFC).
1. Hot Work: “Hot work” shall be defined as the operation of any equipment or tool that creates sparks, hot slag, or radiant or convective heat as a result of the work. This includes, but is not limited to, welding, cutting, brazing, or soldering.
 2. Use and storage of compressed gas for both temporary storage and permanent facility installation. This includes, but is not limited to, flammable gas (excluding propane-LPG), oxidizer (including oxygen), and inert and/or simple asphyxiates.
 3. Tank installation, which includes above-ground storage tanks (AST) and underground storage tanks (UST) for both temporary tanks and permanent facility installations.
- C. In addition to the above permits, the Denver Fire Department may require other permits that are associated with the specific work in the Contract Documents. Policies provided by the Denver Fire Department are meant to provide basic information for the most common conditions and situations. In any given occupancy, many other International Fire Code (IFC) requirements may be enforced. These should be addressed with the Denver Fire Department before construction begins and during construction with premise inspection(s). Any questions can be addressed to the Fire Prevention Bureau between 6:30 A.M. and 9:00 A.M. Monday-Friday at 720-913-8242 or 720-913-8237.

1.6 THE DENVER OFFICE OF DISABILITY (ADA) COMPLIANCE

- A. Construction shall be based on the latest edition of the referenced codes including additions and revisions thereto that are in effect at the time of project bidding.

City and County of Denver
Human Rights and Community Partnerships
Office of Disability Rights
201 West Colfax Avenue, Dept 1102
Denver, CO. 80202

*Note: Currently the 2010 ADA standards for accessible design and the Transportation Standards and Details for the Engineering Division, Denver Public Works Department, 7.0-8.1 are being used as reference documents.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PERMITS AND CERTIFICATIONS

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

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

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

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

4.2 PAYMENT

- A. No separate payment will be made for work under this Section. The cost of the work described in this Section shall be included in the Contract price.

END OF SECTION 01 42 10

SECTION 01 42 16**DEFINITIONS AND CONVENTIONS**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

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

1.3 DEFINITIONS

A. Alphabetical Listing of Definitions

1. As Directed, As Approved, or As Requested: Unless otherwise indicated, these terms imply “by the Project Manager” and require that an instruction be obtained by the Contractor from the Project Manager.
2. As Indicated, As Shown, or As Noted: As depicted by graphic indication, notes or schedules, or written in the Contract Drawings, Specifications, or elsewhere in the Contract Documents.
3. Concealed: Embedded in masonry, concrete or other construction; installed in furred spaces; within double partitions or hung ceilings; in trenches; in crawl spaces or in enclosures.
4. Ensure: To make certain in a way that eliminates the possibility of error.
5. Exposed: Not installed underground or “concealed” as defined above.
6. Furnish or Provide: To supply, install and connect complete and ready for safe and regular operation of particular work unless specifically otherwise noted.
7. Install: To erect, mount and connect complete with related accessories.
8. Or equal, or Approved Equal: Refers to products which, in the opinion of the Project Manager, are similar in all respects to products specified by proprietary brand name.
 - a. Refer to Division 01 Section “Substitutions” for procedures for submittal of proposed substitutions.
9. Related Work: Includes, but not necessarily limited to, mentioned work associated with, or affected by, the work specified.
10. Reviewed, Satisfactory, Accepted, or Directed: Assumes by or to the Project Manager.
11. Rework: To repair existing items or work required to be removed and replaced in order to accomplish the Work in accordance with the contract documents.
12. Similar, or Equal: Same in materials, weight, size, design, construction, capacity, performance and efficiency of specified product.
13. Supply: To purchase, procure, acquire and deliver complete with related accessories.
14. Unless Otherwise Indicated and Unless Otherwise Noted: General note to perform work as indicated or shown on drawings or in specifications unless specifically directed otherwise elsewhere in the contract documents; may be abbreviated “U.O.N.”, “U.O.I.”, or “U.N.O.”

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1.4 CONVENTIONS

- A. Specifications Format: In order to standardize the location of information in the Contract Documents, the specifications generally are organized in the following format:
 - 1. The 2014 edition of “MASTERFORMAT” published by the Construction Specifications Institute.
- B. Organization of Drawings and Specifications: Organization of the specifications into divisions and sections, and arrangement or numbering of drawings is intended solely for the convenience of the Contractor in his responsibilities to divide the Work among subcontractors or to establish the extent of work to be performed by any trade.
 - 1. Neither the City nor the Project Manager assume any liability arising out of jurisdictional issues or claims advanced by trade organizations or other interested parties based on the arrangement or organization of drawings or specifications.
- C. Gender and Number: For convenience and uniformity, parties to the Contract, including the City, Contractor, and Project Manager, and their subcontractors, suppliers, installers, consultants or other interested parties are referred to throughout the contract documents as if masculine in gender and singular in number. Such reference is not intended to limit the meaning of the contract documents to the masculine gender or singular number.
- D. Singular vs. Plural: Materials, products, equipment or other items of work referred to in the singular shall be construed as plural where applicable by the intent of the contract documents and shall not limit quantities to be provided by the Contractor.
- E. Imperative Mood: Specifications and notes on the Drawings or elsewhere in the contract documents are generally written in the imperative mood as instructions to the Contractor, whether the Contractor is specifically addressed or not.
- F. References to Subcontractors or Trades: References to subcontractors, trades, or other entities which are not parties to the contract shall be construed as meaning the Contractor whose responsibility it shall be to divide the Work among subcontractors or trades. Such references are used as a matter of convention, and are not intended to preclude or direct the Contractor’s responsibility to divide the Work.
- G. Abbreviations: Abbreviations are believed to be those in general use in the construction industry. Contact the Project Manager for clarification of abbreviations for which the meaning is not clear.
 - 1. Review the contract drawings for additional abbreviations.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

PART 4 - MEASUREMENT AND PAYMENT

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4.1 MEASUREMENT

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

4.2 PAYMENT

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

END OF SECTION 01 42 16

SECTION 01 42 23

ADMINISTRATION, PROCEDURES, CODES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes general administrative requirements and procedures, and related applicable codes.

1.3 CODES

- A. Obtain all permits and licenses in accordance with General Conditions Article 317 – “Permits and Licenses”.
- B. Publication Dates: Comply with General Conditions Article 401 – “Contract Documents-Review and Interpretation”.

1.4 EXISTING UTILITIES

- A. Locate and protect existing utilities in accordance with General Conditions Article 804 – “Protection of Municipal, Public Service, or Public Utility Systems”.
- B. Although existing utilities may not be shown on the drawings, the Contractor is required to call Utility Notification Center of Colorado (UNCC) at 811 three (3) days (72 hours) prior to starting any work.

1.5 CONTRACTOR’S CONSTRUCTION SCHEDULE

- A. Furnish construction schedule, as required by General Conditions Article 306 – “Working Hours and Schedule”.
- B. IMPORTANT: Prior to beginning work on project site, the Contractor shall give a minimum of forty-eight (48) hours notification to both the Project Manager and the District Superintendent.
- C. The schedule may be used as a tool in analyzing any requests for the extension of the contract completion date due to changes in the Work or abnormal weather conditions. Normal weather conditions are based on the ten (10) year historical weather information provided by the National Climatic Data Center for the Denver Metropolitan area. Normal weather conditions shall be incorporated into the bar chart schedule. Additional time will be added to the Contract time only if the activities involved will affect the project’s Completion Date because of the criticality of the activities changed or altered.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Properly carton, crate, cover, and protect materials, products and equipment for shipping, handling and storing. Use appropriate means for hoisting and loading which will prevent

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damage or overstress to items being handled or shipped. Store them under roof in controlled environment whenever feasible; otherwise store off the ground under suitable coverings properly secured against wind and weather. Protect all items from rain, snow, moisture, wind, cold, heat, frost, sun, staining, discoloration, deterioration and physical damage from any cause. Refer to individual sections for specific requirements.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

PART 4 - MEASUREMENT AND PAYMENT (Not Used)

END OF SECTION 01 42 23

SECTION 01 43 00

QUALITY ASSURANCE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Quality Assurance is defined as measures, tests, and/or audits that may be performed by the City or City Representatives to ensure the Contractors work is installed per the construction documents and the contractors Quality Control Plan.
- B. This Section identifies inspection activities to be performed by inspectors and testing agencies employed by the City and working under the direction of the Project Manager.
 - 1. Inspection and tests, conducted by persons or agencies other than the Contractor, shall not in any way relieve the Contractor of his responsibility and obligation to meet all specifications and the referenced standards.
 - 2. The inspection and approval of work by other agencies above does not constitute inspection or acceptance of work required by the City. Technical specifications may contain requirements more stringent than Building Inspection Division or other code agency requirements.
- C. Reference General Conditions as listed:
 - 1. Article 1701 "Construction Inspection by the City".
 - 2. Article 1702 "Authority of Inspectors".
 - 3. Article 1703 "Observable Defects".
 - 4. Article 1704 "Defects – Uncovering Work".
 - 5. Article 1705 "Latent Defects".
 - 6. Article 1706 "Removal of Defective Materials and Work".
- D. Related Sections:
 - 1. Division 01 Section "Contractor Quality Control".
 - 2. Division 01 Section "Submittals".
 - 3. Division 01 Section "Shop and Working Drawings, Product Data, and Samples".

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 CITY'S QUALITY ASSURANCE MEASURES

- A. According to the judgment of the Project Manager, any portion of the work in this contract may be tested at any time for any reason.
- B. Contractor shall not rely upon these tests to assure compliance with the Contract Documents.

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3.2 TESTING – GENERAL

- A. Tests: Made by testing laboratory approved by the Project Manager. Except as otherwise provided, sampling and testing of materials and laboratory methods and testing equipment shall be in accordance with latest standards and tentative methods of ASTM.
 - 1. Specific information concerning testing methods, sample sizes, etc., is included under applicable sections of Specifications.
 - 2. Any modification of, or elaboration on, these test procedures included for specific materials under their respective sections in Specifications shall take precedence over these procedures.

3.3 COST OF TESTING

- A. Unless indicated otherwise, additional testing required by the City's Agents shall be performed by the City's authorized agents, at the City's expense.
- B. Costs for testing shall be borne by the Contractor only if such tests indicate that work does not meet Contract Document requirements.
- C. Costs for re-testing of non-complying work shall be borne by the Contractor.

3.4 TEST REPORTS

- A. Test reports, whether performed for the City or the Contractor, shall be submitted to the Project Manager and Contractor as soon as results are available. Reports shall be clear, concise, comprehensive written forms containing required test results.
- B. Reports of tests made by testing laboratories shall be distributed by testing laboratory as follows:
 - 1. Two (2) Copies – Project Manager.
 - 2. One (1) Copy – Contractor.
 - 3. One (1) Copy – Applicable Supplier or Subcontractor.

3.5 MANUFACTURING AND FABRICATION INSPECTIONS

- A. The Project Manager may elect to perform additional inspections and/or tests at the place of the manufacturer, the shipping point, or at the destination to verify conformance to applicable specifications. Inspections and tests performed by the City shall not relieve the Contractor from the responsibility to meet the specifications, nor shall such inspections/tests be considered to be a guarantee for acceptance of materials that will be delivered at a later time.
- B. The Project Manager or his authorized representative may inspect at its source any material or assembly to be used in the Work. Manufacturing plants may be inspected from time to time for the purpose of determining compliance with specified manufacturing methods or materials to be used in the Work and to obtain samples for testing and further inspection.
- C. Should the Project Manager conduct plant inspections the following conditions shall exist:
 - 1. The Project Manager shall have the cooperation and assistance of the Contractor and the producer with whom the Contractor has contracted for materials.

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2. The Project Manager shall have full access during scheduled production or warehousing working hours to parts of the plant that are concerned with the manufacture, production, storage or shipping of materials being furnished.
 3. The Contractor shall arrange for adequate office or working space that can reasonably be needed for conducting a plant inspection. Office or working space shall be conveniently located with respect to the plant and/or warehouse as required by the Project Manager.
- D. It is understood and agreed that the City shall have the right to re-test, at the City's expense, any materials that have been tested and accepted at the source of supply after it has been delivered to the site.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

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

4.2 PAYMENT

- A. No separate payment will be made for work under this Section. The cost of the work described in this Section shall be included in the Contract price.

END OF SECTION 01 43 00

SECTION 01 45 16

CONTRACTOR QUALITY CONTROL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section identifies the Quality Control activities to be performed during all phases of the contract by the Contractor. Quality Control is defined as the process by which the Contractor ensures the project is constructed per the construction documents.
- B. The Contractor shall have a Quality Control Program in place to ensure that all materials and work are completed in compliance with contract documents. The Contractor is solely responsible for Quality Control. The City reserves the right to conduct additional tests or audits to verify compliance per Division 1 section "Quality Assurance".
- C. Test schedules and/or testing requirements for materials used on this project are included in the technical specifications. Laboratory and field testing identified in the technical specifications shall be conducted by an Independent Testing Agency (ITA) retained by the Contractor.

1.3 LEVEL OF CONTROL

- A. The intent of this section is to enable the Contractor to establish a necessary level of control that will:
 - 1. Adequately provide for the production of acceptable quality materials.
 - 2. Provide sufficient information to ensure both the Contractor and the Project Manager that the specification requirements are being met.
 - 3. Allow the Contractor as much latitude as possible to develop his or her own standards of control.

1.4 SUBMITTALS

- A. Refer to Division 01 Sections "Submittals" and "Shop and Working Drawings, Product Data, and Samples", for submittal requirements.
- B. Quality Control Plan: Within ten (10) days after Notice to Proceed, the Contractor shall submit a Quality Control Plan for review and acceptance. Acceptance by the Project Manager does not relieve the Contractor of compliance with the contract requirements. The Contractor Quality Control Plan shall address the following as a minimum:
 - 1. Provide a general description of Quality Control monitoring to be performed until final acceptance by the City. Include monitoring activities of Work and the worksite during times no construction activity is scheduled to take place.
 - 2. The Contractor shall designate an employee as the Quality Control Representative, qualified to perform quality control monitoring of the Work. The designated individual shall have the authority to direct work changes required to bring the Work into

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- conformance with contract requirements including stopping non-conforming work in progress.
3. The Quality Control Plan shall address each technical specification division's requirements for quality control. The Contractor shall identify each item requiring submittal and approval/acceptance prior to installation of work. Also, the Contractor shall identify each item of work requiring testing by the independent testing agency.
 4. The Quality Control Plan shall address and establish controls and documentation format to ensure that items or materials that have been accepted through receiving inspection are used or installed. Identification and traceability shall be provided throughout all inspections, test activities, and records. For stored items, provisions shall be made for the control of item/material identification, consistent with the expected duration and type of storage.
 5. Provide a methodology of monitoring, testing, and exercising of all equipment, valves and/or assemblies to ensure the Work installed is in proper working order.
- C. List of Suppliers and Subcontractors: Submit a list of suppliers and subcontractors, including items to be supplied by each supplier and/or subcontractor. Identify work to be performed by each subcontractor. The list shall be updated and resubmitted as required.
- D. Emergency Contact List: Submit a list of emergency contact information including name, company, title, work phone number, mobile phone number, and other means of contact for at least four individuals.
1. Review the Emergency Contact list on a weekly basis. In the event there is any change in any of the information, the Contractor shall forward the updated list to the Project Manager.
 2. The Emergency Contact list shall include the project number, project title, and date of issue.
- E. Quality Control Report:
1. The Quality Control Report shall be submitted weekly or per the discretion of the Project Manager in the format detailed in Division 01 Section "Standard Forms". The report shall address as a minimum the following: identify notifications and discussions with/by other agency inspectors, identify work placed that day and any deviations and/or corrections required to bring the Work into conformance with the contract. Reporting must be digital format and signed by the Contractors Quality Control Representative. Legible, hand written reports on the approved form shall be accepted. Scanned copies of daily reports are acceptable.
 2. Submit one electronic copy of the Quality Control Report to the Project Manager the week following the work or per the discretion of the Project Manager. The report shall be signed by the Contractor's Quality Control Representative and the Contractor's Superintendent.
- F. Corrective Action Report (CAR): Conditions adverse to quality will be reviewed by the Contractor and the City Representative to determine the cause and to recommend a corrective action that will preclude recurrence.
1. The condition, its cause, and the corrective action planned shall be reported to the Project Manager prior to implementation.
 2. Follow-up action shall be taken to verify implementation of the corrective action.
 3. The Contractor will document the corrective action and a copy of the Corrective Action Report (CAR) will be transmitted to the Project Manager.

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1.5 DOCUMENTATION

- A. The Contractor shall not change or alter approved submittals, procedures, specifications, drawings, or other pertinent documentation without the Project Manager's written authorization.
- B. All records and documents that are quality related shall be prepared, identified, and maintained by the Contractor and shall be made available to the City upon request. Records shall be protected from damage, deterioration or loss. A copy of the records and documents shall be maintained at the Work site at all times unless the Project Manager has approved other locations in writing.
- C. The Contractor shall maintain records at the actual worksite and at Contractor's office to show the inspection status of materials and items installed in order to ensure that the required inspections and tests have been performed in a timely and correct manner.

1.6 INSPECTIONS AND TESTS

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

1.7 INSPECTION PLAN

- A. The Contractor shall utilize the following six-point inspection plan to ensure the conformance of the Work performed by the Contractor meets the requirements of the contract drawings and specifications, the referenced codes and standards and the approved submittals:
 - 1. Pre-work Coordination: Prior to the start of construction work, work under each separate specification section, where a change in a construction operation is contemplated by the Contractor, and a new subcontractor starting work, a coordination meeting will be held with the Contractor's superintendent, Quality Control, and Safety representative(s), and the ITA representative. Supervisory, Safety, and Quality Control representatives of all applicable subcontractors shall also attend. The Contractor's Quality Control Representative shall chair the meeting, and prepare and distribute minutes of Quality Control meetings. Meeting minutes shall be electronically distributed within twenty-four (24) hours of the meeting.

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2. The purpose of the meeting is to ensure that the Contractor's personnel have no misunderstandings regarding their safety and quality procedures as well as the technical requirements of the contract. The following items shall be presented and reviewed by the Contractor:
 - a. Contract requirements and specifications.
 - b. Shop drawings, certifications, submittals and Record Drawings.
 - c. Testing and inspection program and procedures.
 - d. Contractor's Quality Control program.
 - e. Familiarity and proficiency of the Contractor's and subcontractor's workforce to perform the operation to required workmanship standards including certifications of installers.
 - f. Safety, security, and environmental precautions to be observed.
 - g. Any other preparatory steps dependent upon the particular operation.
 - h. The Contractor's means and methods for performing the Work.
3. Initial Inspection: Upon completion of a representative sample of a given feature of the Work and no later than two (2) weeks after the start of a new or changed operation, the Project Manager and/or his designated representative will meet with the Contractor's Quality Control representative and applicable subcontractor's supervisor and their Quality Control representatives to check the following items, as a minimum:
 - a. Workmanship to established quality standards.
 - b. Conformance to Contract Drawings, Specifications and the accepted shop drawings.
 - c. Adequacy of materials and articles utilized.
 - d. Results of inspection and testing methods.
 - e. Adequacy of Record Drawings maintained daily.
4. Once accepted, the representative sample will become the physical baseline by which ongoing work is compared for quality and acceptability. To the maximum practical extent, approved representative samples of work elements shall remain visible until all work in the appropriate category is complete. Acceptance of a sample does not waive or alter any contract requirements or show acceptance of any deviation from the contract not approved in writing by the Project Manager.
5. Follow-up Inspection: The Contractor's Quality Control representative will monitor the work to review the continuing conformance of the work to the workmanship standards established during the preparatory and initial inspections.
6. Completion Inspection: This is not a Substantial Completion Inspection. Forty-eight (48) hours prior to the completion of an item or segment of work and prior to covering up any work, the Contractor will notify the Project Manager who will verify that the results of the segment of work are acceptable, and all inspections and tests have been completed.
 - a. The purpose of this inspection is to allow further corrective work upon, or integral to, the completed segment of work.
 - b. If any items are determined to be deficient, need correction or are non-conforming, a Deficiency List will be prepared and issued to the respective Contractor for correction, repair or replacement of any deficient or non-conforming items.
 - c. The Project Manager and Contractor's Quality Control representative will verify the correction of the deficient and/or non-conforming items prior to the start of the next operation.
7. Prior to requesting a Substantial Completion Inspection by the City, all work and operational systems to be inspected shall be satisfactorily completed and tested by the Contractor.
8. Substantial Completion Inspection will occur when the Contractor notifies the Project Manager the work is completed to the required stage and is ready for inspection. The

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work shall have progressed to the point that the City can beneficially occupy or utilize the work. Refer to the Contract General Conditions, Title 19 – Substantial Completion of the Work.

9. After the Contractor receives Substantial Completion from the Project Manager, the Warranty period begins. Refer to the Contract General Conditions, Title 18 – Warranties, Guarantees, and Corrective Work.
10. Final Acceptance will occur when the punch list items have been completed and all site clean-up has been done. Refer to the Contract General Conditions, Title 20 – Final Completion and Acceptance of the Work.

1.8 SAMPLES

- A. The Contractor shall maintain at the worksite a copy of all samples submitted and accepted by the City. Samples shall be made available to the designer or the Project Manager’s designated representatives for review and comparison in the field. The Project Manager prior to use on the project must accept all items and materials.
- B. The installed work will be compared to the samples and if any of the work is not of the same quality, material, finish, color, texture or appearance as the sample, that portion that is not the same will be considered defective and in nonconformance.
- C. Contractor selection of samples will only be considered if taken at random. The Contractor shall permit City Representatives to witness the selection of samples. Inspection or tests of items or materials that fail shall be sufficient cause to terminate further inspections/tests of the same brand, make or source of that product.
- D. The Contractor is obligated to correct any item deemed deficient.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 REQUIREMENTS

- A. The Contractor is responsible for Quality Control of the Construction. All acquisition of materials, sequence of construction (except as otherwise indicated), and means and methods of construction shall be the responsibility of the Contractor. Establish system to perform sufficient inspection and tests of all items of work, including that of subcontractors, to ensure conformance to Contract Documents for materials, workmanship, construction, finish, functional performance and identification.
 1. Control System: Establish for all construction except where Contract Documents provide for specific compliance tests by testing laboratories and engineers employed by the City.
 2. Control System: Specifically include all testing required by various sections of Specifications.
 3. Quality Control System: Means by which Contractor assures himself that construction complies with requirements of Contract Documents.
 - a. Controls: Adequate to cover all construction operations and keyed to proposed construction schedule.

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- B. All materials required for the contract shall be new except where specified otherwise. The Project Manager may elect to perform additional inspections and/or tests at the place of the manufacture, the shipping point or at the destination to verify conformance to applicable specifications. Inspections and tests performed by the City shall not relieve the Contractor from the responsibility to meet the specifications, nor shall such inspections/tests be considered a guarantee for acceptance of materials that will be delivered at a later time.
- C. The Contractor is obligated to correct or remove non-conforming materials, whether in place or not. If necessary, the Project Manager will send written notification to the Contractor to correct or remove the defective materials from the project. If the Contractor fails to respond, the Project Manager may order correction, removal and/or replacement of defective materials by others, in which case the Contractor shall bear all costs incurred by such actions.
- D. Materials accepted on the basis of a Certificate of Compliance may be sampled and inspected and/or tested by the Project Manager or his/her Designer at any time. The fact that the materials were accepted on the basis of such certification shall not relieve the Contractor of his responsibility to use materials that conform to the specifications.
- E. The Contractor shall impose upon his suppliers the same quality control requirements, including inspection and test procedures, as imposed upon him by the specifications and referenced standards. The Contractor shall apply appropriate controls, designed to ensure that all materials supplied meet the requirements and specifications.

3.2 CONTRACTOR'S QUALITY CONTROL SYSTEM

- A. The Contractor is responsible for Quality Control of the Construction. All acquisition of materials, sequence of construction (except as otherwise indicated), and means and methods of construction shall be the responsibility of the Contractor. Establish system to perform sufficient inspection and tests of all items of work, including that of subcontractors, to ensure conformance to Contract Documents for materials, workmanship, construction, finish, functional performance and identification.
 - 1. Control System: Establish for all construction except where Contract Documents provide for specific compliance tests by testing laboratories and engineers employed by the City.
 - 2. Control System: Specifically include all testing required by various sections of Specifications.
 - 3. Quality Control System: Means by which Contractor assures himself that construction complies with requirements of Contract Documents.
 - a. Controls: Adequate to cover all construction operations and keyed to proposed construction schedule.
- B. The Contractor shall be responsible for assuring compliance with the quality standards as indicated in the Contract Documents. In addition, the Contractor shall be responsible for:
 - 1. Review of submittals prior to their being forwarded to the Project Manager for review. The Contractor shall mark submittals with comments and shall indicate the date and party conducting the Contractor's review of each submittal.
 - 2. Final inspection of the project prior to calling for the Project Manager to conduct a final inspection. The Contractor shall provide his inspection comments to the Project Manager prior to the scheduled final inspection.
 - 3. Verification of completion of punch-list items prior to calling for verification inspection by the Project Manager.

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- C. Records: Maintain correct records on appropriate forms for all inspections and tests performed, instructions received from the Project Manager and actions taken as result of those instructions.
 - 1. Records: Include evidence that required inspections or tests have been performed (including type and number of inspections or tests, nature of defects, causes for rejection, etc.) proposed or directed remedial action, and corrective action taken.
 - 2. Document inspections and tests as required by each section of the Specifications.

3.3 MATERIAL AND WORKMANSHIP

- A. Unless otherwise specified, or indicated on the Drawings, material shall be new, of best quality, and without flaws, and delivered upon completion in an undamaged condition.
- B. Workmanship shall be the best of its respective kind. Labor shall be performed in a thorough workmanlike manner by qualified, efficient, and skilled mechanics, acceptable to the Project Manager, and other trades involved on the job requiring acceptable substrate for the performance of their work.

3.4 TESTING – GENERAL

- A. Testing Laboratory and/or Engineering services are required for quality control in portions of the work identified in other sections of these specifications.
- B. Tests required by these Specifications shall be performed in strict accordance with referenced testing methods, procedures, and conditions. Pertinent data shall be included in clear, comprehensive written forms according to the requirements of these Contract Documents.
- C. Contractor: Provide equipment and facilities as required for testing at no additional cost, subject to Project Manager's review, for conducting field tests and for collecting and forwarding samples.
 - 1. Do not use materials or equipment represented by samples until tests, if required, have been made and materials or equipment found to be acceptable.
 - 2. Do not incorporate any product into work which becomes unfit for use after acceptance thereof.
- D. Testing: Materials or equipment proposed to be used may be tested at any time during their preparation or use. Furnish required samples without charge and give sufficient notice of placing of orders to permit testing. Products may be sampled either prior to shipment or after being received at site of work.
- E. Tests: Made by testing laboratory approved by the Project Manager. Except as otherwise provided, sampling and testing of materials and laboratory methods and testing equipment shall be in accordance with latest standards and tentative methods of ASTM.
 - 1. Specific information concerning testing methods, sample sizes, etc., is included under applicable sections of Specifications.
 - 2. Any modification of, or elaboration on, these test procedures included for specific materials under their respective sections in Specifications shall take precedence over these procedures.

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3.5 OTHER TESTING

- A. Following Testing: Performed at expense of Contractor:
 - 1. Any additional tests required because of any tests that fail subject to following conditions:
 - a. Quantity and Nature of Tests: Determined by the Project Manager.
 - b. Tests: Taken in presence of the City and/or the Project Manager.
 - c. Proof of Noncompliance: Contractor liable for corrective action which the Project Manager feels is required including complete removal and replacement of defective material.
 - 2. Material Substitution: Any tests of material or equipment offered as substitute for specified item on which test may be required in order to prove its compliance with the Contract Documents.
- B. Contractor: May have tests performed on material and equipment for his own information and job control so long as the City does not assume responsibility for costs or for giving them consideration when appraising quality of materials.

3.6 EQUIPMENT TESTING

- A. Equipment testing shall be as determined appropriate by the Project Manager to assure proper performance according to the manufacturer's specifications for each equipment item.
- B. After all utility connections to equipment have been completed; the Contractor shall conduct final tests of equipment in presence of the City and Project Manager.
- C. Unless waived in writing by the Project Manager, the requirements of this section shall apply to all installed equipment items having utility connections.

3.7 NOTIFICATION

- A. The Contractor shall be responsible for notifying the Project Manager at least 3 working days prior to commencing work which is identified as requiring testing.
- B. The Contractor shall be responsible for scheduling and coordinating all required testing with the Project Manager and, when required by the City's Agents, the City's Independent Testing Agency.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

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

4.2 PAYMENT

- A. No separate payment will be made for work under this Section. The cost of the work described in this Section shall be included in the Contract price.

END OF SECTION 01 45 16

SECTION 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes requirements for furnishing, installing, operating, maintaining, and removing temporary construction fences, barriers, enclosures and field facilities including the Contractor's construction offices, staging areas, yards, storage areas, electrical power, telephone, water, fire protection, sanitary service.
- B. Yards and Storage Areas:
 - 1. Temporary facilities which the Contractor desires to locate in staging areas adjacent to the Work or within the project limits are subject to approval by the Project Manager.

1.3 UTILITY AND FIRE SERVICES

- A. Electrical Service:
 - 1. Reference General Contract Conditions Article 327 "Power, Lighting, Heating, Ventilating, Air Conditioning, and Water Services".
 - 2. Any necessary electrical service will be provided by generators supplied by the contractor.
- B. Fire Protection:
 - 1. In accordance with the Site Safety Plan, Contractor shall furnish, install and maintain temporary portable fire protection equipment throughout the construction period.

1.4 SUBMITTALS

- A. Refer to Division 01 Sections "Submittals" and "Shop and Working Drawings, Product Data, and Samples" for submittal procedures.
- B. Submit a shop drawing within five (5) days of the Notice to Proceed that shows the following:
 - 1. Temporary facilities equipment and materials (include manufacturer's literature).
 - 2. Details and layout of temporary installations including fences, visual fence screens, roads, utilities, parking, buildings, storage areas and drainage plans.
 - 3. Lighting plan showing temporary lighting facilities, electrical service panel location, electrical circuit diagram and anticipated light level on the working roadway, pathway or construction surface.

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PART 2 - PRODUCTS

2.1 ELECTRICAL SERVICE

- A. Provide temporary power and lighting equipment as needed for construction. Comply with NEMA.
- B. Portable power generators shall be grounded.

2.2 FIRE PROTECTION

- A. Fire extinguishers shall be UL rated and shall comply with the current City fire code.

2.3 SANITARY SERVICE

- A. Provide materials and equipment adequate for the intended purposes, which will neither create unsanitary conditions nor violate the codes applicable to temporary sanitary facilities. Enclosures for toilet and washing facilities shall be weatherproof, sight proof, ventilated and sturdy.
- B. Provide portable type toilet facilities that satisfy the requirements of OSHA.
- C. Provide washing facilities as needed. Furnish soap, single-service paper towels, towel dispenser and towel receptacle. If paints, coatings and other volatile or hazardous materials injurious to humans will be applied as part of the contract, provide washing facilities with warm water of approximately one hundred twenty degrees (120°) F.

PART 3 - EXECUTION

3.1 ELECTRICAL SERVICE

- A. The Contractor shall locate temporary electrical service where it will not interfere with equipment, storage spaces, traffic, and prosecution of the Work or the work of others. Installation shall present a neat and orderly appearance and shall be structurally sound. Maintain service in a manner that will ensure continuous electrical service and safe working conditions.

3.2 TELEPHONE SERVICE

- A. Utilize radios or other satellite communication devices as there is not cellular telephone service on the site.

3.3 FIRE PROTECTION

- A. Install products in conformance with the requirements of the applicable fire district and OSHA regulations.
- B. Fire protection equipment shall be placed in easily accessible locations throughout the construction site. The Contractor shall instruct construction personnel as to location and use of temporary fire protection equipment.

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- C. Fire extinguishers shall be located for easy access. Their location shall be clearly marked so that they can be seen at least seventy-five feet (75') away.

3.4 SANITARY SERVICE

- A. Place temporary sanitary (and washing) facilities within the limits of the work and convenient to the work stations. Make these facilities structurally and mechanically sound. Modify, relocate and extend the facilities as required by progress of the work.
- B. Service toilets at those time intervals which will minimize the accumulation of wastes and prevent creation of unsanitary conditions, but not less frequent than once per week.
- C. The waste from the sanitary and wash facilities shall be disposed of in accordance with all applicable rules, regulations and laws and with the least environmental impact.

3.5 SIGNS

- A. All temporary signs must be approved by the Project Manager prior to installation.

3.6 QUALITY CONTROL

- A. Provide products for, and the execution of, the Work of this Section that will satisfy the requirements of the NEC, OSHA, and local codes. Provide products that satisfy requirements of NEMA and are UL listed.

3.7 REMOVAL

- A. The Contractor shall locate all temporary facilities so they can be completely removed without damaging permanent work or the worksite. All temporary facilities shall be removed in a timely manner following Substantial Completion of the Project or per the direction of the Project Manager.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

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

4.2 PAYMENT

- A. No separate payment will be made for work under this Section. The cost of the work described in this Section shall be included in the Contract price.

END OF SECTION 01 50 00

SECTION 01 56 39

TREE RETENTION AND PROTECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This section consists of retention and protection of trees during the construction of the project.

1.3 DEFINITIONS AND REFERENCE STANDARDS

- A. Drip Line: The outermost edge of the tree's canopy or branch spread. The area within a tree's drip line is all the ground under the total branch spread.
- B. High Value Shrub: Any specimen shrub with an appraised value of one-hundred dollars (\$100.00) or more.
- C. City Forester / Office of the City Forester: The City agency responsible for trees and shrubs in public parks, parkways, and other public property. Denver's street trees are under regulation of the City Forester.
- D. Project Consulting Arborist: An independent consultant with a degree in forestry, horticulture, or arboriculture, an American Society of Consulting Arborists (ASCA) registered consulting arborist, an International Society of Arboriculture (ISA) Certified Arborist, and / or a consultant with at least five years (5) field experience in tree preservation or on-site monitoring of public works or construction projects involving tree retention and protection.
- E. Tree Protection Zone: The Tree Protection Zone shall be the area below ground and the space above ground, equal to one and one-half foot (1.5') radius from the base of the tree's trunk for each one (1") inch of the tree's diameter at four and one-half feet (4.5') above grade (referred to as diameter at breast height)
 - 1. With groups of trees, there may be discontinuous (non-overlapping) perimeters of Tree Protection Zones which result in difficult to maintain or ineffective tree protection fencing. In these cases, if the distance between the perimeters of such areas is less than thirty feet (30), they should be treated as one contiguous Tree Protection Zone. In effect, this will enlarge the area of tree protection but will result in a more clearly defined and manageable area.
- F. Contractor shall comply with applicable requirements and recommendations of the most current versions of the following standards and guidelines. Where these conflict with other specified requirements, the more restrictive requirements shall govern.
 - 1. ANSI Z133.1-2006: American National Standard for Tree Care Operations.
 - 2. ANSI A300: Tree, Shrub, and Other Woody Plant Management – Standard Practices.
 - 3. Guide for Plant Appraisal – Current Edition: Authored by the Council of Tree and Landscape Appraisers; published by the International Society of Arboriculture.

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1.4 QUALITY CONTROL

- A. As established by Chapter 57 of the Denver Revised Municipal Code, the City Forester, or an approved designee from the Office of the City Forester, shall be responsible for ensuring that all construction activities are in compliance with established standards for removal, maintenance, and planting of trees with the goal of promoting the health, safety, welfare, and quality of life of the residents of the city through the development of a sustainable community forest and, specifically, the preservation of trees.
- B. At its discretion, the City may hire a Project Consulting Arborist to conduct daily observation of the Contractor's field crews during the critical phases of the project, such as: demolition of existing concrete, root pruning, construction of retaining walls, and construction of new curb or sidewalk in Tree Protection Zones.
- C. Motorized equipment and trailers, including tractors, bobcats, bulldozers, rubber-tired excavators, tracked excavators, trucks, cars, and carts shall not be allowed access within Tree Protection Zones. Should access be necessary within designated Tree Protection Zones the City Forester or Project Consulting Arborist shall be notified and shall approve of the access and driving surface prior to its use.
- D. Materials and supplies shall not be stockpiled or stored within the Tree Protection Zone unless otherwise approved by the City Forester. Should temporary storage be necessary within designated Tree Protection Zones, the existing grade shall be covered with twelve inches (12") of wood mulch with overlapping three quarter inch (3/4") thick plywood on top to help distribute the weight of equipment and to minimize soil compaction and rutting. Plywood and/or mulch are not acceptable bridging materials for driving over exposed tree roots.
- E. Under no circumstances shall any objects or materials be leaned against or supported by a tree's trunk, branches, or exposed roots. The attachment or installation of any sign, cable, wire, nail, swing, or any other material to trees that is not needed to help support the natural structure of the tree is prohibited. Standard arboricultural techniques such as bracing or cabling that are performed by professional arborists are acceptable upon approval by the City Forester or Project Consulting Arborist.

1.5 SUBMITTALS

- A. Tree Protection Plan: Submit a tree protection plan based on the contract drawings for approval by the City Forester or Project Consulting Arborist.
- B. Proposed methods and schedule for implementing tree and other plant protection shall be submitted for approval.
- C. Proposed methods, materials, and schedule for root pruning, branch pruning, and other tree maintenance shall be submitted for approval.
- D. Construction Schedule: Contractor shall submit construction schedule which includes a time frame for work near existing plants. Approval of such shall be obtained from the City Forester or Project Consulting Arborist prior to commencement of construction near Tree Protection Zones.

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- E. Maintenance Schedule: Submit maintenance schedule to the Project Manager for approval by City Forester or Project Consulting Arborist.

PART 2 - PRODUCTS

2.1 TREE PROTECTION FENCE

- A. Orange plastic safety fencing – minimum of forty-eight inches (48”) in height, heavy duty T-posts.
- B. Galvanized Chain-link – Six feet (6’) in height.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. If it appears any work may cause damage to the branches of a tree, the Contractor shall contact the Project Manager and the City Forester. The Project Manager and City Forester will make the determination as to whether such damage is likely and pruning is necessary.
- B. To prevent or minimize soil compaction, designated routes for equipment and foot traffic by work crews shall be determined prior to commencing construction activities, and shall be indicated in the tree protection plan to be submitted by the Contractor to the Project Manager for review and approval by the Office of the City Forester.
- C. Where work is proposed within a tree protection zone, the Contractor shall use a compressed air excavation tool or hand dig a trench at the limit of proposed work to reveal existing tree roots. Upon inspection and approval by the City Forester, if no tree roots larger than 2” are discovered, the location of the tree protection fence may be relocated to the limit of proposed work.

3.2 TREE PROTECTION FENCING

- A. Tree protection fence shall be installed prior to any site activity and shall remain in place and maintained in condition in which they were installed until its removal is authorized by the City Forester or the Project Manager.
- B. Tree protection fencing should be installed 1-foot behind the edge of existing roads in areas where the street surface will be removed and replaced.
- C. Tree protection fences shall be constructed as follows:
 - 1. Plastic fencing shall have the top secured to metal T-posts with twelve-gauge (12) wire woven through the top of fencing along the entire length. Heavy duty T-posts shall be placed so that wire and fence are taut.
 - 2. Chain link fence shall have posts installed no less than ten feet (10’) on center, at a depth of thirty-six inches (36”) minimum. Installation of post shall not result in injury to tree surface roots; root flares or branches.

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3. Chain link fence may be required by the Office of the City Forester where heavy construction activity is adjacent to existing trees. Fencing shall be installed to surround the trees within the limits of work.

3.3 DEMOLITION

- A. Caution should be used during removal of existing features to minimize injury to tree root systems. The following procedures should be used when removing existing concrete.
 1. Breaking of existing pavement for removal shall be done in a manner that will minimize ground disturbance and vibration.
 2. Roots and root-trunk flares growing over demolished items shall not be injured during removal. Wood and bark tissues shall not be injured by equipment.
 3. During the removal of features, all exposed root systems and soil areas shall not be disturbed.
 4. Motorized equipment and trailers, including but not limited to tractors, skid steers, bulldozers, rubber-tired excavators, tracked excavators, trucks, cars, and carts are to be limited to areas that are being graded only. If access within designated Tree Protection Zones is approved by the City forester or Project Consulting Arborist the existing grade shall be covered with twelve inches (12") of wood mulch and overlapping sheets of three-quarter inch (3/4") thick plywood placed on top of the wood mulch to help distribute the weight of equipment and to minimize soil compaction and rutting.
 - a. Exposed tree roots shall not be driven over. Plywood and/or mulch are not acceptable bridging materials for driving over exposed tree roots.

3.4 CONSTRUCTION IN TREE PROTECTION ZONES

- A. The following procedures shall be used when constructing paving, paths and drainage inlets.
 1. Protect exposed roots from contamination by stabilization materials and concrete.
 2. Locate concrete washouts away from Tree Protection Zones. Washout runoff shall be strictly contained within the washout area and shall not flow into Tree Protection Zones or proposed new planting areas.
 3. When excavating for the construction of inlets, excavated soil shall be deposited in trucks and hauled off or deposited temporarily on three quarter inch (3/4") thick plywood outside the Tree Protection Zones. Excavated and fill soil shall not be deposited, even temporarily, on unprotected natural grade.
 4. After proper root-pruning, as needed, cover exposed roots within thirty (30) minutes to minimize desiccation. Roots may be covered with soil, mulch, or moistened burlap (7 ounce or equivalent), and shall be kept moist until the final grade is established.
- B. Grading within the Tree Protection Zone shall be performed by hand or a method approved by the City Forester. Any fill material that needs to be placed in the Tree Protection Zone shall be limited to a maximum of one inch (1") of fill material over the area. Fill should consist of on site topsoil. When using fill soil, the existing surface to receive fill should be scarified by hand to a maximum depth of one inch (1") from the finished grade prior to placing fill material, to ensure proper incorporation of fill material. Any filling operation should not occur during water saturated soil conditions.
- C. In areas where roots need to be removed for construction of drain inlets, roots shall be pruned prior to excavation to eliminate unnecessary tearing of roots by equipment.
 - a. Excavate soil by hand at the construction cut limit to a depth of thirty (30) inches or to the depth of the required root cut, whichever is less.

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- b. Prune roots as specified.
 - c. Protect exposed roots as specified.
- D. Concrete or chemicals spilled within Tree Protection Zones should be completely removed. Contaminated soil shall be completely removed at the time of the spill and removed by hand and/or air spade tool without disturbance to root systems. Appropriate soil should be added as necessary to restore the grade. Contact the Project Manager and City Forester immediately in the event of a spill within a Tree Protection Zone.

3.5 STORM DRAINAGE PIPE INSTALLATION

- A. Contractor shall protect all trees and high-value shrubs from injury due to irrigation related work. All injuries to trees and high-value shrubs shall be mitigated to the satisfaction of the City Forester or Project Consulting Arborist, and, if appropriate in accordance with guidelines established in the "Guide for Plant Appraisal". All costs of such mitigating shall be charged to and paid by the Contractor. See Article 3.9 – Injuries to Existing Plants – Damage Penalties of this section for definition of high value trees and shrubs.
- B. Wherever trenching exposes roots extending through the trench wall, those roots shall be hand pruned immediately, refer to Root Pruning. All trenches within shall be closed within twelve hours (12); if this is not possible, the trench walls shall be covered with burlap and kept moistened. Prior to backfilling, the Contractor shall contact the City Forester, Project Consulting Arborist, or Project Manager to inspect the condition and treatment of roots injured by trenching.

3.6 ROOT PRUNING

- A. Tree roots shall not be pruned or cut unless their removal is unavoidable. The City Forester or Project Manager shall be notified prior to any operation known or suspected to involve cutting of more than:
- B. All roots needing to be pruned or removed shall be cut cleanly with sharp hand tools, with oversight by the City Forester or Project Consulting Arborist. No wound dressings shall be used.
- C. Recommended root pruning tools:
- 1. Scissor-type lopper.
 - 2. Scissor-type pruner.
 - 3. Large and small hand saws.
 - 4. Wound scribe.

3.7 PROJECT SITE MONITORING

- A. The Tree Protection Zones should be monitored a minimum of one (1) time weekly (more frequently at the start of the project) until all procedures and specifications are understood and properly executed by the Contractor.
- B. Specific monitoring schedules shall be reviewed at the construction meetings and modified as deemed necessary by the appropriate parties.

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3.8 INJURIES TO EXISTING PLANTS - DAMAGE PENALTIES

- A. Any plants designated as requiring retention or protection that are partially injured or lost due to Contractor neglect or improper construction activities will result in a penalty as determined by the City Forester, as described in Chapter 57 of the Denver Revised Municipal Code.
- B. Tree and High-Value Shrub Appraisal: All protected trees and high-value shrubs that are damaged during construction will be evaluated and appraised by the City Forester.
 - 1. The threshold level for plants to be appraised shall be one-hundred dollars (\$100.00); only those trees and shrubs estimated to have a monetary value greater than one-hundred dollars (\$100.00) shall be appraised.
 - 2. A fine of one-thousand dollars (\$1,000.00) will be levied against the Contractor for each incident of construction damage, including construction traffic within designated Tree Protection Zones. This fine shall be independent of any applicable damage penalty for the appraised value of the tree.
 - 3. Documentation for appraisals will consist of:
 - a. Measurement of plant size.
 - b. Identification by common and botanical names.
 - c. Current condition (overall health, injuries, overt hazard status, etc.).
 - d. Location factors as described in the most current addition of "Guide for Plant Appraisal". Photographs may be taken of certain trees and shrubs to document debilitating condition factors.

3.9 TREE MAINTENANCE DURING CONSTRUCTION

- A. The timing duration and frequency of necessary maintenance practices should be determined and approved by the City Forester or Project Consulting Arborist, based on factors associated with the site and affected plants.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Measurement will be based on the percentage complete for the lump sum contract amount for Tree Retention and Protection.

4.2 PAYMENT

- A. Payment will be made at the lump sum contract price, and shall include required materials, transportation, equipment, and labor, required to establish tree protection, and remove the tree protection at the end of the project as required in accordance with the Contract Drawings and Specifications. Payment will also include the maintenance of the tree protection throughout the duration of the project as well as the labor, materials and equipment required to restore the site to its original condition at the completion of the project.

END OF SECTION 01 56 39

SECTION 01 57 13

EROSION AND SEDIMENTATION CONTROL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This section consists of requirements for the installation and maintenance of erosion and sedimentation prevention and protection measures during the construction of the project from just prior to the start of earth disturbance until final site stabilization. The cost of maintaining, repairing, and/or replacement of damaged BMP's will be at the Contractors expense.

Refer to "City and County of Denver Construction Activities Stormwater Manual" by City and County of Denver Wastewater Management Division, Department of Public Works, revised June 2010, or latest edition, at:

<https://www.denvergov.org/content/denvergov/en/wastewater-management/capital-projects-management/engineering-and-permits.html>

- B. Refer to applicable sections within the Wastewater Capital Projects Management Standard Construction Specifications, Wastewater Management Division, Department of Public Works, specifications updated March 2016, or latest edition.

PART 2 - PRODUCTS

- 2.1 Refer to "City and County of Denver Construction Activities Stormwater Manual".

PART 3 - EXECUTION

- 3.1 Refer to "City and County of Denver Construction Activities Stormwater Manual".

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Measurement will be based on the percentage complete for the lump sum contract amount for Erosion and Sedimentation Control.

4.2 PAYMENT

Payment will be made at the lump sum contract price, and shall include required materials, transportation, equipment, labor, excavation, stockpiling, disposing, hauling off, watering, and dust control as required in accordance with the Contract Drawings and Specifications. The contract price shall include all material, labor and equipment required to establish and maintain

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specified erosion and sedimentation controls prior to and during construction. The contract price shall include removal of erosion and sedimentation controls after final stabilization.

END OF SECTION 01 57 13

SECTION 01 60 00**MATERIAL AND EQUIPMENT**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements governing the Contractor's selection of products for use in the project.

1.3 DEFINITIONS

- A. Definitions used in this Article are not intended to change the meaning of other terms used in the Contract Documents, such as "specialties", "systems", "structure", "finishes", "accessories", and similar terms. Such terms are self-explanatory and have well-recognized meanings in the construction industry.
1. Products: Are items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock. The term "Product" includes the terms "material", "equipment", "system" and terms of similar intent.
 2. Named Products: Are items identified by manufacturer's product name, including make or model designation, indicated in the manufacturer's published product literature that is current as of the date of the Contract Documents.
 3. Materials: Are products that are substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.
 4. Equipment: Is a product with operational parts, whether motorized or manually operated, that requires service connections such as wiring or piping.

1.4 SUBMITTALS

- A. Product List: A list of products is included in each appropriate specification division. Prepare a schedule in tabular form showing each product listed. Include the manufacturer's name and proprietary product names for each item listed.
1. Coordinate product list with the Contractor's Construction Schedule and the Schedule of Submittals.
 2. Form: Prepare product list with information on each item tabulated under the following column headings:
 - a. Related Specification Section number.
 - b. Generic name used in Contract Documents.
 - c. Proprietary name, model number, and similar designations.
 - d. Manufacturer's name and address.
 - e. Supplier's name and address.
 - f. Installer's name and address.
 - g. Projected delivery date or time span of delivery period.

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3. Initial Submittal: Within thirty (30) days after date of commencement of the Work, submit three (3) copies of an initial product list. Provide a written explanation for omissions of data and for known variations from Contract requirements.
4. Completed List: Within sixty (60) days after date of commencement of the Work, submit three (3) copies of the completed product list. Provide a written explanation for omissions of data and for known variation from Contract requirements.
5. Action: The Project Manager will respond in writing to Contractor within ten (10) working days or receipt of the completed product list. No response within this period constitutes no objection to listed manufacturers or products, but does not constitute a waiver of the requirement that products comply with Contract Documents. The Project Manager's response will include a list of unacceptable product selections, containing a brief explanation of reasons for this action.

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products according to the manufacturer's recommendations, using means and methods that will prevent damage, deterioration and loss, including theft.
 1. Schedule delivery to minimize long-term storage at the site and to prevent overcrowding of construction spaces.
 2. Coordinate delivery with installation time to assure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
 3. Deliver products to the site in an undamaged condition in the manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting and installing.
 4. Inspect products upon delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.
 5. Store products at the site in a manner that will facilitate inspection and measurement of quantity or counting of units.
 6. Store products subject to damage by the elements above ground, under cover in a weathertight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.

1.6 GENERAL PRODUCT REQUIREMENTS

- A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, new at the time of installation.
 1. Provide products complete with accessories, trim, finish, safety guards, and other devices and details needed for a complete installation and the intended use and effect.
 2. Standard Products: Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.
- B. It is the responsibility of the Contractor and his installers, as experts, to notify the Project Manager of any specified product that to his knowledge will not meet the requirements or is unsuited to the application indicated or specified.
- C. The use of manufacturer's and trade names is intended only to establish standards of quality and performance and not to limit competition.
- D. Substitution of Materials and Equipment: All bids are to be based on those materials and equipment specified in the Contract Documents. Substitutions after the bid will be made in

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accordance with the provisions of General Contract Conditions Article 406 “Substitution of Materials and Equipment”, and Division 01 Section “Substitutions”.

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

- A. The Contract Documents and governing regulations govern product selection. Procedure governing product selection include the following:
1. Proprietary Specification Requirements: Where Specifications name only a single product or manufacturer, provide the product indicated. No substitutions will be permitted.
 2. Semi-proprietary Specification Requirements:
 - a. Where Specifications name two or more products or manufacturers, provide one (1) of the products indicated. No substitutions will be permitted.
 - b. Where Specifications specify products or manufacturers by name, accompanied by the term “or equal” or “or approved equal,” comply with the Contract Document provisions concerning “substitutions” to obtain approval for use of an unnamed product.
 3. Non-proprietary Specifications: When Specifications list products or manufacturers that are available and may be incorporated in the work, but do not restrict the Contractor to use of these products only, the Contractor may propose any available product that complies with Contract requirements. Comply with Contract Document provisions concerning “substitutions” to obtain approval for use of an unnamed product.
 4. Descriptive Specification Requirements: Where Specifications describe a product or assembly, listing exact characteristics required, with or without use of a brand or trade name, provide a product or assembly that provides the characteristics and otherwise complies with Contract requirements.
 5. Performance Specification Requirements: Where Specifications require compliance with performance requirements, provide products that comply with these requirements and are recommended by the manufacturer for the application indicated. Manufacturer’s recommendations may be contained in published product literature or by the Manufacturer’s Certification of Performance.
 6. Compliance with Standards, Codes and Regulations: Where Specifications only require compliance with an imposed code, standard, or regulation, select a product that complies with the standards, codes, or regulations specified.
 7. Visual Matching:
 - a. Where Specifications require matching an established Sample, the Project Manager’s decision will be final on whether a proposed product matches satisfactorily.
 - b. Where no product available within the specified category matches satisfactorily and complies with other specified requirements, comply with provisions of the Contract Documents concerning “substitutions” for selection of a matching product in another product category.
 8. Visual Selection: Where specified product requirements include the phrase “...as selected from manufacturer’s standard colors, patterns, textures...” or a similar phrase, select a product and manufacturer that complies with other specified requirements. The Project Manager will select the color, pattern, and texture from the product line selected.

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PART 3 - EXECUTION

3.1 INSTALLATION OF PRODUCTS

- A. Comply with manufacturer's instructions and recommendations for installation of products in the applications indicated. Anchor each product securely in place, accurately located and aligned with other work. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

3.2 QUALITY ASSURANCE

- A. Source Limitations:
 - 1. To the fullest extent possible, provide products of the same kind from a single source.
 - 2. Substitutions to the specified products will only be allowed in accordance with General Contract Conditions Article 406 "Substitution of Materials and Equipment", and Division 01 Section "Substitutions".
- B. Nameplates: Except for required labels and operating data, do not attach or imprint manufacturer's or producer's nameplates or trademarks on surfaces of products that will be exposed to view in occupied spaces or on the exterior.
 - 1. Labels: Locate required product labels and stamps on concealed surfaces or, where required for observation after installation, on accessible surfaces that are not conspicuous.
 - 2. Equipment Nameplates: Provide a permanent nameplate on each item of service-connected or power-operated equipment. Locate on an easily accessible surface that is inconspicuous in occupied spaces. The nameplate shall contain the following information and other essential operating data:
 - a. Name of product and manufacturer.
 - b. Model and serial number.
 - c. Capacity.
 - d. Speed.
 - e. Ratings.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

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

4.2 PAYMENT

- A. The cost of the Work described in this Section shall be included in the Contract price.

END OF SECTION 01 60 00

SECTION 01 66 00

STORAGE AND PROTECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. The Work specified in this Section consists of providing storage and protection of the materials, products and supplies which are to be incorporated into the construction and indicating such storage areas on the Contract Drawings with the location and dates when such areas will be available for each purpose.
- B. Reference General Contract Conditions Article 803 "Protection of Property and Work in Progress".

1.3 SUBMITTALS

- A. Refer to Division 01 Sections "Submittals" and "Shop and Working Drawings, Product Data, and Samples" for submittal procedures. Submit concurrently with submittals required in Division 01 Section "Layout of Work and Surveys".
- B. Storage Site Plan: Submit working drawings showing locations of storage areas not indicated on the Contract Drawings.
- C. Storage and Protection Methods: Submit descriptions of proposed methods and locations for storing and protecting products.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Materials required for the storage and protection of the items specified shall be durable, weatherproof and either factory finished or painted to present an appearance acceptable to the Project Manager. Storage facilities shall be uniform in appearance with similar materials used to the maximum extent possible.

PART 3 - EXECUTION

3.1 GENERAL REQUIREMENTS OF EXECUTION

- A. Palletize materials, products and supplies which are to be incorporated into the construction and stored off the ground. Store these items in a manner which will prevent damage, and which will facilitate inspection. Leave seals, tags and labels intact and legible. Maintain access to products to allow inspection. Protect products that would be affected by adverse environmental conditions.

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- B. Periodically inspect stored products to ensure that products are being stored as stipulated and that they are free from damage and deterioration.
- C. Do not remove items from storage until they are to be incorporated into the Work.
- D. The Contractor shall ensure that all protective wrappings and coverings are secure and ballasted to prevent any items from deterioration and/or subsequent dislodgment. All items on the worksite that are subject to becoming windborne shall be ballasted or anchored.

3.2 HANDLING AND TRANSPORTATION

- A. Handling:
 - 1. Avoid bending, scraping or overstressing products. Protect projecting parts by blocking with wood, by providing bracing or by other approved methods.
 - 2. Protect products from soiling and moisture by wrapping or by other approved means.
 - 3. Package small parts in containers such as boxes, crates, or barrels to avoid dispersal and loss. Firmly secure an itemized list and description of contents to each container.
 - 4. Refer to Division 32 Sections related to landscape materials for proper handling and storage of plant material.
- B. Transportation: Conduct the loading, transporting, unloading, and storage of products so that they are kept clean and free from damage.
 - 1. Refer to Division 32 Sections related to landscape materials for proper transportation of plant material.

3.3 STORAGE

- A. Store items in a manner that shall prevent damage to the City's property. Do not store hydraulic fluids, gasoline, liquid petroleum, gases, explosives, diesel fuel, and other flammables in excavations, except one day's supply of diesel fuel may be stored in open excavations.
- B. Provide sheltered weather-tight or heated weather-tight storage as required for products subject to weather damage.
- C. Provide blocking, platforms or skids for products subject to damage by contact with the ground.
- D. All material shall be stored according to the manufacturer's recommendations. Any material that will be stored within specified temperature or humidity ranges shall have a twenty-four (24) hour continuously written recording made of the applicable condition. Should the recording show that the material was not stored within the recommended ranges the material shall be considered defective and in nonconformance. If a certification from the manufacturer's engineering design representative is provided stating that the actual variations are acceptable and will in no way harm the material or affect warranties, then the deficiency will be considered corrected.
- E. Store hazardous material separately, with all material marked with a label showing the hazard and how to treat exposure to the material.

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3.4 LABELS

- A. Storage cabinets and sheds that will contain flammable substances and explosive substances shall be labeled **FLAMMABLE--KEEP FIRE AWAY** and **NO SMOKING** with conspicuous lettering and conforming to OSHA requirements.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

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

4.2 PAYMENT

- A. The cost of the Work described in this Section shall be included in the Contract price. See Division 01 Section "Schedule of Values" for additional requirements for the possible payment of stored material.

END OF SECTION 01 66 00

SECTION 01 71 23

LAYOUT OF WORK AND SURVEYS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the procedures and accuracy requirements for survey services for layout of work and field measurement of work quantities to be determined by surveys.
 - 1. The Work is to be verified and coordinated with Contract Drawings. Variations between Contract Drawings and actual field conditions are to be immediately brought to the attention of the Project Manager.
 - 2. Reference Standard Specifications for Construction General Contract Conditions, Article 318 "Construction Surveys" and Article 319 "Preservation of Permanent Land Survey Control Markers".

1.3 SUBMITTALS

- A. Refer to Division 01 Sections "Submittals" and "Shop and Working Drawings, Product Data, and Samples" for the submittal process.
- B. Field Notes: Submit Copies of original pages of field notes.
- C. Closeout Submittals:
 - 1. Original field notebooks when filled and at end of contract.
 - 2. Measurements for Record Documents.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 CONSTRUCTION LINES AND GRADES

- A. The Contractor shall make surveys and layouts as necessary to delineate the work. The Contractor shall make the surveys for the proper performance of the Work. As a part of such surveys, the Contractor shall furnish, establish, and maintain in good order survey control points that may be required for the completion of the Work subject to the approval of the Project Manager as to their location, sufficiency, and adequacy. However, such approval by the Project Manager shall not relieve the Contractor of his responsibility for the accuracy of his survey work.
- B. The Contractor shall furnish skilled labor, instrument platforms, ladders, and such other temporary structures as may be necessary for making and maintaining points and lines regarding the surveys required.

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- C. The City may draw the Contractor's attention to errors or omissions in lines or grades, but the failure to point out such errors or omissions shall not give the Contractor any right or claim nor shall in any way relieve the Contractor of his obligations according to the terms of this contract.
- D. The Contractor's instruments and other survey equipment shall be accurate, suitable for the surveys required in accordance with recognized professional standards and in proper condition and adjustment always. Surveys shall be performed under the direct supervision of a Colorado licensed surveyor.

3.2 DIGITAL FILES

- A. If approved by the Project Manager, the Contractor may elect to utilize the Design Consultant's digital CAD files as guidance for layout and location of site elements.
- B. Layout and location of site elements, grades and features from digital CAD files does not relieve the Contractor of requirements, locations and grades shown on the Contract Drawings.
- C. Contractor is responsible to verify locations of elements staked with digital data to assure conformance with the Contract Drawings at a level of accuracy as stated in Section 3.3 below.

3.3 SURVEYING ACCURACY AND TOLERANCES IN SETTING SURVEY, LAYOUT, AND QUANTITY CALCULATION STAKES

- A. The tolerances generally applicable in setting survey stakes shall be as set forth in the CDOT's Survey Manual, latest edition. Such tolerances shall not supersede stricter tolerances required by the drawings or specifications, and shall not otherwise relieve the Contractor of responsibility for measurements in compliance therewith.

3.4 RECORD MEASUREMENTS

- A. Provide record measurement for items that will be hidden or visible including all civil, mechanical and electrical, control work, and all utilities that are placed in concrete, earth, or behind walls shall be made.
- B. Items located within or five feet (5') beyond a building shall be referenced to building column lines and finish floor elevations.
- C. Special attention shall be paid to items requiring service, sensors, items with moving parts, access points and locations of junctions, elevation changes, and directional changes.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

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

4.2 PAYMENT

- A. No separate payment will be made for work under this Section. The cost of the work described in this Section shall be included in the Contract price.

END OF SECTION 01 71 23

SECTION 01 74 23**CLEANING**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the requirements for maintaining a clean, orderly, hazard free worksite during construction, and final cleaning for the City's Final Acceptance. Failure to maintain the worksite will be grounds for withholding monthly payments until corrected to the satisfaction of the Project Manager.
- B. Reference General Contract Conditions as listed:
 - 1. Article 325 "Cleanup During Construction".
 - 2. Article 803 "Protection of Property and Work in Progress".
 - 3. Article 2001 "Cleanup Upon Completion".

1.3 JOB CONDITIONS

- A. Safety Requirements: Maintain the worksite in a neat, orderly and hazard-free manner in conformance with all federal, state and local rules, codes, regulations and orders, including all OSHA requirements, until Final Acceptance of the Work. Keep catwalks, underground structures, worksite walks, sidewalks, roadways and streets, along with public and private walkways adjacent to the worksite, free from hazards caused by construction activities.
 - 1. Inspect those facilities regularly for hazardous conditions caused by construction activities.
- B. Hazards Control:
 - 1. Store volatile wastes in covered metal containers and remove those wastes from worksite daily.
 - 2. Do not accumulate wastes which create hazardous conditions.
 - 3. If volatile and noxious substances are being used in spaces that are not naturally ventilated, provide artificial ventilation.
 - 4. Hazard controls shall conform to the applicable federal, state, and local rules and regulations.
 - 5. Provide appropriate waste receptacles in all areas in which employees are working. Waste receptacles shall be kept covered at all times. All materials on site shall be anchored and covered to prevent any objects from becoming wind-borne.
- C. Access: Maintain the worksite to permit access by other City contractors as required and to allow access by emergency personnel.

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PART 2 - PRODUCTS

2.1 CLEANING MATERIALS

- A. Utilize the type of cleaning materials recommended by the manufacturer for the surfaces to be cleaned.
- B. Maintain current Safety Data Sheets (SDS) on site for all chemicals. Refer to following link for associated OSHA requirements.
https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10103
- C. Ensure proper disposal of all wastes generated from the use of these materials. Must ensure compliance with all environmental regulations.

PART 3 - EXECUTION

3.1 INTERIM CLEANING

- A. Clean the worksite every shift/workday for the duration of the construction contract. Maintain structures, grounds, storage areas, and other areas of worksite, including public and private properties immediately adjacent to worksite, free from accumulations of waste materials caused by construction operations. Place waste materials in covered metal containers. All hard concrete, steel, wood, and finished walking surfaces shall be swept clean daily.
- B. Remove or secure loose material on open decks and on other exposed surfaces at the end of each workday or more often in a manner that will maintain the worksite hazard free. Secure material in a manner that will prevent dislodgment by wind and other forces.
- C. Sprinkle waste materials with water or acceptable chemical palliative to prevent blowing of dust.
- D. Promptly empty waste containers when they become full and legally dispose of the contents at dumping areas off the City's property.
- E. Control the handling of waste materials. Do not permit materials to be dropped or thrown from structures.
- F. Immediately remove spillage of construction related materials from haul routes, work site, private property, or public rights of way.
- G. Clean only when dust and other contaminants will not precipitate upon newly painted surfaces.
- H. Cleaning shall be done in accordance with manufacturer's recommendation.
- I. Cleaning shall be done in a manner and using such materials as to not damage the Work.
- J. Clean areas prior to painting or applying adhesive.
- K. Clean all heating and cooling systems prior to operations. If the Contractor was allowed to use the heating and cooling system it shall be cleaned prior to testing.

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- L. Clean all areas that will be concealed prior to concealment.

3.2 FINAL CLEANING

- A. Inspect interior and exterior surfaces, including concealed spaces, in preparation for completion and acceptance.
- B. Remove dirt, dust, litter, corrosion, solvents, paint, stains, and extraneous markings.
- C. Remove surplus materials, except those materials intended for maintenance.
- D. Remove all tools, appliances, equipment, and temporary facilities used in the construction.
- E. Remove detachable labels and tags. File them with the manufacturer's specifications for that specific material for the City's records.
- F. Repair damaged materials to the specified finish or remove and replace.
- G. Clean all catch basins, manholes, drains, strainers, and filters after all trades have completed their work and just before Final Acceptance
- H. Sweep roadway, driveways, floors, steps, and walks.
- I. Interior areas of buildings shall be vacuumed clean and mopped.
- J. Final cleanup applies to all areas within and adjacent to the site.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

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

4.2 PAYMENT

- A. No separate payment will be made for work under this Section. The cost of the work described in this Section shall be included in the Contract price.

END OF SECTION 01 74 23

SECTION 01 77 00

CONTRACT CLOSEOUT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes procedures required for Substantial Completion under Title 19 and Final Completion and Acceptance of the Work under Title 20 of the General Contract Conditions and Division 01 Section "Contract Record Documents".
- B. Reference General Contract Conditions as listed:
 - 1. Article 906 "Applications for Payment".
 - 2. Article 909 "Additional Withholding of Progress Payments".
 - 3. Article 2003 "Final Settlement".

1.3 PREPARATION FOR FINAL INSPECTION

- A. Before requesting inspection for Final Acceptance of the Work by the City, inspect, clean, and repair the Work as required.

1.4 FINAL INSPECTION

- A. When the work is complete the Contractor shall submit written notification that:
 - 1. All punch list items have been completed.
 - 2. All clean up at the project site has been accomplished.
 - 3. Work has been inspected by the Contractor for compliance with contract documents.
 - 4. Work has been completed in accordance with contract documents.
 - 5. Work is ready for final inspection by the City.
 - 6. All required Record Documents have been submitted and accepted.
 - 7. All damaged or destroyed real, personal, public or private property has been repaired or replaced.
 - 8. All operation and maintenance manuals have been submitted and accepted and all training has been completed.
- B. The Project Manager will inspect to verify the status of completion with reasonable promptness after receipt of such notification. The inspection of the work will be done in accordance with the General Contract Conditions.
- C. If the Project Manager finds incomplete or defective work:
 - 1. The Project Manager may, at their sole discretion, terminate the inspection and/or deduct all costs associated with premature inspection from final billing.
 - 2. The Contractor shall take immediate steps to incomplete work and send a second written notification to the Project Manager that Work is complete.
 - 3. The Project Manager will then re-inspect the Work.

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1.5 REINSPECTION FEES

- A. Should the Project Manager perform re-inspection due to failure of the Work to comply with the claims of status of completion made by the Contractor:
 - 1. The Contractor shall compensate the City for such additional services at the rate of seventy-five dollars (\$75.00) per man-hour.
 - 2. The City shall deduct the amount of such compensation from the final payment to the Contractor.

1.6 FINAL ADJUSTMENT OF ACCOUNTS

- A. Submit a Final Statement of Accounting to the Project Manager.
- B. The Final Statement of Accounting shall reflect all adjustments to the contract amount and shall include the following:
 - 1. The original contract amount.
 - 2. Additions and deductions resulting from:
 - a. Previous change orders.
 - b. Allowances.
 - c. Final quantities for unit price items. Along with this statement shall be detailed backup for the quantities.
 - d. Deductions or corrected work.
 - e. Penalties.
 - f. Deductions for liquidated damages.
 - g. Deductions for re-inspection payments.
 - h. City resurveys required due to the Contractor.
 - i. Other adjustments
 - 3. Total contract amount, as adjusted.
 - 4. Previous payments.
 - 5. Sum remaining due.
- C. If required, the Project Manager will prepare a final change order, reflecting approved adjustments to the Contract sum which were not previously made by change orders.

1.7 FINAL APPLICATION FOR PAYMENT

- A. The Contractor shall submit the final application for payment in accordance with the procedures and requirements stated in the General Contract Conditions Title 20 "Final Completion and Acceptance of the Work".

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

PART 4 - MEASUREMENT AND PAYMENT

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4.1 MEASUREMENT

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

4.2 PAYMENT

- A. No separate payment will be made for work under this Section. The cost of the work described in this Section shall be included in the Contract price.

END OF SECTION 01 77 00

SECTION 01 78 35

WARRANTIES AND BONDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the requirements for preparing and submitting warranties and bonds required by these specifications.
- B. Reference the General Contract Conditions as listed:
 1. Article 111 "Final Completion".
 2. Article 1501 "Surety Bonds".
 3. Article 1502 "Performance Bond".
 4. Article 1503 "Payment Bond".
 5. Article 1801 "Contractor's Warranties, Guarantees, and Correction of Work".
 6. Article 1802 "Performance During Warranty Period".

1.3 SUBMITTALS

- A. Refer to Division 01 Section "Submittals" for submittal procedures.
- B. Submit executed warranties and bonds.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 WARRANTIES AND BONDS

- A. Execute the warranties and bonds required by the Contract Documents. Prepare and submit a list of all warranties and bonds on the form provided by the City. Reference Division 01 Section "Standard Forms".
- B. Provide warranties or bonds for the materials, labor, and time period set forth in the sections of these specifications requiring such documents. All warranties shall be in accordance with the General Contract Conditions. Refer to the individual specifications sections for all specific items requiring longer warranty periods.
- C. Provide all warranties and bonds that the manufacturer or supplier furnishes at no additional cost in regular commercial trade. All warranties shall be in accordance with the General Contract Conditions. Refer to the individual specifications sections for all specific items requiring longer warranty periods.

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PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

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

4.2 PAYMENT

- A. No separate payment will be made for work under this Section. The cost of the work described in this Section shall be included in the Contract price.

END OF SECTION 01 78 35

SECTION 01 78 39

CONTRACT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the requirements for maintaining, marking, recording, and submitting contract record documents, including shop drawings, warranties, contract documents, and Contractor records.
- B. Reference General Contract Conditions Article 324 “Documents and Samples at the Site” and Division 32 Sections “Irrigation Systems” and “Automatic Irrigation Controllers”.

1.3 SUBMITTALS

- A. Each submittal of record documents shall contain the following information:
 - 1. Date.
 - 2. Project title and numbers.
 - 3. Contractor’s name and address.
 - 4. Title and number of each record document.
 - 5. Certification that each document as submitted is complete and accurate.
 - 6. Signature of the Contractor or his authorized representative.
- B. At the completion of this contract, deliver all record documents including the following:
 - 1. Shop drawings, diagrams, illustrations, schedules, charts, brochures and other similar data, updated to record status.
 - 2. Warranties, guarantees, and bonds.
 - 3. Contract documents.
 - 4. Contractor records.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 MAINTENANCE OF DOCUMENTS

- A. The Contractor shall maintain at the worksite on a current basis one record copy of all drawings, specifications, addenda, change orders, approved shop drawings, working drawings, product data, and samples in good order and marked currently to record all changes made during construction.
- B. Maintain at the field office one (1) copy of the following record documents:
 - 1. Contract Documents:

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- a. Contract drawings with all clarifications, requests for information, directives, changes and field-modified conditions clearly posted.
 - b. Contract specifications with all clarifications, requests for information, changes, directives and record of the manufacturer used along with product trade name.
 - c. Reference Standards in accordance with Division 01 Section "Definitions and Conventions".
 - d. One set of drawings to record the following:
 - 1) Horizontal and vertical location of underground utilities affected by the Work.
 - 2) Location of internal utilities; include valves, controls, conduit, duct work, switches, pressure reducers, size reducers, transitions, crosses, tees, filters, motors, heaters, dampers, regulators, safety devices, sensors, access doors, and appurtenances that are concealed in the construction shall be shown with dimensions given from a visible and recognizable reference to the item shown in all three dimensions. The drawing shall also reference the applicable submittal for the item being located.
 - 3) Field changes of dimensions and details including as-installed elevations and location (station and offset).
 - 4) Details not on original contract drawings but obtained through requests for information or by other communications with the City.
2. Contractor Records:
- a. Daily QC Reports.
 - b. Certificates of compliance for materials used in construction.
 - c. Nonconformance Reports (NCRs).
 - d. Remedial Action Requests (RARs).
 - e. Completed inspection list.
 - f. Inspection and test reports.
 - g. Test procedures.
 - h. Qualification of personnel.
 - i. Approved submittals.
 - j. Material and equipment storage records.
 - k. Safety Plan.
 - l. Erosion, sediment, hazardous and quality plans.
 - m. Hazardous material records.
 - n. First report of injuries.

3.2 RECORDING

- A. Keep record documents current daily.
- B. Legibly mark copies of the contract drawings to record actual construction.
- C. Legibly mark up each Section of the technical specifications and contract drawings to record:
 1. Changes made by change orders, requests for information, substitutions, and variations approved by submittals.

3.3 DOCUMENT MAINTENANCE

- A. Maintain Documents in a clean, dry and legible condition, which shall be turned over to the City prior to final acceptance.

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- B. Do not use record documents for construction purposes.
- C. Make documents available for inspection by the Project Manager and any others having jurisdiction.

3.4 REVIEW

- A. Project Manager or their designated representative will inspect the Record Drawings at each weekly progress meeting to ensure that they are being maintained and contain the most current data.
- B. Prior to any application for payment, the Project Manager or his designated representative will inspect the record documents to ensure that they are being maintained and contain the most current correct data with attention to Record Drawings.
- C. If, during the inspection, the Project Manager determines that the documents are not being maintained and kept current as to as-installed conditions, an amount may be withheld from the payment request and deducted from the contract value to cover the City's cost of collecting and recording the Record Contract data. This cost will be determined on the basis of seventy-five dollars (\$75.00) per man-hour of effort.

3.5 FIELD QUALITY CONTROL

- A. Record documents shall be prepared by Contractor to a high standard of quality, such as that set forth in MIL STD 100, American National Standard Drafting Manual (ANSI Y14), or other relevant lower tier specification defining equal drafting quality for microfilming, except for daily reports.

3.6 IRRIGATION RECORD DRAWINGS

- A. Refer to Division 32 Section "Irrigation Systems".

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

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

4.2 PAYMENT

- A. No separate payment will be made for work under this Section. The cost of the work described in this Section shall be included in the Contract price.

END OF SECTION 01 78 39

SECTION 01 99 90

STANDARD FORMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This section includes forms to be used by the Contractor throughout the duration of the work.
 - 1. This is not a complete listing of all required forms.
 - 2. Required Forms
 - 3. The Contractor may create their own forms listed under Sample Forms recreate some of the forms so that they are compatible with the Contractor's Project Management system. However, Contractor must receive prior approval from the Project Manager before using modified forms.
 - 4. The Contractor shall properly complete all forms required by the contract or the Project Manager.
 - 5. The Project Manager shall review and approve all submitted forms. If submitted forms are not acceptable the Contractor shall resubmit forms in an acceptable format.

1.3 REQUIRED FORMS

- A. The Contractor shall use the following required forms provided by the City
 - 1. Submittal Log.
 - 2. Request for Substitution.
 - 3. Quality Control Report.
 - 4. Request for Information Log.
 - 5. Non-Conformance Report.
 - 6. Corrective Action Report.
 - 7. Pay Application Forms.

1.4 SAMPLE FORMS

- A. The Contractor may create their own forms to be similar in style and content of the examples listed below.
 - 1. Schedule.
 - 2. Contractor/Subcontractor Warranty (reference the General Contract Conditions).
 - 3. Request for Substantial Completion Letter.

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PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 COMPLETING FORMS

- A. All documents are to be filled in digitally by the Contractor using the format provided by the Project Manager or using Adobe Acrobat. It is at the discretion of the Project Manager if other forms or formats will be accepted.

3.2 SIGNING FORMS

- A. Original hand-written signatures are acceptable for all documents. The Contractor is to fill out the document digitally as indicated above prior to signing the hard copy.
 - 1. If the form is to be submitted digitally to the Project Manager the document shall be scanned and saved as an Adobe Acrobat file.
- B. Digital signatures are acceptable for all documents. The Contractor is to fill out the document digitally in the format provided by the Project Manager or use Adobe Acrobat. The file must be signed and submitted digitally to the Project Manager.
 - 1. All digital signatures must contain the name of signer in plain text and the time and date the signature is executed.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

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

4.2 PAYMENT

- A. No separate payment will be made for work under this Section. The cost of the work described in this Section shall be included in the Contract price.

END OF SECTION 01 99 90

SECTION 02 41 00**DEMOLITION**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the requirements for demolition, removal and/or stockpiling for reuse of:
 - 1. Signs.
 - 2. Existing Road Base Material.
 - 3. Trees.
 - 4. Boulders.
- B. Related Sections:
 - 1. Division 01 Section "Temporary Facilities and Controls".
 - 2. Division 01 Section "Erosion and Sedimentation Control".
 - 3. Division 01 Section "Tree Protection and Retention".
 - 4. Division 31 Section "Clearing and Grubbing".
 - 5. Division 31 Section "Earth Moving".

1.3 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.
- B. Remove and Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to the City in a condition ready for re-use.
- C. Remove and Reinstall: Detach items from existing construction, prepare for reuse, and reinstall where indicated.
- D. Existing to Remain: Existing items of construction that are not to be permanently removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.
- E. Recyclable Material: Material generated during demolition operations that can be reconditioned and reclaimed for the same or different use. Such materials include asphalt, concrete, metals (steel, iron, aluminum, copper, etc), rubber, glass and paper.

1.4 PROJECT CONDITIONS

- A. Keep dust to a minimum at removal areas. Use water trucks as necessary.
- B. Ensure safety of persons in demolition area. Provide temporary barricades as required per Division 01 Section "Temporary Facilities and Controls".

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1.5 PRE-CONSTRUCTION MEETINGS

- A. Preconstruction: Inspect and discuss condition of construction to be selectively demolished.
- B. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
- C. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
- D. Review areas where existing construction is to remain and requires protection.
- E. Agenda Items
 - 1. Items may include, but not be limited to, discussion of schedule, site access, work times, staging, daily site cleanup, shop drawing and submittal review schedules, and site staking approvals before install of items.

1.6 INFORMATIONAL SUBMITTALS

- A. Proposed Protection Measures: Submit report, including drawings, that indicates the measures proposed for protecting individuals and property ,for environmental protection, and for dust control. Indicate proposed locations and construction of barriers.
- B. Schedule of Demolition Activities: Indicate the following:
 - 1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure the City’s on-site operations are uninterrupted.
 - 2. Interruption of utility services. Indicate how long utility services will be interrupted.
 - 3. Coordination for shutoff, capping, and continuation of utility services.
- C. Inventory: Submit a list of items to be removed and salvaged and deliver to the Project Manager prior to start of demolition.
- D. Preconstruction Photographs or Video: Submit digital photographs or videos prior to Work commencing.

1.7 CLOSEOUT SUBMITTALS

- A. Inventory:
 - 1. Submit a list of items that have been removed and salvaged.
 - 2. Include documentation of the type and volume/weight of materials hauled to the nearest recycling center.
- B. Landfill Records: Provide records of receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

PART 2 - PRODUCTS

2.1 FILL MATERIALS

- A. Soils as indicated on documents, free of debris, frozen materials, roots, and other organic matter. See Division 31 Section “Earth Moving”.

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PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect structures, pavement, trails, utilities, and vegetation to remain.
- B. Set up all barriers, including those for tree protection, in accordance with Division 01 Section “Temporary Facilities and Controls” and Division 01 Section “Tree Protection and Retention”, prior to proceeding with any demolition.
- C. Protection and Repair of Underground lines:
 - 1. Existing Public Utilities: Locate existing underground utilities within the limits of work per General Contract Conditions, Article 804 Protection of Municipal, Public Service or Public Utility Systems. Request utility locates seventy-two (72) hours in advance of any excavations by calling the Utility Notification Center of Colorado at 811. The Contractor is responsible for providing written and graphical documentation from the utility owner. Take whatever precautions are necessary including potholing to verify location and depth to protect these underground lines from damage. Should unmarked or incorrectly marked utilities or other piping be encountered during excavation, notify the Project Manager immediately for direction. If damage does occur, all damage shall be repaired by the utility owner and all costs of such repair shall be paid by the Contractor. Only written all clears will be acceptable from utility providers or utility locate services, verbal all clears will not be accepted.
 - 2. Existing Private Utilities: Locate existing underground utilities within the limits of work per General Contract Conditions, Article 804 Protection of Municipal, Public Service or Public Utility Systems. The Contractor is required to contact all private utility companies including The City and County of Denver departments to locate all private utilities. The Contractor is responsible for providing written and graphical documentation from the private utility owner. The request for locates shall be a minimum of seventy-two (72) hours prior to proceeding with any excavation. If, after such requests, private utilities are encountered and damaged by the Contractor these shall be repaired at no cost to the City. If the Contractor damages staked or located private utilities they shall be repaired by the utility owner and all costs of such repair shall be paid by the Contractor. Only written all clears will be acceptable from utility providers or utility locate services, verbal all clears will not be accepted.

3.2 DEMOLITION

- A. Signs and Posts:
 - 1. Remove to full depth of foundation signs and posts as indicated on plans.
- B. Road Base:
 - 1. Strip road base material and stockpile on-site for use as fill. All stripped material to be clean and free from organic matter, roots, brush or other vegetation, trash, and debris or other detrimental substances before replacement as fill.
 - a. The Project Manager is to approve material prior to placement.
- C. Boulders:
 - 1. Remove and salvage boulders as indicated on plans. Stockpile on site. Stockpile location subject to the approval of owner or owner’s representative.

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3.3 RESTORATION

- A. Backfilling: Ensure that areas to be filled are free of standing water, frost, frozen material, vegetation, including roots and debris. Place fill materials in accordance with Division 31 Section "Earth Moving".
- B. Grading:
 - 1. Restored Areas: Grade surface to blend with original contours and provide free drainage flow. All ruts and depressions where any amount of standing water collects shall be re-graded to a smooth natural appearance to ensure positive drainage.
 - 2. New Construction Areas: Grade as indicated in Division 31 Section "Earth Moving".

3.4 DISPOSAL

- A. Remove trash, debris and waste materials, haul and legally dispose of it off the property. All recyclable materials shall be hauled to nearest recycling center and any non-recyclable materials shall be hauled to DADS. DADS Disposal tickets shall be provided to the Contractor by the Project Manager.
- B. Salvaged Material: All salvaged material remains the property of the City. Store or deliver as directed by the Project Manager.

3.5 FIELD QUALITY CONTROL

- A. Comply with safety requirements for demolition, ANSI A10.6-83.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Measurement will be based on the percentage complete for the lump sum contract amount for Demolition.

4.2 PAYMENT

- A. Payment will be made at the lump sum contract price, and shall include required materials, transportation, equipment, labor, excavation, stockpiling, legally disposing of, hauling, watering, dust control, erosion and sediment control, as required in accordance with the Contract Drawings and Specifications. The price shall include sawing or otherwise effectively cutting the existing paving, curb and gutter or concrete pipe smoothly and squarely in a manner satisfactory to the Project Manager. The price shall include the removal and offsite disposal of all materials including any base course deemed unsuitable by the Project Manager. No payment will be made for the removal and/or replacement of any paving, curb and gutter or pipe sections damaged by the Contractor beyond the authorized limits of removal.

END OF SECTION 02 41 00

SECTION 03 30 00**CAST-IN-PLACE CONCRETE**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section of the Work includes excavation, furnishing, placing, shoring, bracing, and anchorage of formwork, concrete reinforcement, accessories, and placing concrete in connection with cast-in-place concrete installation for footings and foundations.
- B. Related Sections:
 - 1. Division 01 Section "Layout of Work and Surveys"
 - 2. Division 01 Section "Submittals".
 - 3. Division 01 Section "Contractor Quality Control".
 - 4. Division 01 Section "Erosion and Sedimentation Control".
 - 5. Division 05 Section "Metal Fabrications":
 - 6. Division 31 Section "Earth Moving".
 - 7. Division 32 Section "Aggregate Base Course".
 - 8. Division 32 Section "Concrete Walks, Curbs, and Miscellaneous Flatwork".

1.3 REFERENCES

- A. Project Geotechnical Report:
 - 1. Geotechnical Investigation Report, Improvements at Genesee Park, Golden Colorado
 - a. Yeh and Associates, Inc. 2000 Clay St, Ste 200, Denver, CO 80211. June 16, 2014.
- B. Note: All references below shall be from the most current edition.
- C. American Concrete Institute (ACI):
 - 1. ACI 117 - Standard Tolerances for Concrete Construction and Materials.
 - 2. ACI 301 - Specifications of Structural Concrete for Buildings.
 - 3. ACI 304 - Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete.
 - 4. ACI 305 and 306 - Hot and Cold Weather Protection for Concrete.
 - 5. ACI 315 - Details and Detailing of Concrete Reinforcement.
 - 6. ACI 318 - Building Code Requirements for Reinforced Concrete.
 - 7. ACI 347 - Recommended Practice for Concrete Formwork.
- D. American Society for Testing and Materials (ASTM):
 - 1. ASTM A615 - Deformed and Plain Billet-Steel for Concrete Reinforcement.
 - 2. ASTM A1064 / A1064M-17 - Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete
 - 3. ASTM C33 - Concrete Aggregates.
 - 4. ASTM C94 - Ready-Mixed Concrete.
 - 5. ASTM C150 - Portland Cement.

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6. ASTM C260 - Air Entraining Admixtures for Concrete.
7. ASTM C494 - Water Reducing Admixtures for Concrete.
8. ASTM C618 - Fly Ash Mineral Admixture for Concrete.
9. ASTM C672 - Scaling Resistance of Concrete Surfaces Exposed to Deicing Chemicals.
10. ASTM C979 - Pigments for Integrally Colored Concrete
11. ASTM C1059 - Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete
12. ASTM-C1315 - Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete

E. Concrete Reinforcing Steel Institute (CRSI) - Manual of Standard Practice.

F. Colorado Department of Transportation (CDOT) - Standard Specifications for Road and Bridge Construction.

G. National Ready Mixed Concrete Association (NRMCA)

1.4 QUALITY CONTROL

A. Pre-Construction Conference: Conduct conference at location approved by the Project Manager.

1. Before submitting design mixtures, review concrete design mixture and examine procedures for ensuring quality of concrete materials. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following:
 - a. Contractor's superintendent.
 - b. Independent testing agency responsible for concrete design mixtures.
 - c. Ready-mix concrete manufacturer.
 - d. Concrete subcontractor.
2. Review special inspection and testing and inspecting agency procedures for field quality control, concrete finishes and finishing, cold- and hot-weather concreting procedures, curing procedures, construction contraction and isolation joints, joint-filler strips, semi-rigid joint fillers, forms and form removal limitations, shoring and reshoring procedures, vapor-retarder installation, anchor rod and anchorage device installation tolerances, steel reinforcement installation, concrete repair procedures, and concrete protection.

1.5 SUBMITTALS

A. Qualification Data: Installer to document for Owner's Representative experience on projects of similar scope and scale successfully completed within the past five (5) years.

B. Product Data and Material Certificates: For each type of product and material indicated on the plans and in this specification.

C. Mix Designs:

1. Submit substantiating data for each concrete mix design specified for use to the Project Manager not less than four (4) weeks prior to first concrete placement. Data for each mix shall, as a minimum, include the following:
 - a. Mix identification designation (unique for each mix submitted).
 - b. Statement of intended use for mix.
 - c. Mix proportions.
 - d. Admixtures (must be approved by the Project Manager).

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- e. Aggregates
 - f. Wet and dry unit weight.
 - g. Entrained air content.
 - h. Design slump.
 - i. Strength qualification data.
- D. Submit shop drawings for fabrication, bending and placement of concrete reinforcement. Comply with ACI Detailing Manual SP 66. Include all accessories specified and required to support reinforcement.
- E. Material Test Reports: For the following, from a qualified testing agency, indicating compliance with requirements:
- 1. Aggregates. Include service record data indicating absence of deleterious expansion of concrete due to alkali aggregate reactivity.
- F. Field quality-control reports.
- G. Minutes of Pre-Construction conference.
- 1.6 DELIVERY, STORAGE AND HANDLING
- A. General: Materials handling and batching shall conform to applicable provisions of ASTM C94.
- B. Reinforcing: Unload and store reinforcing bars so they are kept free of mud and damage.
- C. Project-Site Mixing: Not allowed without prior approval from the Project Manager. If allowed, submit process description to the Project Manager for approval prior to construction.
- D. Hauling Time for Concrete: Deliver and discharge all concrete transmitted in a truck mixer, agitator, or other transportation device not later than one and one-half (1-1/2) hours, or three-hundred (300) revolutions of the drum after the initial mixing water has been added, whichever is earliest.
- E. Extra Water:
- 1. Deliver concrete to site in exact quantities required by design mix.
 - 2. Should extra water be required for workability before depositing concrete, and the water/cement ratio of accepted mix design will not be exceeded, the General Contractor's superintendent shall have the sole authority to authorize addition of water. Additional water shall not exceed one (1) gal/cu. yd. Any additional water added to mix after leaving batch plant shall be indicated on truck ticket and signed by person responsible.
 - 3. Where extra water is added to concrete it shall be mixed thoroughly for thirty (30) revolutions of drum before depositing.
 - 4. Water may be added at the site only once for each batch.
 - 5. A full set of tests shall be performed after addition of water. Excessive slump or other out of range tests will be cause for rejection.
- 1.7 PROJECT CONDITIONS
- A. Environmental Requirements:
- 1. Cold Weather Placement:

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- a. When for three successive days prior to concrete placement the average daily outdoor temperature drops below forty degrees (40°) F or when the average outdoor temperature is expected to drop below forty degrees (40°) F on the day of concrete placement, preparation, protection and curing of concrete shall comply with ACI 306R.
 - b. Minimum temperature of concrete upon delivery shall conform to ACI 301 Table 7.6.1.1. Concrete at time of placement shall conform to minimum values of ACI 306R Table 1.4.1, and shall not exceed minimum values by more than twenty degrees (20°) F.
 - c. Subject to acceptance of the Project Manager an accelerating admixture may be used. Admixtures shall meet requirements of Part 2. Calcium Chloride and other chloride-type accelerating admixtures are not allowed.
2. Hot Weather Placement:
- a. When depositing concrete in hot weather, follow recommendations of ACI 305R.
 - b. Temperature of concrete at time of placement shall not exceed eighty-five degrees (85°) F.
 - c. When air temperatures on day of placement are expected to exceed ninety degrees (90°) F, mix ingredients shall be cooled before mixing. Flake ice or well-crushed ice of a size that will melt completely during mixing may be substituted for all or part of mix water.
 - d. Retarding admixture may be used subject to acceptance of the Project Manager. Admixtures shall meet requirements of Part 2.

PART 2 - PRODUCTS

2.1 FORM MATERIALS

- A. Forms for Cylindrical Columns, Pedestals, and Supports: Metal, glass-fiber-reinforced plastic, paper, or fiber tubes that produce surfaces with gradual or abrupt irregularities not exceeding specified formwork surface class. Provide units with sufficient wall thickness to resist plastic concrete loads without detrimental deformation.
- B. Hand Placed Steel Forms: Hand placed steel forms are only to be used for sections that are straight and have no bend, radii, or curvature in the sections to be used.
- C. Wood Forms: Forms shall be made of solid one side grade, sound, undamaged lumber with straight edges.
 1. Curved elements (bends, radii, or curvature) shown on plans are to be constructed with smooth-curved plywood forms. Faceted forms composed of straight sections will not be accepted.
- D. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.
 1. Formulate form-release agent with rust inhibitor for steel form-facing materials.

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2.2 STEEL REINFORCEMENT

- A. Recycled Content: Provide steel reinforcement with an average recycled content of steel so postconsumer recycled content plus one-half of pre-consumer recycled content is not less than twenty five percent (25%).
- B. Reinforcing Bars: ASTM A 615/A 615M, Grade 60; deformed.
- C. Epoxy-Coated Reinforcing Bars: ASTM A 775/A 775M or ASTM A 934/A 934M; with ASTM A 615/A 615M, Grade 60 deformed bars.
 - 1. Epoxy Repair Coating: Liquid, two-part, epoxy repair coating, compatible with epoxy coating on reinforcement.
- D. Joint Dowel Bars: ASTM A 615/A 615M, Grade 60 plain-steel bars. Cut bars true to length with ends square and free of burrs.
- E. Epoxy-Coated, Joint Dowel Bars: ASTM A 775/A 775M; with ASTM A 615/A 615M, Grade 60, plain-steel bars.
- F. Tie Wire: ASTM A1064, minimum sixteen (16) gauge annealed type.
- G. Hook Bolts: ASTM A 307, Grade A, internally and externally threaded. Design hook-bolt joint assembly to hold coupling against paving form and in position during concreting operations, and to permit removal without damage to concrete or hook bolt.
- H. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete of greater compressive strength than concrete specified, and as follows:
 - 1. Equip wire bar supports with sand plates or horizontal runners where base material will not support chair legs.
 - 2. For concrete surfaces exposed to view where legs of wire bar support contact forms, use CRSI Class one (1) plastic-protected steel wire or CRSI Class two (2) stainless-steel bar supports.
 - 3. For epoxy-coated reinforcement, use epoxy-coated or other dielectric-polymer-coated wire bar supports.
 - 4. For zinc-coated reinforcement, use galvanized wire or dielectric-polymer-coated wire bar supports.

2.3 CONCRETE MATERIALS

- A. Provide materials in accordance with ACI 301, unless amended or superseded by requirements of this section or general notes on structural drawings.
 - 1. General: Ready-mixed Concrete: ASTM C94. On-site mixed concrete not allowed.
 - 2. Cement: ASTM C150. Type II
 - 3. Fly ash: ASTM C618 Class F.
 - 4. Aggregate: ASTM C33.
 - a. All sand and aggregates to meet C-33 Table 3 for Class 4S "Severe Weathering Region".
 - 1) Fine Aggregate: Clean, natural sand.
 - 2) Coarse Aggregate: Clean gravel or crushed stone.

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5. Water: ASTM C 94/C 94M, clean and not detrimental to concrete.

2.4 ADMIXTURES

- A. General: Unless specified, no admixtures may be used without specific approval of the Project Manager.
- B. Prohibited Products: Calcium chloride or admixtures containing more than one half of one percent (0.05%) chloride ions or thiocyanates are not permitted.
- C. Color Admixture: Color Pigment: ASTM C 979, synthetic mineral-oxide pigments or colored water-reducing admixtures; color stable, nonfading, and resistant to lime and other alkalis.
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Davis Colors.
 - b. Dayton Superior Corporation.
 - c. Scofield, L. M. Company.
 2. Color: To match Davis color Omaha Tan.
- D. Air-Entraining Admixture: ASTM C260.
- E. Water Reducing Admixture: ASTM C494, Type A.
- F. High Range Water Reducing Admixture (Superplasticizer): ASTM C494, Type F or G.
- G. Warm Weather Admixtures: ASTM C494. Use of admixtures will not relax warm weather placement requirements.
- H. Cold Weather Admixtures: ASTM C494. Use of admixtures will not relax cold weather placement requirements.

2.5 CONCRETE MIX

- A. Refer to the City and County of Denver Right of Way Services approved materials list of pre-approved concrete mixes at the following website:

<https://www.denvergov.org/content/denvergov/en/right-of-way-services/engineering-regulatory-analytics/engineering-plan-review/manuals-regulations.html>

All Concrete mixes from the approved list or submitted for approval shall meet the following criteria:

1. Mix concrete in accordance with ASTM C94 and ACI 301 Chapter 3.
2. Cement Content: Type II cement, minimum of five hundred twenty-eight (528) pounds per cubic yard.
3. Fly ash: Class F per CDOT Standard Specifications for Road and Bridge Construction Section 701.02. Fly ash shall not exceed twenty (20%) of total cementitious material by weight unless approved by the Project Manager.
4. Maximum water-cement ratio: 0.44.
5. Slump: Four inches (4") maximum when hand placed.
6. Air Entrainment: Five percent (5%) to eight percent (8%).
7. Aggregate Size: three quarter inches (3/4"), maximum.

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8. Concrete for Footings, Walls, and Interior Slabs-on-Grade shall be Class B or Class D, as approved by the Project Manager.

2.6 ACCESSORIES

- A. Expansion Joints:
 1. Interior Use or Exterior Use Where Sealants are Specified: Bituminous saturated fiber conforming to ASTM D1751, one half inch (1/2") thick. Provide manufacturer's certification of compatibility with specified sealants where required.
 2. Exterior Use Where Sealants are not Specified: Pre-molded asphalt and fiber conforming to ASTM D994, one half inch (1/2") thick.
 3. Joint Sealant: Per CDOT's approved joint and crack sealant list. Where concrete color additive is used, sealant color to match adjacent concrete.
- B. Form Ties: Factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete surface.
 1. Furnish units that will leave no corrodible metal closer than two inches (2") to the plane of exposed concrete surface, or as shown on the drawings.
 2. Furnish ties that, when removed, will leave holes no larger than 1 inch (1") in diameter in concrete surface.
 3. Furnish ties with integral water-barrier plates to walls indicated to receive damp proofing or waterproofing.
- C. Spray Curing and Sealing Compound: White, Waterborne, Membrane-Forming ASTM C 1315, Type two (2), Class B, dissipating.
 1. Products:
 - a. ChemMasters Silencure SRT
 - b. Or approved equal.
- D. Bonding Agent: Latex bonding adhesive shall meet ASTM C 1059.

PART 3 - EXECUTION

3.1 FIELD QUALITY CONTROL

- A. Requirements of Regulatory Agencies: Comply with all applicable provisions of the state and local building and safety codes.
- B. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer, unless otherwise approved by the Project Manager.
- C. Ready-Mix-Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
- D. Testing: All testing shall be completed by the Contractor at their expense unless otherwise specified by the contract.

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- E. Testing Agency Qualifications: Engage a qualified testing agency to perform material evaluation tests and to design concrete mixtures. Qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.
 - 1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.
- F. Testing Frequency: Obtain at least one composite sample for each one hundred (100) cubic yards, or fraction thereof of each concrete mixture placed each day.
 - a. When frequency of testing will provide fewer than five (5) compressive-strength tests for each concrete mixture, testing shall be conducted from at least five (5) randomly selected batches or from each batch if fewer than five (5) are used.
 - 2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one (1) test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
 - 3. Air Content: ASTM C 231, pressure method; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
 - 4. Compression Test Specimens: ASTM C 31/C 31M; cast and laboratory cure one (1) set of four (4) standard cylinder specimens for each composite sample.
 - 5. Compressive-Strength Tests: ASTM C 39/C 39M; test one specimen at seven days and two specimens at twenty-eight (28) days. and keep one for backup in the event a sample should break.
 - a. A compressive-strength test shall be the average compressive strength from two specimens obtained from same composite sample and tested at twenty-eight (28) days.
- G. Strength of each concrete mixture will be satisfactory if average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than two-hundred (200) psi.
- H. Test results shall be reported in writing to Project Manager, concrete manufacturer, and Contractor within forty-eight (48) hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at twenty-eight (28) days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both seven (7) and twenty-eight (28) day tests.
- I. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Project Manager.
- J. Concrete work will be considered defective if it does not pass tests and inspections.
- K. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
- L. Prepare test and inspection reports.
- M. Record of Work: A record shall be kept by the Contractor listing the time and date of placement of all concrete for the structure. Such record shall be kept until the completion of the project and shall be available to the Project Manager for examination at any time.
- N. Tolerances:
 - 1. Formed Surfaces and Building Lines: Conform to ACI 301 4.3.
 - 2. Horizontal Finishing Tolerances:
 - a. Elevation and Cross-slope: In conformance with grading plans and ADA.
 - b.

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3. Embedded Items: Unless noted otherwise on drawings, tolerances shall be as follows:
 - a. Anchor Bolts:
 - 1) Adjacent anchor bolts in a group receiving a single fabricated setting piece: Plus or minus one-eighth inch (1/8").
 - 2) Location and alignment of anchor bolt groups from designated location and alignment: Plus or minus one-eighth inch (1/8").

3.2 PREPARATION OF SUBGRADE

- A. Excavate to required depth in accordance with geotechnical report. Remove soft, yielding material and replace with select fill. Compact to minimum ninety-five percent (95%) Standard Proctor within two percent (2%) of optimum moisture.
- B. Refer to Division 31 Section: Earth Moving for requirements for subgrade testing and proof-rolling.
- C. Maintain subgrade in a compacted condition until concrete is placed.

3.3 FORMS

- A. Construct formwork to maintain tolerances in accordance with ACI 301.
- B. Verify lines, levels, and measurement before proceeding with formwork.
- C. Limit concrete surface irregularities, designated by ACI 347 as abrupt or gradual, as follows:
 1. Class A, one-eighth inch (1/8") for smooth-formed finished surfaces.
 2. Class B, one-quarter inch (1/4") for rough-formed finished surfaces.
- D. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
- E. Form Tie Holes: Form tie holes are to be filled with grout and finished to match adjacent concrete surface.
- F. Elements shown as curved on plans are to be formed with flexible form material to form smooth curve transitions. Disjointed, poorly transitioned form alignments will not be accepted. Curved sections formed with straight facets will not be accepted.
- G. Contractor shall notify the Project Manager a minimum of forty-eight (48) hours in advance of placing concrete for review of formwork. Contractor shall make correction within twenty-four (24) hours of review. If formwork is not in place at time of the scheduled inspection, then the Contractor will be responsible for compensation of the Project Manager's time and expenses per the General Contract Conditions.
- H. Minimize form joints. Symmetrically align form joints and make watertight to prevent leakage of mortar.
- I. Provide chamfer strips on all exposed corners or as indicated on construction documents.

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- J. Do not apply form release agent other than specified materials where concrete surfaces receive special finishes or applied coatings which may be affected by agent. Soak contact surfaces of untreated forms with clean water. Keep surfaces wet prior to placing concrete.
- K. Coordinate work of other Sections in forming and setting openings, slots, recesses, chases, sleeves, bolts, dowels, anchors, and other inserts and embedded materials.
- L. Do not remove forms, shoring and bracing until concrete has sufficient strength to support its own weight, and construction and design loads which may be imposed upon it.
- M. During cold weather, remove ice and snow from forms. **Do not** use deicing salts. Do not use water to clean out completed forms unless formwork and construction proceed within heated enclosure. Use compressed air to remove foreign matter.

3.4 REMOVING AND REUSING FORMS

- A. General: Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than fifty degrees (50°) F for twenty-four (24) hours after placing concrete. Concrete must be hard enough to not be damaged by form-removal operations and curing and protection operations need to be maintained.
 - 1. Leave formwork for structural elements that supports weight of concrete in place until concrete has achieved at least seventy percent (70%) of its twenty-eight (28) day design compressive strength.
- B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.
- C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by the Project Manager.

3.5 EMBEDDED ITEMS

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 1. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC's "Code of Standard Practice for Steel Buildings and Bridges."

3.6 STEEL REINFORCEMENT

- B. Install steel reinforcement only in locations shown on Contract Drawings.
- C. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

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- D. Clean reinforcement of loose rust and mill scale, earth, ice, or other bond-reducing materials.
- E. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.

3.7 CONCRETE PLACEMENT

- A. Contractor's Review: Contractor shall inspect forms and reinforcing prior to concrete placement to assure accurate placement of embedded items and overall acceptability.
- B. Project Manager's Review: Contractor shall provide minimum of forty-eight (48) hours' notice to the Project Manager to allow review of forms and reinforcement before concrete is placed and to observe placing of concrete.
- C. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
- D. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated.
 - 1. Deposit concrete in horizontal layers of depth to not exceed formwork design pressures and in a manner to avoid inclined construction joints.
 - 2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
 - 3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least six inches (6") into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.
- E. Deposit and consolidate concrete for concrete pavements in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
 - 1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
 - 2. Maintain reinforcement in position on chairs during concrete placement.
 - 3. Screed slab surfaces with a straightedge and strike off to correct elevations.
 - 4. Slope surfaces as indicated on drawings.
 - 5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.
 - 6. Allow time for bleed water to appear, then scrape or push off all bleed water. Do not work water into surface.
 - 7. Final level, light bull float, but do not trowel surface.
 - 8. Broom or drag surface or other specified finish, per Subsection 3.8 this Section.
 - 9. Do not use evaporative retarders as finishing aid.
- F. Cold-Weather Placement: Comply with ACI 306R. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
 - 1. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.

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2. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.
3. Comply with concrete protection temperature requirements of ACI 306R. Record concrete temperatures during specified protection period at intervals not to exceed sixteen (16) hours and no less than twice during any twenty-four (24) hour period.

G. Hot-Weather Placement: Comply with ACI 305R.

1. Spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.
2. Protect to prevent rapid drying. Start finishing and curing as soon as possible.

H. Ensure reinforcement, inserts, embedded parts and formed joints are not disturbed during concrete placement.

3.8 CONCRETE FINISHING

A. Rough Form Finish: All texture imparted by form facing material, including tie holes and defective areas, shall be repaired and patched, and all fins and other projections exceeding one-quarter inch (1/4") shall be removed.

B. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.9 CONCRETE CURING AND SURFACE TREATMENTS

A. General:

1. Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Maintain concrete with minimal moisture loss at a relatively constant temperature for the period necessary for hydration of the cement and hardening of concrete.
2. Curing shall commence as soon as free water has disappeared from the concrete surface after placing and finishing. The curing period shall be seven days for all concrete unless test cylinders, made and kept adjacent to the structure and cured by the same methods, are tested with the average compressive strength equal to seventy percent (70%) of the specified twenty-eight (28) day strength.
3. Curing shall be in accordance with ACI 301 and ACI 308 procedures. Avoid rapid drying at the end of the curing period. During hot and cold weather, cure concrete in accordance with ACI 305R and ACI 306R.

B. Curing Methods: Perform curing of concrete by moisture curing, by moisture-retaining cover curing, by curing compound, or by combinations thereof, as herein specified and in accordance with ACI 308.1. Coordinate with and choose a curing method that is compatible with the requirements for subsequent material usage on the concrete surface.

1. Provide moisture retaining cover curing as follows: Cover concrete surfaces with a moisture-retaining cover for curing concrete, placed in widest practical width with sides and ends lapped at least three inches (3") and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during curing period using cover material and waterproof tape.

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2. Provide curing and sealing compound to interior slabs left exposed, and to exterior slabs, walks and curbs as follows:
 - a. Apply specified curing and sealing compound to concrete slabs as soon as final finishing operations are complete. Apply uniformly in continuous operation by power-spray or roller in accordance with manufacturer's directions. Recoat areas subjected to rainfall within three hours after initial application.
 - b. Maintain continuity of coating and repair damage during period.
 - c. Do not use membrane curing compounds on surfaces which are to be covered with materials applied directly to concrete: liquid floor hardener, waterproofing, damp proofing, painting, and other coating and finish materials.
- C. Curing Formed Surfaces: Where wooden forms are used, cure formed concrete surfaces by moist curing with forms in place for full curing period or until forms are removed. When forms are removed, continue curing by methods specified above for specified curing time.
- D. Curing Unformed Surfaces:
 1. Cure unformed surfaces, such as slabs, floor topping, and other flat surfaces by application of appropriate curing method.

3.10 FORM REMOVAL

- A. Removal of Forms: Supplement and Modify ACI 301 as follows:
 1. ACI 301 4.5.4: Formwork not supporting weight of concrete such as sides of grade beams, walls, and similar parts of the work, may be removed after cumulatively curing at not less than fifty degrees (50°) F for twenty-four (24) hours after placing the concrete provided:
 - a. The concrete is sufficiently cured to be undamaged by form removal.
 - b. Required shores and supports are so arranged that they will not be loosened or disturbed during form removal.
 - c. Supplemental curing and protection is provided for exposed concrete surfaces.

3.11 CONCRETE SURFACE REPAIRS

- A. Defective Concrete: Repair and patch defective areas when approved by the Project Manager. Remove and replace concrete that cannot be repaired and patched to the Project Manager's approval.
- B. Perform structural repairs of concrete, subject to the Project Manager's approval, using epoxy adhesive and patching mortar.
- C. Repair materials and installation not specified above may be used, subject to Project Manager approval.

3.12 CLEANING

- A. Perform cleaning during installation of the Work and upon completion of the Work. Remove all excess materials, debris, and equipment from the site. Repair any damage resulting from installation of the concrete.

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3.13 ACCEPTANCE

- A. Concrete work will be accepted when it meets the specified strength and all other requirements of this specification.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. There is no separate measurement for this work. Cast-in-place concrete for footings and foundations are included in the work of other items.

4.2 PAYMENT

There is no separate payment for this work. Cast-in-place concrete for footings and foundations shall be included in the lump sum prices for handrails and Prefabricated picnic shelter.

END OF SECTION 03 30 00

SECTION 03 41 00

PRECAST CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

- A. This section addresses precast concrete storm drainage products, log bench supports, and curb stops.
- B. Related Work Specified Elsewhere:
 - 1. Division 33 - Storm Sewerage

1.2 REFERENCES

- A. Not Used

1.3 SUBMITTALS

- A. See Division 33 – Storm Sewerage for required submittals for precast concrete storm sewer pipe and manholes.
- B. Shop Drawings: for special precast concrete items submit shop drawings showing dimensions, layout and details of reinforcement, color, method of manufacture and installation, openings, joints, and embedment items.

1.4 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Delivery and Storage
 - 1. Materials delivered to the site shall be inspected for damage, unloaded, and stored with a minimum of handling. Materials shall not be stored directly on the ground. The inside of pipes and fittings shall be kept free of dirt and debris. The Contractor shall have a copy of the manufacturer's instructions available at the construction site at all times and shall follow these instructions unless directed otherwise by the Owner's Representative.
- B. Handling
 - 1. Materials shall be handled in a manner that ensures delivery to the final position in sound, undamaged condition. Precast products shall be carried to the final position, not dragged.

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PART 2 - PRODUCTS

2.1 PRECAST CONCRETE PRODUCTS

- A. Precast concrete manholes, storm sewer pipe and appurtenant items shall be in accordance with Division 33 – Storm Sewerage.
- B. Precast concrete prep tables shall be Summit by Arco Precast (303 659-2800) with 6” height extension, or approved equal. Submit shop drawings for approval.
 - 1. Finish: Acid Etch
 - 2. Color: Davis Colors Omaha Tan - Integral
- C. Precast concrete curb (wheel) stop shall be 6’ in length by 9” by 5”, plain gray as manufactured by Arco Precast (303 659-2800), or approved equal. Submit shop drawing for approval.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. After placement and installation of precast manhole and pipe sections.
 - 1. Remove lifting straps and lugs flush with the concrete surface as accepted by the Owner’s Representative.
 - 2. Fill all lifting holes with non-metallic, non-shrink grout to form a water tight seal.
- B. Precast Concrete Prep Tables
 - 1. Install table on concrete slab and level to match slope of flatwork.
 - 2. Scratches or other damage that occurs to a table will result in rejection of the work.
- C. Precast Concrete Curb Stops.
 - 1. Install curb stops with Peachtree 14” parking curb spike or approved equal. 2 per curb stop.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. There is no separate measurement for precast storm sewerage pipes, manholes and appurtenances. Measurement will be based on the percentage complete for the lump sum contract amount for Storm Sewerage.
- B. Measurement will for concrete prep tables and curb stops be per each unit for each type of precast product installed and accepted.

4.2 PAYMENT

- A. Payment for precast concrete storm sewer elements will be part of the lump sum contract price for storm sewerage, and shall include required materials, transportation, equipment, labor,

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stockpiling, all other items required to complete the work as required in accordance with the Contract Drawings and Specifications

- B. Payment will be made at the per each unit price for each type of precast product installed and accepted:
1. Preparation Tables
 2. Curb Stops

END OF SECTION 03 41 00

SECTION 04 20 00

UNIT MASONRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Concrete masonry units.
2. Mortar and grout.
3. Ties and anchors.
4. Embedded flashing.
5. Miscellaneous masonry accessories.

B. Related Requirements:

1. Section 044313.13 "Anchored Stone Masonry Veneer" for masonry anchors.

1.3 DEFINITIONS

- A. CMU(s): Concrete masonry unit(s).

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.

1.5 INFORMATIONAL SUBMITTALS

- A. Material Certificates: For each type and size of the following:

1. Masonry units.
 - a. For masonry units, include data and calculations establishing average net-area compressive strength of units.
2. Cementitious materials. Include name of manufacturer, brand name, and type.
3. Mortar admixtures.
4. Preblended, dry mortar mixes. Include description of type and proportions of ingredients.
5. Grout mixes. Include description of type and proportions of ingredients.
6. Reinforcing bars.
7. Joint reinforcement.

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8. Anchors, ties, and metal accessories.

B. Mix Designs: For each type of mortar. Include description of type and proportions of ingredients.

1. Include test reports for mortar mixes required to comply with property specification. Test according to ASTM C 109/C 109M for compressive strength, ASTM C 1506 for water retention, and ASTM C 91/C 91M for air content.
2. Include test reports, according to ASTM C 1019, for grout mixes required to comply with compressive strength requirement.

1.6 QUALITY ASSURANCE

A. Testing Agency Qualifications: Qualified according to ASTM C 1093 for testing indicated.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.
- B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.
- D. Deliver preblended, dry mortar mix in moisture-resistant containers. Store preblended, dry mortar mix in delivery containers on elevated platforms in a dry location or in covered weatherproof dispensing silos.
- E. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.8 FIELD CONDITIONS

- A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.
- B. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.
- C. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

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PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from single source from single manufacturer for each product required.
- B. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from single manufacturer for each cementitious component and from single source or producer for each aggregate.

2.2 UNIT MASONRY, GENERAL

- A. Masonry Standard: Comply with TMS 602/ACI 530.1/ASCE 6, except as modified by requirements in the Contract Documents.

2.3 CONCRETE MASONRY UNITS

- A. Shapes: Provide shapes indicated and as follows, with exposed surfaces matching exposed faces of adjacent units unless otherwise indicated.
 - 1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.
 - 2. Provide square-edged units for outside corners unless otherwise indicated.
- B. CMUs: ASTM C 90.
 - 1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 2150 psi (14.8 MPa).
 - 2. Density Classification: Normal weight unless otherwise indicated.

2.4 MORTAR AND GROUT MATERIALS

- A. Portland Cement: ASTM C 150/C 150M, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.
 - 1. Alkali content shall not be more than 0.1 percent when tested according to ASTM C 114.
- B. Hydrated Lime: ASTM C 207, Type S.
- C. Masonry Cement: ASTM C 91/C 91M.
 - 1. Type N
- D. Aggregate for Mortar: ASTM C 144.

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- E. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C 494/C 494M, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.
- F. Water: Potable.

2.5 TIES AND ANCHORS

- A. General: Ties and anchors shall extend at least 1-1/2 inches (38 mm) into veneer but with at least a 5/8-inch (16-mm) cover on outside face.
- B. Materials: Provide ties and anchors specified in this article that are made from materials that comply with the following unless otherwise indicated:
 - 1. Steel Sheet, Galvanized after Fabrication: ASTM A 1008/A 1008M, Commercial Steel, with ASTM A 153/A 153M, Class B coating.
 - 2. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- C. Corrugated-Metal Ties: Metal strips not less than 7/8 inch (22 mm) wide with corrugations having a wavelength of 0.3 to 0.5 inch (7.6 to 12.7 mm) and an amplitude of 0.06 to 0.10 inch (1.5 to 2.5 mm) made from 0.060-inch- (1.52-mm-) thick steel sheet, galvanized after fabrication.
- D. Individual Wire Ties: Rectangular units with closed ends and not less than 4 inches (100 mm) wide.
 - 1. Wire: Fabricate from 3/16-inch- (4.76-mm-) diameter, hot-dip galvanized-steel wire.

2.6 MORTAR AND GROUT MIXES

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.
 - 1. Do not use calcium chloride in mortar or grout.
 - 2. Use masonry cement mortar unless otherwise indicated.
 - 3. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.
- B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.
- C. Mortar for Unit Masonry: Comply with ASTM C 270. Provide the following types of mortar for applications stated unless another type is indicated.
 - 1. For exterior, above-grade, load-bearing and nonload-bearing walls and parapet walls; for interior load-bearing walls; for interior nonload-bearing partitions; and for other applications where another type is not indicated, use Type N.

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PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

3.2 TOLERANCES

- A. Dimensions and Locations of Elements:
 - 1. For dimensions in cross section or elevation, do not vary by more than plus 1/4 inch or minus 1/4 inch.

3.3 LAYING MASONRY WALLS

- A. Lay out block in advance for accurate spacing of uniform joint thicknesses. Avoid using less-than-half-size units, particularly at corners, and, where possible, at other locations.
- B. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than 2 inches. Bond and interlock each course of each wythe at corners. Do not use units with less-than-nominal 4-inch horizontal face dimensions at corners.
- C. Stopping and Resuming Work: Stop work by stepping back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar, and wet brick if required before laying fresh masonry.

3.4 MORTAR BEDDING AND JOINTING

- A. Lay CMUs as follows:
 - 1. Bed face shells in mortar and make head joints of depth equal to bed joints.
 - 2. Bed webs in mortar in all courses of piers, columns, and pilasters.
 - 3. Bed webs in mortar in grouted masonry, including starting course on footings.
 - 4. Fully bed entire units, including areas under cells, at starting course on footings where cells are not grouted.
 - 5. Fully bed units and fill cells with mortar at anchors and ties as needed to fully embed anchors and ties in mortar.

3.5 REPAIRING, POINTING, AND CLEANING

- A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.

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3.6 MASONRY WASTE DISPOSAL

- A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. There is no separate measurement for this work. Unit masonry is included in the work for anchored stone masonry veneer.

4.2 PAYMENT

- A. There is no separate payment for this work. Unit masonry is included in the work of anchored stone masonry veneer.

END OF SECTION 04 20 00

SECTION 04 43 13.13

ANCHORED STONE MASONRY VENEER

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Stone masonry anchored to concrete block on the foundations at the park shelter.

B. The following are definitions for the stone masonry terminology used in this specification and on the Drawings.

1. Arris: The sharp edge or exterior corner formed by the meeting of two surfaces, whether planed or curved.
2. Bedding, Bed, or Bed Joint: a horizontal joint, mortared or dry laid, between two adjacent stones.
 - a. The top or bottom horizontal surface of a piece, which is covered when the piece is set in place.
 - b. A filled or open space extending horizontally between adjacent pieces set in place.
3. Capstone: the uppermost stone course at stone walls.
4. Cavity Wall: a masonry wall with face wythes of CMU and/or stone masonry which are tied with metal ties that extend through a fully grouted cavity.
5. Depth: the dimension from the exposed face of a stone to the opposite, unexposed face, within a wall, veneered or otherwise.
6. Face: the exposed major surface of the stone piece with its specified finish.
7. Face-bedded: the practice of placing the bedding plane of the stone parallel to the surface plane of the wall.
8. Head: the exposed surface of the jointed end of any given piece whose gauged dimension is not more than the minimum thickness of the material specified.
9. Height: the vertical dimension of the exposed face of a stone within a wall, veneered or otherwise.
10. Honed: dull sheen, without reflections.
11. Joint: a vertical joint, mortared or dry laid, between two adjacent stones. The end or side surface of a piece which is covered when the piece is set in place. A filled or open space extending vertically between adjacent pieces set in place.
12. Jumper: a stone that extends up through horizontal bedding planes. These stones may be square or rectangular in shape.
13. Kerf: slot cut into edge of sandstone or granite piece with saw blade for insertion of anchor.
14. Polished: mirror gloss, with sharp reflections.
15. Quirk Mitre: the right-angle exposure from the face of the jointed edge whose dimension is a recommended minimum of 1/4 inch. Polished finish on the quirk miter when the face is polished; honed when the face is honed; and diamond finish when the face is thermal.
16. Rebated Kerf: additional cut that counter sinks kerf from back edge of kerf to back edge of stone piece for the purpose of additional anchor clearance. This is not a gauged cut, and if used for a bearing surface, it must be shimmed to allow for tolerance in cut.
17. Sawn: relatively plane surface with texture ranging from wire sawn, a close approximation of rubbed finish, to shot sawn, with scorings 3/32-inch in depth. Gang saws produce parallel scorings, rotary or circular saws make circular scorings. Shot-sawn surfaces should be cleaned to remove all rust stains.

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18. Seam: a crack or fissure in a rough quarry block.
19. Start: the beginning of a crack, caused by quarrying, fabrication, or handling.
20. Stone Veneer: non-structural facing of CMU and/or stone secured to a backing and supported by mechanical fasteners attached to the backing.
21. Thermal: finish produced by application of high temperature flame to the surface. Large surfaces may have shadow lines caused by overlapping of the torch.
22. Width: the horizontal dimension of the exposed face of a stone within a wall, veneered or otherwise.

1.2 RELATED WORK

- A. Section 04 20 00 Unit Masonry
- B. Section 12 93 00 Site Furnishings

1.3 ACTION SUBMITTALS

- A. Stone Supplier: Submit name, address and phone number of supplier.
- B. Samples:
 1. Stone: submit at least four samples of each specific stone type to define the range of color, texture, marking, and tooling. Samples shall not less than 12" x 6" x 4" (LxWxH) in measurement. Samples shall show the sawn condition, tooled condition, guillotine condition, texture, finish (including stone sealer), strata, and anticipated range of color. Show extreme ranges of color, texture, finish, and quality in each set. Natural stone materials may have variations in color and other characteristics. Depending on stone selected and quantity required a range of mock-ups shall be used to further define the characteristics of the materials.
 2. Mortar: submit samples of colors for mortar at same time as sample is submitted for the stone.
- C. Manufacturer's Literature and Product Data: submit manufacturer's printed instructions and data for each product; including applicable temperature ranges.
 1. Certificates: Furnish an affidavit from supplier certifying materials and products delivered meet requirements specified.
 2. Joint reinforcement, anchors, and ties: Submit manufacturer's data.
 3. Admixtures: Describe content, properties and recommended dosage.
 4. Sealants: submit supplier's color options for selection by Project Manager.
 5. Setting and Grouting Materials: submit separate statement or notation on package labels indicating compliance with specified requirements and suitability for intended use. Submit setting and joint sand mortar color additive for approval by Project Manager.
- D. Shop Drawings:
 1. Submit drawing of stone anchoring detail.
 2. Submit shop drawings for stone column caps and their relationship to the stone veneer.

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1.4 QUALITY ASSURANCE

- A. Mock Up Panel – shelter column masonry
 1. Erect on actual location of work for approval by Project Manager. If the mock up is not accepted it shall be dismantled and reconstructed in place.
 2. Sample panel shall be full height by full width, including corner, cap and base. Backup wall materials for the sample shall be as indicated.
 3. Sample wall panels shall contain full color range, texture, bond, mortar joints and workmanship of materials and shall include all anchoring devices, weeps, mortar, etc., as specified and indicated.
 4. Panel mock up and approval must be completed prior to continuation of work on the wall. Approved panel shall become the standard of comparison for future work, and shall remain in place as part of new wall reconstruction if accepted by Project Manager. If not accepted sample panel shall be deconstructed and rebuilt until a suitable sample panel is accepted by Project Manager.

1.5 SHOP DRAWINGS

- A. Drawings shall indicate all bedding, bonding, jointing, and anchoring details, relationship to adjoining construction, and the general dimensions of stones. Indicate field cutting which may be required, as well as method of attachment. Verify dimensions and elevations of adjacent work on-site by accurate field measurement prior to preparation of shop drawings. Coordinate with structural concrete work.
- B. No final sizing or finishing shall be done until the shop drawings for that part of the Work have been approved.

1.6 CONTRACTOR QUALIFICATIONS

- A. All stone work shall be executed by professional stone masons with a minimum successful experience of 5 years in the type and size of projects comparable to the Work. Submit a Qualification Statement to the City for approval prior to engaging in the work.

1.7 FIELD CONDITIONS

- A. Do not place veneer or stone for columns when outside air temperature is below 40 degrees F unless approved means are provided to heat materials, protect work from cold and frost, and ensure that mortar and grout will cure without freezing. Conform to “Recommended Practices and Guide Specifications for Cold Weather Masonry Construction” by IMI. Provide the following minimum protection procedures when temperature falls below 40 degrees F.
 1. Remove any ice or snow formed on stonework bed by carefully applying heat until top surface is dry to touch. Remove setting bed and stonework determined to be frozen or damaged by freezing conditions.
 2. Do not use frozen materials or materials mixed or coated with ice or frost. Do not use salt to thaw ice in anchor holes or slots. Do not lower the freezing point of mortar by use of admixtures or anti-freeze agents, and do not use calcium chloride in mortar or grout.
 3. When mean daily air temperature is from 40 degrees F to 32 degrees F, protect stone work from rain or snow for at least 24 hours by covering with weather-resistive membrane.

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4. When mean daily air temperature is below 32 degrees F, maintain stonework temperature above 32 degrees F for at least 24 hours using enclosures and supplementary heat, electric heating blankets, infrared lamps, or other acceptable methods.
- B. Environmental requirements for are as follows:
 1. Complying with requirements of referenced standards and recommendations of material manufacturers for environmental conditions before, during, and after installation. Maintain environmental conditions and protect work during and after installation to comply with referenced standards and manufacturer's printed recommendations.
- C. Review existing conditions prior to work as follows:
 1. Utilities: Determine location of underground utilities. Perform work in a manner to avoid possible damage. Hand excavate, as required.
 2. Excavation: Maintain grade stakes set by others until removal is mutually agreed up- on by parties concerned. When conditions detrimental to Work are encountered, such as disturbed protection board, unprotected waterproofing, adverse drainage conditions, incomplete construction or obstructions, notify Project Manager before proceeding.
- D. Protection of Stone Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work.
- E. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Comply with cold-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.
 1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg. F (4 deg. C) and above and will remain so until masonry has dried.
- F. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

PART 2 - PRODUCTS

2.1 STONE

- A. Picnic Column Veneer: Stone shall match stone from existing historic shelter in Genesee Park, located on the west side of the Chief Hosa exit on I-70, near Moss Drive and Stapleton Drive.
- B. Picnic Column Caps: Masonville Buff Sandstone.

2.2 MORTAR MATERIALS

- A. General: Provide mortar of uniform strength and uniform color for masonry. Use same mix throughout work. Use of salts or chemicals to prevent freezing is prohibited. Other additives are not permitted unless specified herein.
 1. Do not use calcium chloride.
 2. Use portland cement mortar unless otherwise indicated.
- B. Mortar for Stone Masonry: Comply with ASTM C 270, Proportion Specification.

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1. Mortar for Setting Stone: Type S
 2. Mortar for Pointing Stone: Type N
- C. Portland Cement: ASTM C 150, Type I or Type II, except Type III may be used for cold-weather construction; natural color or white cement may be used as required to produce mortar color indicated.
1. Low-Alkali Cement: Not more than 0.60 percent total alkali when tested according to ASTM C 114.
- D. Hydrated Lime: ASTM C 207, Type S.
- E. Masonry Cement: ASTM C 91.
- F. Mortar Pigments: Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes and complying with ASTM C 979. Use only pigments with a record of satisfactory performance in stone masonry mortar. Tan or Taupe color, submit samples in conjunction with rock samples.
- G. Colored Portland Cement-Lime Mix: Packaged blend of portland cement, hydrated lime, and mortar pigments. Mix shall produce color indicated or, if not indicated, as selected from manufacturer's standard colors. Pigments shall not exceed 10 percent of portland cement by weight.
- H. Colored Masonry Cement Mix: Packaged blend of masonry cement and mortar pigments. Mix shall produce color indicated or, if not indicated, as selected from manufacturer's standard colors. Pigments shall not exceed 5 percent of masonry cement by weight.
- I. Aggregate: ASTM C 144 and as follows:
1. For pointing mortar, use aggregate graded with 100 percent passing No. 16 (1.18-mm) sieve.
 2. White Aggregates: Natural white sand or ground white stone.
 3. Colored Aggregates: Natural-colored sand or ground marble, granite, or other sound stone; of color necessary to produce required mortar color.

2.3 VENEER ANCHORS

- A. Stone Anchoring System:
1. For adjustable two-piece anchors, anchors of wire size W1.7, and 22 gage corrugated sheet-metal anchors, provide at least one anchor for each 2.67 s.f. of wall area. For other anchors, provide at least one anchor for each 3.5 s.f. of wall area. Space anchors at a maximum of 32 in. (813 mm) horizontally and 18 in. vertically. Provide additional anchors around openings larger than 16 in. in either dimension. Space anchors around perimeter of opening at a maximum of 3 ft. on center. Place anchors within 12 in. (305 mm) of openings.
 2. Corrugated sheet-metal anchors: Corrugated sheet-metal anchors shall be at least 7/8 in. wide, have a base metal thickness of at least 0.03 in. and shall have corrugations with a wavelength of 0.3 to 0.5 in. and an amplitude of 0.06 to 0.10 in. Corrugated sheet-metal anchors shall be placed as follows: Embed anchors in the mortar joint and extend into the veneer a minimum of 1 1/2 in., with at least 5/8-in. mortar cover to the outside face.
 3. Sheet-metal anchors: Sheet-metal anchors shall be at least 7/8 in. wide, shall have a base metal thickness of at least 0.06 in and shall have corrugations as specified for Corrugated

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sheet metal anchors, or be bent, notched, or punched to provide equivalent performance in pull-out or push-through. Sheet-metal anchors shall be placed as follows: embed anchors in the mortar joint and extend into the veneer a minimum of 1 1/2 in., with at least 5/8-in. mortar cover to the outside face.

4. Wire anchors: Wire anchors shall be at least wire size W1.7 and have ends bent to form an extension from the bend at least 2 in. long. Wire anchors shall be placed as follows: embed anchors in the mortar joint and extend into the veneer a minimum of 1 and 1/2 in., with at least 5/8-in. mortar cover to the outside face.

2.4 MASONRY CLEANERS

- A. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar and grout stains, efflorescence, and other new construction stains from stone masonry surfaces without discoloring or damaging masonry surfaces; expressly approved for intended use by cleaner manufacturer and stone producer.

2.5 FABRICATION

- A. Select and tool stone to produce pieces of thickness, size, and shape indicated, including details on Drawings.
- B. Thickness of Stone: Provide thickness indicated, but not less than the following:
 1. Thickness: 4 inches plus or minus 1/4 inch. Thickness does not include projection of pitched faces.
- C. Shape stone for type of masonry (pattern) to match existing work.
- D. Finish exposed stone faces and edges to comply with requirements indicated for finish and to match approved samples. Finish stone veneer and caps to match existing.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Accurately mark stud centerlines on face of weather-resistant sheathing paper before beginning stone installation.
- B. Coat concrete and unit masonry backup with asphalt damp proofing.

3.2 SETTING OF STONE MASONRY, GENERAL

- A. Perform necessary field cutting and trimming as stone is set.
 1. Use power saws to cut stone that is fabricated with saw-cut surfaces.
 2. Use hammer and chisel to split stone that is fabricated with split surfaces.
 3. Fabricate sizes, shapes, dimensions, and details and as shown on the Drawings. Tool stones as needed to meet size and shape dimensions indicated. Keep exposed surfaces and edges

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- of units free from cracks, broken corners, chipped edges, or other defects. No patching or hiding of defects will be permitted.
4. Pitch face at field-split edges as needed to match stones that are not field split.
- B. Sort stone before it is placed in wall to remove stone that does not comply with requirements relating to aesthetic effects, physical properties, or fabrication, or that is otherwise unsuitable for intended use.
- C. Arrange stones with color and size variations uniformly dispersed for an evenly blended appearance.
- D. Laying Stone:
1. Lay with longest faces horizontal. Use largest stones for bottom courses and at corners. Uniformly distribute larger “bonder” stones as indicated on the Drawings. Decrease stones in size from bottom to top. Do not bunch small or equal size stones. Uniformly distribute weathered, colored, or varying textured stones throughout exposed faces of work.
 2. Maximum projection beyond batter lines: 1-1/2 inches. Four corners of adjacent stones shall not be contiguous.
 3. Stone shall be laid with seams or strata in a horizontal plane. Homogenous stones, with no seams or stratification, may be laid with their longest dimension in a horizontal plane. Stones with exposed edges having the appearance of having been sheared, sawn, or otherwise cut will not be permitted.
 4. Protect stone faces from staining.
- E. Stone Veneer Cap:
1. Construct according to the drawings. Slope cap to drain and seal according to drawings.
- F. Maintain uniform joint widths except for variations due to different stone sizes and where minor variations are required to maintain bond alignment if any. Joint width maximum 1/2 inch.
1. Anchor Provision: Cut and drill stone to provide provisions and holes in stone/bedrock for anchors, fasteners, and reinforcing. Allow room for expansion of the anchoring devices where necessary.

3.3 CONSTRUCTION TOLERANCES

- A. Variation from Plumb: For vertical lines and surfaces, do not exceed 1/4 inch in 10 feet or more. For external corners, expansion joints, control joints, and other conspicuous lines, do not exceed 1/4 inch in 20 feet
- B. Variation from Level: For bed joints and other conspicuous lines, do not exceed 1/4 inch in 20 feet or more.

3.4 INSTALLATION OF ANCHORED STONE MASONRY

- A. Anchor stone masonry to concrete blocks with corrugated-metal veneer anchors unless otherwise indicated. Secure anchors by inserting into joints in concrete masonry units.
- B. Embed veneer anchors in mortar joints of stone masonry at least halfway, but not less than 1-1/2 inches through stone masonry and with at least a 5/8-inch cover on exterior face.

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- C. Space anchors to provide not less than one anchor per 2 sq. ft. of wall area. Install additional anchors within 12 inches of openings, sealant joints, and perimeter at intervals not exceeding 12 inches.
- D. Rake out joints for pointing with mortar to depth of not less than 3/4 inch before setting mortar has hardened. Rake joints to uniform depths with square bottoms and clean sides. Rake joints to match existing adjacent work.

3.5 POINTING

- A. Prepare stone-joint surfaces for pointing with mortar by removing dust and mortar particles. Where setting mortar was removed to depths greater than surrounding areas, apply pointing mortar in layers not more than 3/8 inch deep until a uniform depth is formed.
- B. Point stone joints by placing and compacting pointing mortar in layers of not more than 3/8 inch deep. Compact each layer thoroughly and allow to it become thumbprint hard before applying next layer.
- C. Tool joints, when pointing mortar is thumbprint hard, with a smooth jointing tool to produce the following joint profile:

3.6 ADJUSTING AND CLEANING

- A. In-Progress Cleaning: Clean stone masonry as work progresses. Remove mortar fins and smears before tooling joints.
- B. Final Cleaning: After mortar is thoroughly set and cured, clean stone masonry as follows:
 1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
 2. Test cleaning methods on mockup; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before cleaning stone masonry.
 3. Protect adjacent stone and non-masonry surfaces from contact with cleaner by covering them with liquid strippable masking agent, polyethylene film, or waterproof masking tape.
 4. Clean stone masonry with proprietary acidic cleaner applied according to manufacturer's written instructions.

3.7 EXCESS MATERIALS AND WASTE

- A. Remove from the site.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Measurement will be based on each Anchored Stone Masonry Veneer column completed and accepted.

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4.2 PAYMENT

- A. Payment will be made at the contract unit price, and shall include all required materials, transportation, equipment, labor, stockpiling, disposing, hauling off, watering, dust control, erosion and sediment control, placing of unit masonry, wall veneer and cap, anchoring, cast-in-place concrete, reinforcing, joints, curing, finishing and all other items required to complete the work as required in accordance with the Contract Drawings and Specifications.

END OF SECTION 04 43 13.13

SECTION 05 53 13

METAL FABRICATIONS

PART 1 - GENERAL

1.1 SUMMARY

- A. This section addresses the acceptable products, materials, manufacture, fabrication and installation of metal handrails.
- B. Related work specified elsewhere:
 - 1. Cast-in-place Concrete: Section 03 30 00

1.2 REFERENCES

- A. American National Standards Institute (ANSI)
- B. American Society For Testing And Materials (ASTM)
 - 1. ASTM A 53 Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
 - 2. ASTM A 500 Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
 - 3. ASTM A 1011 Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, HotRolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
 - 4. ASTM A 780 Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
- C. American Welding Society (AWS)
 - 1. AWS C 5.5 Recommended Practices for Gas Tungsten Arc Welding.
 - 2. AWS D 1.1 Structural Welding Code-Steel.
- D. U.S. Department of Labor, Occupational Safety and Health Administration (OSHA).
 - 1. 1. OSHA 29 CFR 1910 OSHA Safety and Health Standard for General Industry.
- E. Where reference is made to one of the above standards, the latest revision shall apply.

1.3 PERFORMANCE REQUIREMENTS

- A. Structural Performance for handrails. Provide items capable of withstanding the effects of gravity loads and stresses within limits and under conditions indicated:
 - 1. Meet requirements of OSHA Standard 1910.23.
 - 2. Uniform load of 50 lbf. /ft. applied in any direction.
 - 3. Concentrated load of 200 lbf. applied in any direction.
 - 4. Uniform and concentrated loads need not be assumed to act concurrently.
- B. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

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1.4 SUBMITTALS

- A. Detail drawings for fabrications shall be submitted and approved prior to fabrication.
- B. Materials list for castings and fabricated items shall be submitted at the time of submittal of detail drawings.
- C. Schedules of welding procedures shall be submitted and approved prior to commencing fabrication.
- D. Certified test reports for materials shall be submitted prior to material delivered to the site.
- E. Detail drawings shall include maximum allowable imposed loads and design capacities of each casting or fabrication. Elements of fabricated items inadvertently omitted on contract drawings shall be detailed by the fabricator and indicated on the detail drawings.

1.5 QUALIFICATION OF WELDERS AND WELDING OPERATORS

- A. The Contractor shall certify that the qualification of welders and welding operators and tack welders who will perform welding have been qualified for the particular type of work to be done in accordance with the requirements of AWS D 1.1 and AWS D 1.2.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Items shall be stored in a dry location with spacers to separate the pieces from the ground and each other and in a manner to prevent damage.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Miscellaneous Metals and Standard Articles
 - 1. Steel Tubing
 - a. ASTM A 500, Grade B, schedule 40, welded, outside dimensions as shown.
 - b. Galvanized after fabrication.
- B. Paint Manufacturers
 - 1. Paint Manufacturers' Names: Shortened versions (shown in parentheses) of the following
 - a. Benjamin Moore & Co. (Benjamin Moore).
 - b. ICI Dulux Paint Centers (ICI Dulux Paints).
 - c. PPG Industries, Inc. (Pittsburgh Paints).
 - d. Sherwin Williams Co. (Sherwin Williams).
 - e. KWAL.
 - f. Olympic.
 - g. Approved substitute.
- C. Paint Materials, General

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1. Material Compatibility: Provide block fillers, primers, and finish coat materials that are compatible with one another and with the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
2. Material Quality: Provide manufacturer's best quality paint material of the various coating types specified that are factory formulated and recommended by manufacturer for application indicated. Paint material containers not displaying manufacturer's product identification will not be acceptable.
3. Colors: Flat Black.
4. Zinc Coated Metal Substrates: Galvanized metal primer.

D. Exterior Paint Schedule

1. Zinc Coated Metal:
 - a. Alkyd Enamel Finish: Two finish coats over a galvanized metal primer.
 - b. Primer: Exterior galvanized metal primer.
 - c. Finish Coats: Exterior semi-gloss alkyd enamel.

2.2 FABRICATION

A. Pipe Railings and other Pipe and Tube Fabricated Items

1. General: Fabricate to comply with design, dimensions, and details indicated.
2. Welded Connections: Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.
3. Non-welded Connections: Connect members with concealed mechanical fasteners and fittings.
4. Form changes in direction by bending, or by inserting prefabricated elbow fittings.
5. Form curves by bending in jigs to produce uniform curvature; maintain cross section of member throughout bend without cracking or otherwise deforming exposed surfaces.

B. Metallic Coatings

1. Zinc Coatings – Zinc coatings shall be applied after fabrication in a manner and of a thickness and quality conforming to ASTM A 123 or ASTM A 153. Where zinc coatings are destroyed by cutting, welding or other causes the affected areas shall be regalvanized. Coatings 2 ounces or heavier shall be regalvanized with a suitable low-melting zinc base alloy similar to the recommendations of the American Hot-Dip Galvanizers Association to the thickness and quality specified for the original zinc coating. Coatings less than 2 ounces shall be repaired in accordance with ASTM A 780.

C. Shop Assembly

1. Each unit furnished shall be manufactured in the shop to determine the correctness of the fabrication and matching of the component parts unless otherwise specified. Tolerances shall not exceed those shown.

2.3 INSPECTIONS AND VERIFICATIONS

- A. The Contractor shall submit certifications by an approved laboratory to demonstrate that materials are in conformity with the specifications. These certifications shall be at the Contractor's expense.
- B. Visual Examination:

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1. Completed welds shall be cleaned and carefully examined for insufficient throat or leg sizes, cracks, undercutting, overlap, excessive convexity or reinforcement and other surface defects to ensure compliance with the requirements of AWS D 1.1.
- C. Welding Repairs
1. Defective welds in the steel welding shall be repaired in accordance with AWS D 1.1. Costs of the repairs shall be borne by the Contractor.

PART 3 - EXECUTION

3.1 PAINTING

- A. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified.
- B. Apply paint in the shop per manufacturer's recommendations.

3.2 INSTALLATION

- A. Set metal railings accurately in location, with edges and surfaces level, plumb, and true.
- B. Touchup paint damaged areas if necessary.

3.3 PROTECTION OF FINISHED WORK

- A. Cleaning
 1. Surfaces shall be thoroughly cleaned of foreign matter. All finished surfaces shall be protected by suitable means.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Measurement will be based on the complete installation of handrails.

4.2 PAYMENT

- A. Payment will be made at the lump sum contract price, and shall include required materials, transportation, equipment, labor, stockpiling, placing handrails, concrete foundations, all other items required to complete the work as required in accordance with the Contract Drawings and Specifications.

END OF SECTION 05 53 13

SECTION 12 87 50

PREFABRICATED PICNIC SHELTER

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes unloading and installing a prefabricated picnic shelter that has been prepurchased and delivered to the site by the owner. The specifications for the shelter are included for the contractor's information.
- B. Related Requirements:
 - 1. Section 033000 "Cast in Place Concrete" for footings.
 - 2. Section 312000 "Earth Moving."
 - 3. Section 321313 "Concrete Walks, Curbs, and Miscellaneous Flatwork" for surfacing under shelters.

1.3 DEFINITIONS AND REFERENCES

- A. Performance Standards: Provide prefabricated shelter and roof systems and components that are designed and fabricated to meet or exceed the following criteria:
 - 1. Applicable standards of the 2009 International Building Code.
 - 2. Applicable standards of state and local codes.
 - 3. American Institute of Steel Construction (AISC) specifications.
 - 4. American Iron and Steel Institute (AISI) specifications for cold-formed members.
 - 5. Applicable ASTM standards.
- B. Design Criteria: Unless otherwise required by applicable codes or project conditions, provide prefabricated shelter and roof systems that are designed to meet or exceed the following criteria:
 - 1. Roof Snow Load: 30 psf
 - 2. Wind: IBC, 100 MPH, Exposure C
 - 3. Seismic Site Class D
- C. Design: The Group Picnic Shelter is a design build item. Refer to Drawings for design intent of prefabricated shelters and prefabricated shelter roof systems.
- D. Foundation Design: A foundation design is provided in architectural drawings provided separately. The Contractor shall verify, with the shelter manufacturer, that the foundation design loads provided are suitable for their proposed shelter design.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated and paint color.

PREFABRICATED PICNIC SHELTER

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- B. Shop Drawings: For Prefabricated shelters and roof systems. Include plans, elevations, sections, details, and attachments to other work.
 - 1. Indicate dimensions, weights, loads, gauge, method of field assembly, components, and location and size of each field connection.
 - 2. Submit shop drawings and structural calculations prepared and sealed by a Professional Engineer registered in the State of Colorado, for review and approval by the jurisdiction having authority.
 - 3. Submit letter verifying the shelter design loads are within the range of design loads indicated on the foundation drawing provided by the manufacturer.
 - 4. Submit drawings and details of column showing relationship to the foundations and the slab.
 - 5. Detail connections, reinforcing, anchor bolts, etc.
- C. Building Permit
 - 1. Denver Development Services
- D. Samples: provide for each exposed product and for each color and texture specified. Provide manufacturer's full range of available finishes.
 - 1. Roof paint. Submit in conjunction with samples for Vault Toilet roof.
 - 2. Clear coat for wood members.
 - 3. Tie plates.
- E. Maintenance data.
- F. Warranty: submit warranty documentation.

1.5 QUALITY CONTROL

- A. Manufacturer Qualifications: The manufacturer (or company) shall have been in continuous operation as a "single source" business a minimum of 5 years, specializing in the fabrication of picnic structures, restrooms, storage buildings, etc. Picnic structure fabrication shall be the manufacturer's primary business. The manufacturing company shall have fabricated similar structures to that which is specified.
- B. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.
- C. Welding Qualifications: All fabrication welds shall be in strict accordance with the structural welding code of the American Welding Society (AWS) specifications. All structural welds shall be in compliance with the requirements of "Pre-qualified" welded joints. All welding shall conform to ASTM A-233 series E-70XX electrodes - low hydrogen. Field welding shall not be required.

1.6 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of prefabricated shelters and roof systems that fail(s) in materials or workmanship within specified warranty period.

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1. Installer standard form in which installer agrees to repair or replace components of metal roof panel assemblies, caps or flashings that fail in materials or workmanship within specified warranty period of two years from date of Substantial completion unless otherwise noted. Failures include, but are not limited to, the following:
 - a. Structural failures or defects.
 - b. Water tightness
 - 1) For 10 years from date of Substantial Completion.
 - c. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
- B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal roof panels that show evidence of deterioration of factory-applied finishes within specified warranty period.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Products: Subject to compliance with requirements, provide prefabricated shelters and prefabricated shelter roof systems that meet the plan dimensions and specifications by one of the following:
 1. Cedar Forest Products, Inc. Manufacturer's Rep: A to Z Recreation, Brandon Smith, 303-670-3789, or approved equal.
 - a. Provide Model No.: Custom shelter as indicated on the Drawings.
 - b. Color: Roof Color to match roof of vault toilet, submit samples with roofing samples for toilet.

2.2 DESCRIPTION

- A. Prefabricated Picnic Shelter with timber columns and frame, and metal roof, as shown on the plans.

2.3 METALS

- A. Metal Surfaces, General: Provide materials with smooth, flat surfaces without blemishes.
- B. Ferrous Metals:
 1. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
 2. Steel Tubing: ASTM A 500, Grade B cold-formed steel tubing.
 3. Steel Pipe: ASTM A 53/A 53M, Grade B standard weight (Schedule 40), unless another weight is indicated or required by structural loads.

2.4 METAL ROOFING PANELS

- A. Wind-Uplift Resistance: Comply with UL 580 for wind-uplift resistance class indicated.

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- B. Structural Performance: Capable of withstanding the effects of gravity loads and the following loads and stresses, based on testing according to ASTM E 1592:
 - 1. Wind Loads: Minimum design wind speed of 100 mph, Exposure C.
 - 2. Snow Loads: 30 lbf/sq. ft.
- C. Metallic-Coated Steel Sheet Prepainted with Coil Coating: Steel sheet metallic coated by the hot-dip process and prepainted by the coil-coating process to comply with ASTM A 755/A 755M.
 - 1. Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A 792/A 792M, Class AZ50 coating designation, Grade 40; structural quality.
 - 2. Surface: Smooth, flat finish.
 - 3. Exposed Finishes:
 - a. High-Performance Organic Finish: Two-coat, thermocured system with fluoropolymer coats containing not less than 70 percent polyvinylidene fluoride resin by weight; complying with physical properties and coating performance requirements of AAMA 2604, except as modified below:
 - 1) Humidity Resistance: 1000 hours.
 - 2) Salt-Spray Resistance: 1000 hours.
 - 4. Concealed Finish: White or light-colored acrylic or polyester backer finish.
 - 5. Panel Sealants:
 - a. Sealant Tape: Pressure-sensitive, gray polyisobutylene compound sealant tape with release-paper backing; 1/2 inch wide and 1/8 inch thick.
 - b. Joint Sealant: ASTM C 920; as recommended in writing by metal roof panel manufacturer.
 - c. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C 1311.
- D. FASTENERS
 - 1. Fasteners: Self-tapping screws, bolts, nuts, self-locking rivets and bolts, end-welded studs, and other suitable fasteners designed to withstand design loads. Provide exposed fasteners with heads matching color of metal roof panels by means of plastic caps or factory-applied coating.
 - 2. Provide fasteners per the roofing Manufacturers recommendations.
- E. PANEL MATERIAL
 - 1. Standing-Seam Metal Roof Panels: Factory-formed, designed to be field assembled by lapping and interconnecting raised side edges of adjacent panels with joint type indicated and mechanically attaching panels to supports using concealed clips in side laps. Include clips, cleats, pressure plates, and accessories required for weathertight installation.
 - 2. Steel Panel Systems: Comply with ASTM E 1514.
 - 3. Available Manufacturers:
 - a. Berridge Manufacturing Company.
 - b. Englert, Inc.
 - c. Approved substitute.
 - 4. Type: Vertical rib, snap lock system.
 - 5. Material: Metallic-coated steel sheet, 0.0276 inch thick (24GA).
 - 6. Exterior Finish: Fluoropolymer.
 - 7. Color: Dark Brown to match roof of existing shelter at Challenge Course. Submit color sample to Denver Parks project manager for approval prior to ordering.
 - 8. Clips: Floating to accommodate thermal movement. Space for the maximum wind uplift.
 - 9. Panel Coverage: 16" - 16 1/2"
 - 10. Panel Height: 1 1/2"
 - 11. Uplift Rating: UL 90.
 - 12. No exposed fasteners

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F. ACCESSORIES

1. Roof Panel Accessories: Provide components required for a complete metal roof panel assembly including trim, copings, fascia, corner units, ridge closures, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal roof panels, unless otherwise indicated.
2. Closures: Provide closures at eaves and ridges, fabricated of same metal as metal roof panels.
3. Clips: Panel clips designed to withstand negative-load requirements.
4. Fabricate flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to the design, dimensions, metal, and other characteristics of item indicated.

G. INSTALLATION

1. General: Fabricate and finish metal roof panels and accessories by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.
2. Where indicated, fabricate metal roof panel joints with factory-installed captive gaskets or separator strips that provide a tight seal and prevent metal-to-metal contact, in a manner that will minimize noise from movements within panel assembly.
3. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. The owner or owner's representative must examine prefabricated shelter components before installation. Reject components that are damaged.
- B. Examine area and conditions, with Installer present, for compliance with requirements for site clearing, earthwork, site surface, foundations and other construction affecting installation.
- C. The owner or owner's representative must verify dimensional and layout tolerances affecting installation.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 ERECTION

- A. General: Install prefabricated shelters and prefabricated shelter roof systems in compliance with manufacturer's written instructions and approved Shop Drawings and engineering documents.
- B. Prefabricated shelter framing: Install all components level, plumb, and at locations and elevations indicated on the Shop Drawings. Securely anchor to foundations or other construction as indicated in the Shop Drawings.

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3.3 COORDINATION

- A. Coordinate items to be attached or embedded in work by others. Provide templates, base plates, anchors, etc. for installation in work by others.

3.4 METAL ROOF PANEL INSTALLATION, GENERAL

- A. Install per manufacturer recommendations.

3.5 FIELD-ASSEMBLED METAL ROOF PANEL INSTALLATION

- A. Standing-Seam Metal Roof Panels: Fasten metal roof panels to supports with concealed clips at each standing-seam joint at location, spacing, and with fasteners recommended by manufacturer.
 - 1. Install clips to supports with self-tapping fasteners.
 - 2. Snap Joint: Nest standing seams and fasten together by interlocking and completely engaging.

3.6 CLEANING AND PROTECTION

- A. Remove all debris from project site. Remove temporary protective coverings and strippable films, if any, as metal roof panels are installed, unless otherwise indicated in manufacturer's written installation instructions. Clean all surfaces of prefabricated shelters and prefabricated shelter roof systems to be free of dirt, spots and debris. Use cleaning methods approved by manufacturer and compatible with finishes. Maintain in a clean condition during construction.
- B. Protect structure from damage due to other construction activities. Contractor shall be responsible for repairing or replacing any components damaged during installation of the shelter or occurring as the result of other construction activities. The shelter shall be in new condition at the time of project completion.

3.7 REPLACEMENT

- A. After completing installation of prefabricated shelters and prefabricated roof systems, the owner or owner's representative will inspect all components. Damaged components or finishes shall be repaired or replaced as directed by the Owner.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Measurement will be based on the picnic shelter completely installed and accepted.

4.2 PAYMENT

- A. Payment will be made at the lump sum contract price, and shall include required materials, equipment, labor, excavation, concrete foundations, and all other items required to complete the

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work as required in accordance with the Contract Drawings and Specifications. Stone veneer and caps on the picnic shelter columns are not included and are a separate bid item.

END OF SECTION 12 87 50

SECTION 12 87 60

PREFABRICATED VAULT TOILET

PART 1 - GENERAL

1.1 SUMMARY

- A. The Owner will prepurchase and pay for the shipping of two prefabricated vault toilets complete with prefabricated vaults. The contractor is responsible for unloading the toilets from the truck, and complete installation, as well as full coordination of earthwork for installation of the vault, and other related work.

1.2 RELATED WORK

- A. Related Documents: Construction Drawings, General and Special Conditions of the Contract apply to work of this section.

1.3 SUBMITTALS

- A. Shop Drawings – Vault Toilet:
 - 1. Stamped, engineered drawings to be provided by manufacturers.

1.4 QUALITY ASSURANCE

- A. Contractor Qualifications: Install work using skilled persons, proficient in the trades required, in a neat, orderly and responsible manner with recognized standards of workmanship. Contractor shall have not less than 5 years successful experience with installation of similar work. Submit lists of three projects completed in the last two years of similar complexity to this project number including owner's name and telephone number, name of project, Landscape Architect and telephone number.

1.5 PRODUCT DELIVERY, HANDLING AND STORAGE

- A. Handle and store materials in manner to prevent damage or deterioration. Deliver and store packaged materials in original, unopened, labeled containers. Wet, moldy, opened or broken packages will not be accepted. The Contractor is responsible for damage and subsequent repairs or replacement.

PART 2 - PRODUCTS

2.1 **VAULT TOILETS (Structure, structure slab and concrete vault purchased and delivered to site by Owner under separate contract)**

- A. Manufacturer:

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1. CXT Incorporated, an LBFoster Co. 3808 North Sullivan Road Bldg. #7 Spokane Valley, WA 99216
Tel. (800) 696-5766
Kurt Mee KMee@lbfoster.com
2. CXT Model No.: Double Cascadian with chase double vault toilet building with standard simulated delta rib roof; board and batt with horizontal lap wall texture, three 16 gauge galvanized steel doors and frames, two plastic risers, ADA grab bars, ADA signs, two 3-roll toilet paper holders, two wall vents, and two, 1000 gallon ABS lined concrete vaults.
3. Colors: Walls – to be selected from standard CXT colors by Owner, submit samples for Rich Earth, Natural Honey and Western Wheat.
4. Roof: To be selected from standard CXT colors by Owner, submit samples for Toasted Almond and Nuss Brown in conjunction with the shelter roofing choices.

PART 3 - EXECUTION

3.1 INSPECTION

Inspection of the work to determine the completion of contract, exclusive of the possible repair and replacement of equipment under the guarantee of the project, will be made by the Owner upon written notice requesting such inspection submitted by the Contractor at least ten (10) days prior to the anticipated date.

3.2 INSTALLATION

- A. Work specified under this Section includes excavation of the pit for the vault, providing a level surface for the concrete pad and structure, and backfill and compaction as specified in this section and in Section 312000 Earth Moving.
- B. Provide exact location by stakes or other approved method.
- C. Provide clear and level site free of overhead and/or underground obstructions.
- D. Provide access to the site for truck delivery and sufficient area for the crane to install and the equipment to perform the contract requirements.
- E. Backfill and Compaction
 1. Compact the natural ground at the bottom of the vault excavation with a minimum of three passes with a whacker-type mechanical compactor or equivalent approved by the customer.
 2. Install sand or aggregate bedding material for leveling course if needed. Compact leveling course with one pass with a whacker-type mechanical tamper or equivalent approved by the customer. Grade leveling course so there will be no high spots in the middle of the vault bottom. Compact with a second pass with a whacker or approved equivalent tamper.
 3. The manufacturer will set vault in place and check for level or appropriate scope.
 4. Contractor will backfill around structure. Use excavated material for backfill except those rocks larger than six inches in maximum dimension shall not be placed within six inches of the exterior vault walls.

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5. Fill, adjacent to the building entry, will have excavated material placed in eight inch loose lifts and compacted with a minimum of two passes with a whacker-type mechanical compactor of equivalent approved by the customer.

F. Finish Grading

1. Intended final grade is flush with the top of the front slab. Allow for placement of topsoil to reach that grade. Grade backfill away from structure at maximum slope of five (5) percent unless otherwise approved by the Owner's Representative.

3.3 CLEANING AND PROTECTION

- A. Remove all debris from project site. Maintain in a clean condition during construction.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Measurement will be based on the per each unit completely installed.

4.2 PAYMENT

- A. Payment will be made at the per each unit contract price, and shall include required materials, equipment, labor, stockpiling, excavation, all other items required to complete the work as required in accordance with the Contract Drawings and Specifications.

END OF SECTION 12 87 60

SECTION 12 93 00

SITE FURNISHINGS

PART 1 - GENERAL

1.1 SUMMARY

- A. Provide and install site furnishings including: Picnic Tables, Log Benches, and Handicap Parking Signs.

1.2 RELATED WORK

- A. Related Documents: Construction Drawings, General and Special Conditions of the Contract apply to work of this section.

1.3 SUBMITTALS

- A. Samples and Product Certification: Submit to Owner not less than 14 calendar days prior to scheduled delivery of materials.
 - 1. Submit manufacturer's technical data and installation instruction for all site furnishings.

1.4 QUALITY ASSURANCE

- A. Contractor Qualifications: Install work using skilled persons, proficient in the trades required, in a neat, orderly and responsible manner with recognized standards of workmanship. Contractor shall have not less than 5 years successful experience with installation of similar work. Submit lists of three projects completed in the last two years of similar complexity to this project number including owner's name and telephone number, name of project, Landscape Architect and telephone number.
- B. Provide site furnishings as complete units produced by a single manufacturer including necessary erection accessories, fittings and fastenings.

1.5 PRODUCT DELIVERY, HANDLING AND STORAGE

- A. Deliver, handle and store materials in manner to prevent damage or deterioration. Deliver and store packaged materials in original, unopened, labeled containers. Wet, moldy, opened or broken packages will not be accepted. The Contractor is responsible for damage and subsequent repairs or replacement.

1.6 GUARANTEE

Guarantee all site furnishings as specified in the General Contract Conditions. Guarantee all materials for length of manufacturer's warranty or as specified in the General Contract Conditions, whichever is greater.

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PART 2 - PRODUCTS

2.1 PICNIC TABLES

A. Standard Picnic Table

1. Manufacturer: Pilot Rock, RJ Thomas Mfg. Co. (www.pilotrock.com)
2. Model: UT Series Picnic Table – Using Perforated Steel
 - a. Model Number: UT-C Brown (W)-10R
3. Length: 10'
4. Finish:
 - a. Bench and Top: Perforated Steel, Powder Coated Brown (W)
 - b. Frame: Powder Coated Brown (W)

B. Accessible Picnic Table

1. Manufacturer: Pilot Rock, RJ Thomas Mfg. Co. (www.pilotrock.com)
2. Model: UT Series Picnic Table – Using Perforated Steel
 - a. Model Number: UT-E Brown (W)-8
3. Length: 8' Top, 6' Bench
4. Finish:
 - a. Bench and Top: Perforated Steel, Powder Coated Brown (W)
 - b. Frame: Powder Coated Brown (W)

2.2 LOG BENCHES

- A. Logs benches constructed and supplied by the Owner.

2.3 HANDICAP PARKING SIGNS

- A. MUTCD R7-8 Federal Handicapped Reserved Parking Sign and Post, 12"x18".

PART 3 - EXECUTION

3.1 INSPECTION

Inspection of the work to determine the completion of contract, exclusive of the possible repair and replacement of equipment under the guarantee of the project, will be made by the Owner upon written notice requesting such inspection submitted by the Contractor at least ten (10) days prior to the anticipated date.

3.2 INSTALLATION

- A. The manufactured and fabricated accessories specified herein shall be installed in accordance with the manufacturers' instruction and/or Contract Drawings and shall include anchor bolts and bases necessary for a complete installation as shown on the Drawings or as otherwise noted by the Owner.

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- B. All accessories shall be installed at the locations shown on the Drawings or as otherwise noted by the Owner.
- C. Install Handicapped Reserved Parking signs in conformance with latest ADA installation requirements.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Measurement will be based on the per each unit completely installed.

4.2 PAYMENT

- A. Payment will be made at the per each unit contract price, and shall include required materials, transportation, equipment, labor, stockpiling, excavation, concrete foundations, concrete vault, all other items required to complete the work as required in accordance with the Contract Drawings and Specifications.

END OF SECTION 12 93 00

SECTION 31 11 00

CLEARING AND GRUBBING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes requirements for stripping sod, and removing and disposing of vegetation and debris.
- B. Related Sections:
 - 1. Division 01 Section "Temporary Facilities and Controls".
 - 2. Division 01 Section "Erosion and Sedimentation Control".
 - 3. Division 01 Section "Tree Retention and Protection".
 - 4. Division 31 Section "Earth Moving"

1.3 DEFINITIONS

- A. The term "tree removal" refers to any individual woody plant with a height greater than overall width. Tree removal shall be performed by a tree Contractor licensed through the Office of the City Forester per Chapter 57 of the City and County of Denver Municipal Code.
- B. The term "clearing" refers to removing and disposing trees, brush, stumps, logs, grass, weeds, roots, decayed vegetable matter, poles, stubs, rubbish, refuse dumps, sawdust piles, and loose boulders of one cubic yard (1 yd³) or less existing outside of the construction limits, debris resting on or protruding through the ground surface, or appearing on the construction limits before final acceptance of the work. Clearing also includes removing and disposing of obstructions, such as fences, bridges, buildings, and other incidental structures within the construction limits and shown on the Site Demolition Plans.
- C. The term "grubbing" refers to removal from the area within the construction limits and proper disposal of all objectionable matter defined above under clearing, which is embedded in the underlying soil. Grubbing also includes removing and properly disposing of sidewalks, driveways, catch basins, drop inlets, manholes, curbing, retaining walls, utilities, foundations, paved floors, underground tanks, and portions of plants to be removed that are below grade, and other structures within the construction limits.
- D. Subsoil: All soil beneath the topsoil layer of the soil profile and typified by the lack of organic matter and soil organisms.
- E. Topsoil: Top layer of the soil profile consisting of existing native surface topsoil or existing in-place surface soil and is the zone where plant roots grow, and ; reasonably free of subsoil, clay lumps, gravel, and other objects more than two-inches (2") in diameter; and free of subsoil and weeds, roots, toxic materials, or other non-soil materials.

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- F. Tree-Protection Area: Area surrounding individual trees or groups of trees to be protected during construction.
- G. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

1.4 SUBMITTALS

- A. Existing Conditions: Documentation of existing conditions, adjoining construction, and site improvements that establishes preconstruction conditions that might be misconstrued as damage caused by site clearing.
 - 1. Use sufficiently detailed digital photographs or videos.
 - 2. Include plans and notations to indicate specific damaged conditions of existing construction, site elements, and landscape.
- B. Tree Removal Permit: The contractor shall obtain a removal permit request form available at Denvergov.org/Forestry, and submit the completed form to the Office of the City Forester and the Project Manager.

1.5 PROJECT CONDITIONS

- A. Traffic: Minimize interference with adjoining road during site-clearing operations.
 - 1. Do not close or road without permission from Project Manager.
 - 2. Provide alternate routes around closed or obstructed traffic ways if required by Project Manager.
- B. Improvements on Adjoining Property: Not allowed without prior approval from Project Manager. Work only within Work Limit Line as defined on drawings.
- C. Salvable Items: Carefully remove items indicated to be salvaged and store on site as directed by the Project Manager. Protection and Repair of Underground lines:
 - 1. Existing Public Utilities: Locate existing underground utilities within the limits of work per General Contract Conditions, Article 804 Protection of Municipal, Public Service or Public Utility Systems. Request utility locates seventy-two (72) hours in advance of any excavations by calling the Utility Notification Center of Colorado at 811. The contractor is responsible for providing written and graphical documentation from the utility owner. Take whatever precautions are necessary including potholing to verify location and depth to protect these underground lines from damage. Should unmarked or incorrectly marked utilities or other piping be encountered during excavation, notify the Project Manager immediately for direction. If damage does occur, all damage shall be repaired by the utility owner and all costs of such repair shall be paid by the contractor. Only written all clears will be acceptable, verbal all clears will not be accepted.
 - 2. Existing Private Utilities: Locate existing underground utilities within the limits of work per General Contract Conditions, Article 804 Protection of Municipal, Public Service or Public Utility Systems. The contractor is required to contact all private utility companies including The City and County of Denver departments are to locate all private utilities. The Contractor is responsible for providing written and graphical documentation from the private utility owner. The request for locates shall be a minimum of seventy-two (72) prior to proceeding with any excavation. If, after such requests, private utilities are encountered and damaged by the contractor these shall be repaired at no cost to the city. If the contractor damages staked or located private utilities they shall be repaired by the

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utility owner and all costs of such repair shall be paid by the contractor. Only written all clears will be acceptable, verbal all clears will not be accepted.

- D. Do not commence site clearing operations until temporary erosion- and sedimentation-control and tree and or plant protection measures are in place.

1.6 DELIVERY STORAGE AND HANDLING

- A. All materials except for stripped topsoil and those materials indicated to remain or to be stockpiled, shall remain the property of the City. All other materials shall be removed at the Contractor's expense.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PROTECTION

- A. Protect existing site conditions from damage during construction.
 - 1. Restore existing conditions damaged by Contractor during the work of this Contract to their original condition, as acceptable by Project Manager.

3.2 CLEARING

- A. Remove brush and vegetation from the areas that are being graded within the limit of work

3.3 GRUBBING

- A. Remove all stumps, roots, and debris a minimum of twelve-inches (12") below finish grade in all areas as required. Use hand methods for grubbing inside the tree protection zone of trees to remain. Backfill and compact stump and root holes to a maximum of eighty-five percent (85%) in landscape areas and ninety-five percent (95%) under hardscape or as directed by the Project Manager and City Forester.

3.4 TOPSOIL STRIPPING

- A. See Division 31 Section "Earth Moving".

3.5 TREE STUMP REMOVAL

- A. The Owner will already have cut trees down. The contractors shall remove the remaining stumps and surface roots dispose of them off-site.

3.6 DISEASED TREE REMOVAL AND DISPOSAL

- A. The removal of diseased and infested trees includes the requirement of offsite burial of all parts of the trees immediately following removal. This includes logs, stumps, roots, branches and composted and un-composted chips. Under no circumstances should diseased or infected wood be left or taken for firewood, mulch or taken to a wood processing mill.

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3.7 DISPOSAL

- A. Haul and dispose of all removed materials, trash, debris and waste materials legally inside and outside of the City's property. All recyclable materials shall be hauled to nearest recycling center and any non-recyclable materials shall be hauled to Denver Arapahoe Disposal Site (DADS). DADS tickets shall be provided to the Contractor by Project Manager.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Measurement for general Clearing and Grubbing will be based on the percentage complete for the lump sum contract amount for Clearing and Grubbing.
- B. Measurement for Stump Removal will be per each stump removed per the two sizes of stumps listed on the bid form.

4.2 PAYMENT

- A. Payment for general Clearing and Gubbing will be made at the lump sum contract price, and shall include required materials, transportation, equipment, labor, removal, and legal disposal or recycling of materials as specified.
- B. Payment for Stump Removal will be made at the per unit contract price, and shall include required materials, transportation, equipment, labor, removal, and legal disposal or recycling of materials as specified.

END OF SECTION 31 11 00

SECTION 31 20 00**EARTH MOVING**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Contract Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Related Report Documentation
 - 1. Geotechnical report- June 16th, 2014 prepared by Yeh and Associates Inc.

1.2 SUMMARY

- A. This Section includes the requirements for excavation, re-grading, stripping and stockpiling of topsoil, filling, backfilling, compaction, hauling, and legal off-site disposal of spoil materials to meet the required lines and grade as specified to complete the work.
- B. Related Sections:
 - 1. Division 01 Section "Erosion and Sedimentation Control".
 - 2. Division 01 Section "Tree Retention and Protection".
 - 3. Division 01 Section "Clearing and Grubbing".
 - 4. Division 02 Section "Demolition".
 - 5. Division 31 Section "Excavation and Backfilling of Trenches".
 - 6. Division 32 Section "Topsoil".

1.3 DEFINITIONS

- A. Excavation: The removal of material encountered to subgrade or over-excavation and subsequent disposal or placement of materials removed.
- B. Unclassified Excavation: The term "unclassified excavation", as used herein, includes the excavation of all materials required for the work obtained within construction limits of project, including bedrock, surface boulders, wasted sections of concrete, asphalt or other debris including historic landfills that may be encountered. All excavation will be considered unclassified regardless of the nature of material encountered.
- C. Unauthorized Excavation: Inadvertent or purposely removing materials beyond indicated subgrade elevations or dimensions without specific direction of the Project Manager. Unauthorized excavation, as well as remedial work resulting from unauthorized excavation shall be at Contractor's expense.
- D. Unsuitable Materials: For the purposes of classified excavation, unsuitable material shall be defined as material below subgrade elevation that exhibits excessive pumping or that does not meet density requirements due to unsatisfactory material as determined by geotechnical engineer and/or Project Manager.
- E. Subgrade: The undisturbed earth or the compacted soil layer immediately below proposed pavement and topping materials.

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- F. Structure: Walls, foundations, slabs, pavement or other man-made stationary features occurring above or below ground surface.
- G. Structural Fill: The term “structural fill”, as used herein, includes soil materials used for general site filling under pavements or structures.
- H. Rough Grade: Cutting and filling the earth for preparation of finish grade. Elevation shall be within +/- one-tenth (.10’) of a foot to the elevation indicated for that point.
- I. Finished Grade: Any surface which has been cut to or built to the elevation indicated for that point. Elevation shall be +/- five one-hundredths (.05’) of a foot from required elevation.

1.4 SUBMITTALS

- A. Samples for Verification: For the following products, in sizes indicated below:
 - 1. Warning Tape: Twelve-inches (12”) long; of each color.
- B. Qualification Data: For qualified testing agency.
- C. Material Test Reports: For each on-site and borrow soil material proposed for fill and backfill as follows:
 - 1. Location of soil source.
 - 2. Classification according to ASTM D 2487.
 - 3. Laboratory compaction curve according to ASTM D 698.
- D. .
- E. For imported fill materials, general or structural, the Contractor shall provide, at a minimum, a soils report indicating gradation tests, liquid limit, plasticity index and standard proctor density test and free of environmental contaminants. Depending on the use of the imported backfill materials the Project Manager may request that a soils analysis be performed to determine percent organic content of the soils, salt levels, and environmental contaminants of concern. Division 32 Section “Topsoil” for additional information.
- F. Pre-excavation Photographs or Video: Show existing conditions of adjoining construction and site improvements, including finish surfaces that might be misconstrued as damage caused by earth moving operations. Submit before earth moving begins.

1.5 QUALITY CONTROL

- A. Geotechnical Testing Agency Qualifications: Qualified according to ASTM E 329 and ASTM D 3740 for testing indicated.
- B. Comply with requirements within project Geotechnical Report.
- C. Codes and Standards: Comply with all applicable local, state and Federal rules, regulations and ordinances concerning sloping of excavation, trenching and safety of workers, including the latest version of OSHA requirement.

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- D. Testing Agency: All testing required to determine compliance for the work of this section will be completed as specified in Division 01 Section “Contractor Quality Control”. Testing Agency to test the following, and as stated throughout this Section:
 - 1. Determine prior to placement of fill that site has been prepared in compliance with requirements.
 - 2. Determine that fill material and maximum lift thickness comply with requirements.
 - 3. Determine, at the required frequency, that in-place density of compacted fill complies with requirements.
- E. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2922, and ASTM D 2937, as applicable.

1.6 PROJECT CONDITIONS

- A. Protection and Repair of Underground lines:
 - 1. Existing Public Utilities: Locate existing underground utilities within the limits of work per General Contract Conditions, Article 804 Protection of Municipal, Public Service or Public Utility Systems. Request utility locates seventy-two (72) hours in advance of any excavations by calling the Utility Notification Center of Colorado at 811. The Contractor is responsible for providing written and graphical documentation from the utility owner. Take whatever precautions are necessary including potholing to verify location and depth to protect these underground lines from damage. Should unmarked or incorrectly marked utilities or other piping be encountered during excavation, notify the Project Manager immediately for direction. If damage does occur, all damage shall be repaired by the utility owner and all costs of such repair shall be paid by the Contractor. Only written all clears will be acceptable, verbal all clears will not be accepted.
 - 2. Existing Private Utilities: Locate existing underground utilities within the limits of work per General Contract Conditions, Article 804 Protection of Municipal, Public Service or Public Utility Systems. The Contractor is required to contact all private utility companies and City and County of Denver departments to locate all utilities. The Contractor is responsible for providing written and graphical documentation from the private utility owner. The request for locates shall be a minimum of seventy-two (72) hours prior to proceeding with any excavation. If, after such requests, private utilities are encountered and damaged by the Contractor these shall be repaired at no cost to the city. If the Contractor damages staked or located private utilities, they shall be repaired by the utility owner and all costs of such repair shall be paid by the Contractor. Only written all clears will be acceptable, verbal all clears will not be accepted.
- B. Use of Explosives: Use of explosives is not permitted.
- C. Protection of Persons and Property: The Contractor is responsible for installing barricades and posting warning lights with all open excavations occurring as part of the work.
 - 1. Protect structures, utilities, walkways, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
- D. Environmental Requirements: Blasting is not permitted. Employ jack hammering and other loud noises and methods sparingly; comply with all applicable noise abatement ordinances or regulations. Onsite burning is not allowed.

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- E. Existing Benchmarks: Carefully preserve and maintain existing benchmarks, vertical/horizontal control, monuments, property line pipes and pins, and other reference points. If disturbed or destroyed, restore or replace at no additional cost to the City.
- F. Do not commence earth moving operations until temporary erosion- and sedimentation-control measures, specified in Division 01 Sections "Temporary Facilities and Controls" and "Tree Retention and Protection", and Division 31 Section "Clearing and Grubbing," are in place.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

- A. General: All fill material, regardless of intended use category, must be clean and free from organic matter, roots, brush or other vegetation, trash, debris or other detrimental substances, and rocks or unbroken lumps larger than three-inches (3"). The Project Manager is to approve material prior to placement.
 - 1. The Contractor is responsible for furnishing load tickets and providing a daily log of cubic yards of soil materials imported or exported.
- B. Structural Fill: Shall be Class 1 or Class 2 material composed of non-organic mineral aggregates and soil from excavations of existing soils obtained from on-site or imported fill, including granular or aggregate base course from removed pavements. Fill containing organic matter or any other deleterious substances, including overly wet soils, bedrock, or high swell content soils will not be accepted. If sufficient materials meeting the above requirements are not available from on-site sources, provide additional material obtained from off-site sources and approved by the testing and inspections agency, at no additional cost to the City. The soil must be compactable and pass, at minimum, a proof roll prior to being accepted for supporting paving materials.
- C. On-Site Topsoil: The top four-inches (4") minimum of organic material in the excavation zone shall be stripped stockpiled prior to other earthwork operations. All stockpiled topsoil shall be reused on site, see Section 329120 Topsoil.

2.2 ACCESSORIES

- A. Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, six-inches (6") wide and four (4) mils thick, continuously inscribed with a description of the utility.
- B. Detectable Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, a minimum of six-inches (6") wide and four (4) mils thick, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to thirty-inches (30") deep.
- C. Tape: Colored as follows:
 - 1. Red: Electric.
 - 2. Yellow: Gas, oil, steam, and dangerous materials.
 - 3. Orange: Telephone and other communications.
 - 4. Blue: Water systems.

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5. Green: Sewer systems.

2.3 DRAINAGE GRAVEL

- A. Free-draining ¾" washed gravel.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas where the Work of this Section will be performed for compliance with requirements and conditions affecting installation and performance.
 1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within the work area.
 2. Proceed with installation only after unsatisfactory conditions have been corrected and approved by Project Manager.

3.2 GENERAL PROCEDURES

- A. Comply with Division 01 Section "Erosion and Sedimentation Control" and all local, state and national erosion control requirements.
- B. Erosion Control shall be maintained during all phases of site excavation and site development and maintained throughout the construction period in order to protect adjacent properties, streets, and storm sewers from erosion and sediment runoff during the construction process. Do not commence excavation and grading work until erosion control measures are in place and have been inspected by the Project Manager. Contractor shall be responsible for maintaining erosion control measures throughout construction. Frequent monitoring, cleaning and other work required for proper operation shall be Contractor's responsibility. Contractor shall modify/replace all erosion control measures to fit field conditions following direction for corrective actions from Project Manager and or Wastewater Management Inspector.

3.3 FIELD QUALITY CONTROL

- A. Testing and inspections shall be coordinated and paid for by the Contractor.
- B. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earth moving only after test results for previously completed work comply with requirements.
- C. Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by the Project Manager.
- D. Field tests will be performed at the following locations and frequencies at a minimum:

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1. Paved Areas: At subgrade and at each compacted fill and backfill layer, at least one test for every two thousand (2,000) sq. ft. or less of paved area or building slab, but in no case fewer than three (3) tests.
2. Vault Toilet Concrete Vault Backfill: At each compacted backfill layer, at least one test for every 50 feet (50') or less of wall length, but no fewer than two (2) tests.
3. Landscaped Areas: At least one test every twenty thousand (20,000) sq. ft or less of disturbed landscaped area, but in no case fewer than two (2) tests.
4. Picnic Shelter Column Foundations: At each compacted backfill layer, at each picnic shelter column location.

- E. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil materials to depth required; re-compact and retest until specified compaction is obtained.

3.4 DEWATERING

- A. Wherever possible, prevent surface water and subsurface or groundwater from flowing into excavations and from flooding the project site and surrounding area.
- B. Contractor shall be required to dewater excavated areas by pumping, or otherwise control the water so that the project can be constructed in accordance with the plans. Any controlling of the water must be performed in such a manner that recently constructed portions of the project are not damaged. Repairs shall be at the Contractor's expense.
- C. Damage to adjacent property that results from the Contractor's alteration of any surface drainage, ground water flows or pumped water shall be repaired by the Contractor at no additional cost to the City.

3.5 GROUND SURFACE PREPARATION

- A. Complete clearing and grubbing operations in accordance with Division 31 Section "Clearing and Grubbing". Where new material is to be placed on compacted subgrade, scarify ground surface until surface is free from ruts, hummocks or other uneven features, which would prevent uniform compaction and bond between old and new material.
- B. Prior to placing any new sections of asphalt or concrete pavement, the entire subgrade shall be scarified to a depth of six-inches (6"). In areas where existing pavement is to be removed and replaced the existing compacted subgrade may be reused if the subgrade meets specified compaction. In areas of existing subgrade that do not meet the specified compaction, materials shall be removed, replaced and compacted to meet the specified proctor density. Adjust moisture content and compact as hereinafter specified.

3.6 STRIPPING AND STOCKPILING TOPSOIL

- A. Strip all topsoil from the excavation zone for new facilities (four-inches (4") in depth for all disturbed areas). Stockpile topsoil in locations indicated on the Drawings or as directed by the Project Manager.
- B. Placing topsoil, refer to Division 32 Section "Topsoil".

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3.7 EXCAVATION

- A. Stability of excavations: Comply with local codes, ordinances, and requirements of agencies having jurisdiction to include the latest revision to OSHA standards.
- B. Excavation for Structures: Conform to elevations and dimensions shown within a tolerance of +/- one-tenth (0.1') of a foot, and extending a sufficient distance to permit installation of services and other construction, and for inspection.
- C. Excavation for Pavements: Cut surface under pavements to comply with cross-sections, elevations and grades as indicated within a tolerance of +/- one-tenth (0.1') of a foot.
- D. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.
 - 1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.
 - 2. Remove rock to lines and grades indicated to permit installation of permanent construction without exceeding the following dimensions:
 - a. Twenty-four inches (24") outside of concrete forms other than at footings.
 - b. Twelve-inches (12") outside of concrete forms at footings.
 - c. Six-inches (6") outside of minimum required dimensions of concrete cast against grade.
 - d. Outside dimensions of concrete walls indicated to be cast against rock without forms or exterior waterproofing treatments.
 - e. Six-inches (6") beneath bottom of concrete slabs-on-grade.
 - f. Six-inches (6") beneath pipe in trenches, and the greater of twenty-four inches (24") wider than pipe or forty-two inches (42") wide.

3.8 EXCAVATION FOR STRUCTURES

- A. Excavate to indicated elevations and dimensions shown on Contract Drawings within a tolerance of +/- one-tenth (0.1') of a foot. If applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.
 - 1. Excavations for Footings, Restroom Vaults and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.

3.9 EXCAVATION FOR WALKS AND PAVEMENTS

- A. See project Geotechnical Report.
- B. Excavate to indicated elevations and dimensions within a tolerance of +/- one-tenth (0.1') of a foot.
- C. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.
 - 1. Prior to placing the pavement section, the entire subgrade should be scarified to a depth of six inches (6") under pedestrian paving and twelve inches under vehicular paving,

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adjusted to a moisture content near optimum and compacted as indicated in the Geotechnical Report.

3.10 INSPECTION

- A. Subgrade and Rough Grade Inspection:
1. Contractor shall notify Project Manager when excavations have reached required subgrade.
 2. If Project Manager determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.
 3. Authorized additional excavation and replacement material will be paid for according to Contract provisions for unit prices.
 4. For concrete subgrade preparation, proof-roll subgrade in locations identified by the Project Manager with a pneumatic-tired and loaded ten (10-wheel), tandem-axle dump truck weighing not less than fifteen (15) tons to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.
 - a. Completely proof-roll subgrade in one direction. Limit vehicle speed to three (3) mph.
 - b. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by the Project Manager, and replace with compacted backfill or fill as directed.
 5. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by the Project Manager, without additional compensation.

3.11 SPECIAL CONDITIONS

- A. Cold Weather Protection: Protect excavation bottoms against freezing when atmospheric temperature is less than thirty five degrees (35°) F.
- B. Dust Control: Provide dust control to alleviate dust nuisance to the public, to adjacent properties and other work underway at the project site.
- C. Unanticipated Conditions: Notify the Project Manager immediately upon finding subsurface or other conditions which are not shown or which cannot be reasonably assumed from existing surveys. Secure Project Manager's instructions before proceeding with further work in such areas.
- D. Unsatisfactory Soils: Remove or otherwise correct unsanitary, sour, or otherwise unsatisfactory soil. Remove contaminated or unsuitable material from under paved areas.
- E. Additional Excavation: When excavation has reached required subgrade elevations, the Contractor shall contact the testing agency, which will make an observation of conditions. If unsuitable bearing materials are encountered at required subgrade elevations, carry excavations deeper and replace excavated material as directed by the testing agency.

3.12 FILL AND BACKFILL

- A. General: Place soil material in layers to required subgrade elevations, for each area classification listed below, using materials specified in this Section.
1. Under grassed areas, use satisfactory, excavated or borrow material.

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2. Under walks and pavements, use satisfactory, excavated or borrow materials, or a combination to meet structural fill requirements.
- B. Backfill excavations as promptly as work permits, but not until completion of the following:
1. Inspection, testing, approval, and recording locations of underground utilities have been performed and recorded.
 2. Removal of all trash and debris from excavation.

3.13 PLACEMENT AND COMPACTION

- A. Abide by requirements of project Geotechnical Report unless otherwise directed by Project Manager.
- B. Ground Surface Preparation: Remove vegetation, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface prior to placement of fills. Ground surfaces that are steeper than three-to-one (3:1) (horizontal to vertical) shall be stripped of vegetation, scarified to a depth of six-inches (6") and create excavated benches to ensure that fill material or topsoil will bond with the existing surface.
1. Present remediation options to Project Manager for any soils that do not meet the specified standard proctor density to bring those soils into compliance with the specifications.
- C. Place backfill and fill materials in layers not more than eight-inches (8") in loose depth for material compacted by heavy compaction equipment, and not more than four-inches (4") in loose depth for material compacted by hand-operated tampers, each layer to be compacted to meet requirements herein.
- D. Before compaction, moisten or aerate each layer as necessary to provide optimum moisture content. Compact each layer to required percentage of maximum dry density or relative dry density for each area classification. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.
- E. Compaction of Fill for Hardscape Areas:
1. Select fill material shall be placed and mixed in evenly spread layers. After each fill layer has been placed, it shall be uniformly compacted. Fill materials shall be placed such that the thickness of loose material does not exceed eight-inches (8") and the compacted lift thickness does not exceed six-inches (6").
 2. Compaction shall be obtained by the use of sheepsfoot rollers, multiple-wheel pneumatic-tired rollers, or other equipment required to meet specifications. Granular fill shall be compacted using vibratory equipment or other equipment required to meet specifications. Compaction of each layer shall be continuous over the entire area. Compaction equipment shall make sufficient passes to ensure that the required density is obtained. Refer to Paragraph 3.12.I herein for criteria.
 3. Prior to placement of any base or surfacing materials, one hundred percent (100%) of the subgrade shall be proof rolled with a fully loaded tandem-axle truck.
- F. Compaction of Landscape Slope Areas:
1. Fill slopes shall be compacted with suitable equipment. Compaction operations shall be continued until slopes are stable, compact to a density as specified in Paragraph 3.13.I. Permanent fill slopes shall not exceed three-to-one (3:1) (horizontal to vertical).

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2. Where natural slopes are steeper than twenty percent (20%) in grade and the placement of fill is required, cut benches shall be provided at the rate of one bench for each five feet (5') in height (minimum of two benches). Benches shall be at least ten feet (10') in width. Fill shall be placed on completed benches as outlined within this specification.
- G. Control soil and fill compaction, providing minimum percentage of density specified. Correct improperly compacted areas or lifts as directed if soil density tests indicate inadequate compaction.
- H. Moisture Control: Where subgrade or layer of soil material must be moisture conditioned before compaction, uniformly apply water to surface of subgrade or layer of soil material. Apply water in minimum quantity as necessary to prevent free water from appearing on surface during or subsequent to compaction operations.
1. Moisture Content: The Contractor may be required to add moisture to the excavation materials in the stockpile area if it is not possible to obtain uniform moisture content by adding water on the fill surface. The Contractor may be required to rip or disc the fill soils to provide uniform moisture content through the soils.
 2. The application of water to the embankment materials shall be made with any type of watering equipment which will give the desired results. Water jets from the spreader shall not be directed at the embankment with such force that fill materials are washed out.
 3. Remove and replace, or scarify and air dry, soil material that is too wet to permit compaction to specified density.
 4. Stockpile or spread soil material that has been removed because it is too wet to permit compaction. Assist drying by disking, harrowing, or pulverizing until moisture content is reduced to a satisfactory value.
- I. Density Tests: Field density tests shall be made by the Contractor per Division 01 Section "Contractor Quality Control" locations and depths selected by the Project Manager. Where sheepsfoot rollers are used, the soil may be disturbed to a depth of several-inches. Density tests shall be taken in compacted material below the disturbed surface. When density tests indicate that the density or moisture content of any layer of fill or portion thereof is below that required, the particular layer or portion shall be reworked until the required density or moisture content has been achieved. Criteria for acceptance are as follows:
1. Under pavements and structures: Intervals and quantities of tests required shall be established by the Project Manager. On-site or imported clay materials shall be compacted to at least ninety five percent (95%) of maximum standard Proctor dry density (ASTM D 698) at moisture content within two percent (2%) of optimum. Granular material, whether imported or developed on-site, shall be moisture conditioned to within two percent (2%) of optimum and compacted to at least 95% of maximum modified Proctor dry density (ASTM D 1557).
 2. Under landscape areas (top 12-inches): Eighty five percent (85%) of maximum standard Proctor dry density at moisture content within two percent (2%) of optimum (ASTM D 698).

3.14 STORAGE OF SOIL MATERIALS

- A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
1. Stockpile soil materials away from edge of excavations. Do not store within drip line of existing trees or within Tree Protection Fencing. Refer to Division 01 Section "Tree Retention and Protection".

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3.15 GRADING

- A. General: Uniformly grade areas within project limits of grading under this section, including adjacent transition areas. Smooth finished surface within specified tolerances, compact with uniform levels or slopes between points where elevations or contours are indicated or between such points and existing grades.
- B. Subgrade tolerances are as follows:
 - 1. Lawn, Seeded, and Unpaved Areas: Finish areas to receive topsoil to within not more than +/- one-tenth (0.10') of a foot above or below required subgrade elevations.
 - 2. Athletic Fields: Finish areas to receive topsoil to within not more than +/- five one-hundredths (.05') of a foot from required elevation.
 - 3. Pavements: Shape surface of areas under pavement to line, grade, and cross-section, with finish surface not more than two one-hundredths (0.02') of a foot above or below required subgrade elevation.
- C. Under no circumstances shall variations from specified grade elevations create any ponding or retention of water on intermediate pavement levels, or finished surfaces.

3.16 PLACING STOCKPILED TOPSOIL

- A. Refer to Division 32 Section "Topsoil".

3.17 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
 - 1. Scarify or remove and replace soil material to depth as directed by Project Manager; reshape and re-compact.
- C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
 - 1. Restore appearance, quality, and condition of finished surfacing to match adjacent work.

3.18 MAINTENANCE

- A. Reconditioning Compacted Areas: Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify surface, reshape, and compact to required density prior to further construction.
- B. Settling: Where settling is measurable or observable at excavated areas during general project warranty period, remove surface (pavement, lawn, or other finish), add backfill material, compact, and replace surface treatment. Restore appearance, quality, and condition of surface or finish to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

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3.19 DISPOSAL OF EXCESS AND WASTE MATERIALS

- A. Removal from City's Property: Remove waste materials, including materials not allowed for fill, backfill or site grading as specified within, trash, contaminated materials, and debris, and legally dispose of it off City's property at Contractor's expense. All recyclable materials shall be hauled to nearest recycling center and any non-recyclable materials shall be hauled to Denver Arapahoe Disposal Site (DADS). DADS Disposal tickets shall be provided to the Contractor by Project Manager.
- B. Remove any excess fill material from the site, unless otherwise directed by the Project Manager.
- C. Remove any materials determined to be hazardous or contaminated to DADS. DADS Disposal tickets or hazardous waste manifest tickets shall be provided to the Contractor by Project Manager.
- D. Removal of unsuitable material and its replacement as directed will be paid on basis of Conditions of the Contract relative to changes in work.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Measurement will be based on the percentage complete for the lump sum contract amount for all Earth Moving activities, including Topsoil. Excavation and preparation necessary for installation of the prefabricated vault associated with the restroom, and footings associated with the prefabricated picnic shelter are not included in this measurement.
- B. There is no separate measurement for Drainage Gravel. Drainage Gravel is included in the cost of the work with which it is associated.

4.2 PAYMENT

- A. Payment will be made at the lump sum contract price, and shall include required materials; transportation; equipment; labor; excavation; stripping, stockpiling and respreading topsoil; importing fill or legal disposal of excess excavation if required; re-transporting to fill locations (from locations of excavation or from onsite stockpiles); watering; compaction; sub-grade preparation; measuring of subgrade to bring within tolerances; backfilling; dust control; erosion and sediment control; rough grading and fine grading as required in accordance with the Contract Drawings and Specifications. Payment for the excavation for the vault toilets is not included, and is associated with Section 128760 Vault Toilet. Payment for excavation for footings for the picnic shelter structure is not included, and is associated with Section 128750 Prefabricated Picnic Shelter.
- B. There is no separate payment for Drainage Gravel. Drainage Gravel shall be included in the lump sum prices for the work with which it is associated.

END OF SECTION 31 20 00

SECTION 31 23 16

EXCAVATION AND BACKFILLING OF TRENCHES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes requirements for the excavation and backfill for all piping, conduit, or related appurtenances, as shown on the plans and as specified herein. All work shall be done in conformance with the Detail and Technical Specifications for Storm Drainage and Sanitary Sewer Construction - 4.0 Utility Trenching and Excavation and 5.0 Bedding and Backfilling, available from Denver Wastewater Management Division.
 - 1. www.denvergov.org/wastewatermanagement/WastewaterManagement/EngineeringandPermits/WastewaterDetailandTechnicalSpecifications/tabid/442699/Default.aspx
- B. Related Work: Contractor shall comply with the requirements of the following Sections when installing underground utilities.
 - 1. Division 01 Section "Layout of Work and Surveys".
 - 2. Division 01 Section "Tree Retention and Protection".
 - 3. Division 31 Section "Clearing and Grubbing".
 - 4. Division 31 Section "Earth Moving".
 - 5. Division 32 Section "Soil Preparation".
 - 6. Division 32 Section "Topsoil".
 - 7. Division 32 Section "Native Seeding".
 - 8. Division 32 Section "Storm Sewerage".

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Excavation and Backfilling of Trenches will not be measured separately, and will be included in the cost of the work with which it is associated (e.g storm drainage).

4.2 PAYMENT

- A. No separate payment will be made for excavation and backfilling of trenches.

END OF SECTION 31 23 16

EXCAVATION AND BACKFILLING OF TRENCHES

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SECTION 31 32 50

WATERING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes requirements for furnishing, hauling, and applying water required for compaction of embankments, backfills, sub-grade, and for landscaping, dust control, and other construction operations.
- B. Related Sections:
 - 1. Division 01 Section "Erosion and Sedimentation Control".
 - 2. Division 31 Section "Earth Moving".
 - 3. Division 31 Section "Excavation and Backfilling of Trenches.
 - 4. Division 32 Section "Aggregate Base Course".
 - 5. Division 32 Section "Native Seeding".

PART 2 - PRODUCTS

2.1 WATER

- A. There is no water source on the site.
- B. Water applied for moisture density control, pre-wetting, and as dust palliative shall be free of debris, organic matter, and other objectionable substances.
- C. Water for landscaping shall be free from oils, acids, salts or any substance that may be harmful to plant life. Non-potable water may be accepted on a case-by-case basis as approved by Project Manager.
- D. When the water source proposed for use by the Contractor is not known, the Contractor shall provide an analysis of water samples from an approved testing laboratory. The analysis shall be provided to the Project Manager prior to use.

PART 3 - EXECUTION

3.1 WATER TRUCK

- A. At least one water truck shall be on site or as directed by Project Manager.

3.2 APPLICATION

- A. Moisture and Density Control: Ensure a uniform and controlled application of water without ponding or causing erosion for optimum moisture content.

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- B. Pre-wetting: Pre-wetting material in excavation areas prior to removal for placement in embankments will be allowed as approved by the Project Manager. Prior to excavation the Contractor shall drill, bore or dig test holes to the full depth of excavation to determine moisture requirements. The contractor will identify and confirm with the Project Manager the areas for pre-wetting, including equipment to be used for the pre-wetting operations.
- C. Landscape Watering: The Contractor shall provide water for seeding, mulching, and maintenance operations including regular watering during the warranty period or any other landscape related activities when called out on the Contract Drawings or Specifications.
- D. If overwatering occurs during any of the above operations, de-watering may be required as directed at no additional expense to the City.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. There is no separate measurement for watering during construction. It shall be included in the work with which it is associated (e.g. erosion/dust control, compaction, landscape seeding establishment, etc.)

4.2 PAYMENT

- A. No separate payment will be made for watering.

END OF SECTION 31 32 50

SECTION 31 37 00

RIPRAP, BOULDERS, STONE, AND BEDDING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This section covers requirements for stacked boulder walls, landscape boulders, stepping stones, boulder seating, stone stairs and associated bedding.
- B. Related Sections:
 - 1. Division 31 Section "Earth Moving".
 - 2. Division 31 Section "Trenching and Backfilling".
 - 3. Division 31 Section "Erosion and Sedimentation Controls".
 - 4. Division 31 Section "Concrete Walks, Curbs, and Miscellaneous Flatwork".
 - 5. Division 33 Section "Storm Sewerage".

1.3 REFERENCES

- A. American Association of State Highway and Transportation Officials (AASHTO):
 - 1. T85, Standard Method of Test for Specific Gravity and Absorption of Course Aggregate.
 - 2. T96, Standard Method of Test for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
 - 3. T103, Standard Method of Test for Soundness of Aggregates by Freezing and Thawing.
 - 4. T104, Standard Method of Test for Soundness of Aggregate by Use of Sodium Sulfate or Magnesium Sulfate. T248, Reducing Field Samples of Aggregate Test Size.
- B. ASTM International (ASTM): D698, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lbf/ft³ (600 kN-m/m³)).

1.4 SUBMITTALS

- A. Contractor shall cooperate with Owner's Representative in obtaining and providing samples of all specified materials.
- B. Contractor shall submit product material requirements, data, and gradations for Riprap, Stepping Stones, and Bedding. Boulders for retaining walls will be obtained on-site or provided by Owner.

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PART 2 - MATERIALS

2.1 BROWNSTONE STACKED BOULDER WALLS, SEATS, STEPS AND STEPPING STONES

- A. Brownstone material applies to stacked boulder walls, seating boulders at fire pit, steps near the restroom, and stepping stones.
- B. Brownstone Block. Sandstone; buff-brown colored, square to rectangular shape, not rounded, sound hard surface. Available from The Rock Garden, 167 Spaulding Lane, Fort Collins, CO 80524. Contact: 970-472-1115, or equal as approved by the Owner’s representative. Owner’s representative to review and select stone on site.
- C. Boulder material used shall be of the type, thickness, side slope, and placement designated on the Drawings.

2.2 ON-SITE HARVESTED BOULDERS

- A. Boulder material applies to landscape boulders, and single and double-stacked boulder walls.
- B. Rock used for the boulder material shall be obtained from on-site material where acceptable material is available. Additional boulder material is available in owner stockpiles. Rock shall be approved by Owner’s Representative prior to placement.
- C. Boulder material used shall be of the type, thickness, side slope, and placement designated on the Drawings and shall conform to the following criteria.
- D. Boulder material shape for stacked wall at picnic shelter and retaining walls in the landscape shall be predominantly subangular, and maximum dimension shall not be greater than 1.5 times minimum dimension. If the boulder material shape is subrounded, the recommended sizes should be increased by 10 percent. If the boulder material shape is rounded, the recommended sizes should be increased by 20 percent. Much of the native boulder material will likely qualify as subangular.
- E. Rock shall be free of calcite intrusions.

2.3 RIPRAP

- A. Riprap used shall be the type designated on the DRAWINGS and shall conform to Table 1.

Table 1: Riprap Gradation

Riprap Designation	% Smaller Than Given Size By Weight	Intermediate Rock Dimension (inches)	d₅₀* (inches)
Type VL	70 - 100	12	6**
	50 - 70	9	
	35 - 50	6	
	2 - 10	2	

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Type L	70 - 100	15	9**
	50 - 70	12	
	35 - 50	9	
	2 - 10	3	
Type M	70 - 100	21	12**
	50 - 70	18	
	35 - 50	12	
	2 - 10	4	
Type H	70 - 100	30	18
	50 - 70	24	
	35 - 50	18	
	2 - 10	6	
Type VH	70 - 100	41	24
	50 - 70	33	
	35 - 50	24	
	2 - 10	9	
*d50 = Mean Particle Size			
**Mix VL, L and M riprap with 35% topsoil (by volume) and bury it with 4 to 6 inches of topsoil, all vibration compacted, and revegetate.			

- B. The riprap designation and total thickness of riprap shall be as shown on the DRAWINGS. The maximum stone size shall not be larger than the thickness of the riprap.
- C. Neither width nor thickness of a single stone of riprap shall be less than one-third (1/3) of its length.
- D. The specific gravity of the riprap shall be two and one-half (2.5) or greater.
- E. Riprap specific gravity shall be according to the bulk-saturated, surface-dry basis, in accordance with AASHTO T85.
- F. The bulk density for the riprap shall be 1.3 ton/cy or greater.
- G. The riprap shall have a percentage loss of not more than forty percent (40%) after five hundred (500) revolutions when tested in accordance with AASHTO T96.
- H. The riprap shall have a percentage loss of not more than ten percent (10%) after five (5) cycles when tested in accordance with AASHTO T104 for ledge rock using sodium sulfate.
- I. The riprap shall have a percentage loss of not more than ten percent (10%) after twelve (12) cycles of freezing and thawing when tested in accordance with AASHTO T103 for ledge rock, procedure A.
- J. Rock shall be free of calcite intrusions.

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K. Gradation:

1. Each load of riprap shall be reasonably well graded from the smallest to the largest size specified.
2. Stones smaller than the two to ten percent (2 to 10%) size will not be permitted in an amount exceeding ten percent (10%) by weight of each load.
3. Control of gradation shall be by visual inspection. However in the event ENGINEER determines the riprap to be unacceptable, ENGINEER shall pick two (2) random truckloads to be dumped and checked for gradation.
 - a. Mechanical equipment and labor needed to assist in checking gradation shall be provided by CONTRACTOR at no additional cost.

L. Color:

1. The color of the riprap shall approved by ENGINEER prior to delivery to the PROJECT site.
2. Color shall be consistent on the entire PROJECT and shall match the color of rock to be used for all other portions of the WORK.

M. Broken concrete or asphalt pavement shall not be acceptable for use in the WORK.

N. Rounded riprap (river rock) is not acceptable, unless specifically designated on the DRAWINGS.

2.4 SOIL RIPRAP

- A. Rock requirements are to comply with riprap as specified in Article Materials.
- B. The soil material shall be native or topsoil and mixed with sixty-five percent (65%) riprap and thirty five percent (35%) soil by volume.
- C. Soil riprap shall consist of a uniform mixture of soil and riprap without voids.

2.5 BEDDING

- A. Bedding for stacked boulders, stone stairs, and stepping stones as shown in details shall consist of a single layer, well-graded granular filter that allows for setting the boulder to achieve stability and consistency.
- B. Bedding material may be on-site aggregate base course (ABC) or a different material that meets the same requirements for specific gravity, soundness, durability, and calcite intrusion as required for riprap.
 1. Broken concrete asphalt pavement or sledge, shall not be acceptable for use in the work. Rounded river rock is not acceptable unless specifically designated on the drawings.

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PART 3 - EXECUTION

3.1 STACKED BROWNSTONE WALLS AND SEATING

- A. Contractor shall excavate areas and/or prepare subgrade to receive brownstone material as shown on the Drawings.
- B. Brownstone material shall be placed following acceptable placement of bedding, and rock placed carefully on the prepared surface in a manner that avoids scratches and scars on visible faces. Scrub large scratches with a fiber brush using water.
- C. Brownstone material shall be placed to full course thickness at one operation and in such a manner as to avoid displacing the underlying bedding material. Placing of boulders in layers, or by dumping into chutes, or by similar methods shall not be permitted.
- D. Roughly shape stone with a hammer to approximate fit where necessary. Knock off weak portions. Knob corners and returns square.
- E. Lay stones in random and overlapping pattern per details. Average 3/4-inch wide joints. Maximum allowable joint width 2-inch in select gaps where stone variation occurs. Vary size and placement of stones into to give appearance of random forms and shapes. Interlock stones at corners and bends of the walls.
- F. Backfill wall as construction proceeds.
- G. Slope tops of stone to shed water. Top of stones shall be within 2" of elevations shown on drawings.
- H. The entire mass of brownstone material shall be placed so as to be in conformance with the required gradation and to line, grade, and thickness shown on the Drawings.

3.2 ON-SITE HARVESTED BOULDER WALLS

- A. Contractor shall excavate areas and/or prepare subgrade to receive boulder material as shown on the Drawings.
- B. Subgrade materials to receive boulder material shall be stable.
- C. Boulder material shall be placed following acceptable placement of bedding.
- D. Boulder material shall be placed on the prepared surface in a manner which will produce a reasonably well graded mass of stone with the minimum practicable percentage of voids.
- E. When Boulder material is placed on slope, placement shall commence at the bottom of the slope working up the slope.
- F. The entire mass of Boulder material shall be placed so as to be in conformance with the required gradation and to line, grade, and thickness shown on the Drawings.

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- G. Boulder material shall be placed to full course thickness at one operation and in such a manner as to avoid displacing the underlying bedding material. Placing of boulders in layers, or by dumping into chutes, or by similar methods shall not be permitted.
- H. Smaller rock shall be securely locked between the larger stone. The stone shall be consolidated by the bucket of the backhoe or other means that will cause interlocking of the material.
- I. All rock is to be placed in a dewatered condition beginning at the toe of the slope or other lowest point.

3.3 RIPRAP

- A. Following acceptable placement of granular bedding, riprap placement shall commence as follows:
 - 1. Machine Placed Riprap:
 - a. Riprap shall be placed on the prepared slope or channel bottom areas in a manner which will produce a reasonably well graded mass of stone with the minimum practicable percentage of voids.
 - b. Riprap shall be machine placed, unless otherwise stipulated in the DRAWINGS or SPECIFICATIONS.
 - c. It is the intent of these SPECIFICATIONS to produce a fairly compact riprap protection in which all sizes of material are placed in their proper proportions. Unless otherwise authorized by ENGINEER, the riprap protection shall be placed in conjunction with the construction of embankment or channel bottom with only sufficient delay in construction of the riprap protection, as may be necessary, to allow for proper construction of the portion of the embankment and channel bottom which is to be protected.
 - 2. Slope Placement:
 - a. When riprap is placed on slope, placement shall commence at the bottom of the slope working up the slope.
 - 3. The entire mass of riprap shall be placed on either channel slope or bottom so as to be in conformance with the required gradation mixture and to line, grade, and thickness shown on the DRAWINGS.
 - 4. Riprap shall be placed to full course thickness at one operation and in such a manner as to avoid displacing the underlying bedding material. Placing of riprap in layers, or by dumping into chutes, or by similar methods shall not be permitted.
 - 5. All material used for riprap protection for channel slope or bottom shall be placed and distributed such that there shall be no large accumulations of either the larger or smaller sizes of stone. Some hand placement may be required to achieve this distribution.

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6. The basic procedure shall result in larger materials flush to the top surface with faces and shapes arranged to minimize voids, and smaller material below and between larger materials.
7. Surface grade shall be a plane or as indicated, but projections above or depressions under the finished design grade by more than ten percent (10%) of the rock layer thickness shall not be allowed.
8. Smaller rock shall be securely locked between the larger stone. It is essential that the material between the larger stones not be loose or easily displaced by flow or by vandalism.
9. The stone shall be consolidated by the bucket of the backhoe or other means that will cause interlocking of the material.
10. All rock is to be placed in a dewatered condition beginning at the toe of the slope or other lowest point.
11. CONTRACTOR shall maintain the riprap protection until accepted. Any material displaced for any reason shall be replaced to the lines and grades shown on the DRAWINGS at no additional cost to OWNER. If the bedding materials are removed or disturbed, such material shall be replaced prior to replacing the displaced riprap.
12. Hand Placed Riprap:
 - a. Hand placed riprap shall be performed during machine placement of riprap and shall conform to all the requirements of PART 2, above.
 - b. Hand placed riprap shall also be required when the depth of riprap is less than two (2) times the nominal stone size, or when required by the DRAWINGS or SPECIFICATIONS.
 - c. After the riprap has been placed, hand placing or rearranging of individual stones by mechanical equipment shall be required to the extent necessary to secure a flat uniform surface and the specified depth of riprap, to the lines and grades as shown on the DRAWINGS.
13. Soil Replacement Over Riprap:
 - a. Where riprap is designated to be buried, place onsite excavated material that is free from trash and organic matter in riprap voids by washing and rodding.
 - b. Prevent excessive washing of material into stream.
 - c. When voids are filled and the surface accepted by ENGINEER, place a nominal six (6) inches of topsoil over the area, or as designated on the DRAWINGS.
 - d. Fine grade, seed, and mulch per the SPECIFICATIONS.

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3.4 SOIL RIPRAP

- A. Adjacent stockpiles of riprap and soil shall be created and mixing done at the stockpile location, not at the location where soil riprap is to be placed.
- B. Mix thirty-five percent (35%) soil by volume with stockpiled riprap, using additional moisture and control procedures that ensure a homogenous mixture; where the soil fills the inherent voids in the riprap without displacing riprap.
- C. With prior approval of ENGINEER, layering the riprap and soil instead of premixing may be allowed if the native soil is granular.
- D. Place a first layer of smaller soil riprap of approximate d50 thickness. Then place the top layer with surface rocks that are largely d50 or greater, filling voids as necessary with smaller planted riprap. Create a smooth plane as described in Paragraph A.
- E. The mixture shall be consolidated by large vibratory equipment or backhoe bucket to create a tight, dense interlocking mass.
- F. The soil shall be further wetted to encourage void filling with soil.
- G. Any large voids shall be filled with rock and small voids filled with soil.
- H. Excessively thick zones of soil prone to washing away shall not be created (for example, no thicknesses greater than six (6) inches).
- I. For buried soil riprap, the top surface shall be covered with four (4) inches of topsoil such that no rock points are protruding.
- J. The final surface shall be thoroughly wetted for good compaction, smoothed and compacted by vibrating equipment; the surface shall then be hand raked to receive planting or seeding.

3.5 BEDDING

- A. Place bedding on prepared soil surface to lines, grades, and thickness shown on Drawings.
- B. Mechanical compaction is not required. Work bedding during placement to fill detrimental voids in the layer. Avoid segregation of particles. Do not push material down slope.

3.6 LANDSCAPE BOULDERS

- A. Place boulders harvested on-site under the direction of the Owner's Representative. Boulders may require turning so that the best faces of the rocks are toward pedestrian paths. Avoid scratching rocks with equipment to the greatest extent feasible.

3.7 BROWNSTONE STAIRS

- A. Prepare subgrade, place bedding material and compact.

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- B. Level bedding surface and achieve proper subgrade elevation to account for thickness of rock step.
- C. Place rock step to allow for 1% slope from back to the front of the tread to provide positive drainage.

3.8 BROWNSTONE STEPPING STONES

- A. Prepare subgrade, place bedding material, and compact.
- B. Level bedding surface and achieve proper subgrade elevation to account for thickness of stepping stone.
- C. Place rocks per drawings.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Measurement will be based on the percentage complete for the lump sum contract amount for Stacked Brownstone Walls and Seating.
- B. Measurement will be based on the percentage complete for the lump sum contract amount for Soil Riprap of the type called for on the plans.
- C. Measurement will be based on the percentage complete for the lump sum contract amount for 18" Double-Stacked Boulder Walls.
- D. Measurement will be based on the percentage complete for the lump sum contract amount for 36" Boulder Walls.
- E. Measurement will be based on the percentage complete for the lump sum contract amount for Landscape Boulders.
- F. Measurement will be based on the percentage complete for the lump sum contract amount for Brownstone Stairs.
- G. Measurement will be based on the percentage complete for the lump sum contract amount for Brownstone Stepping Stones.

4.2 PAYMENT

- A. Payment will be made at the lump sum contract price, and shall include required materials when not provided by the Owner, transportation, equipment, labor, excavation, stockpiling, sub-grade preparation, bedding, drainage gravel, placement, backfilling, and other work as required in accordance with the Contract Drawings and Specifications.

END OF SECTION 31 37 00

SECTION 32 11 16

AGGREGATE BASE COURSE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the requirements for furnishing and placing crushed aggregate, bonded with fine aggregate, constructed on a prepared underlying course in accordance with these specifications and in conformity with the dimensions, typical cross section, and the lines and grades shown on the Contract Drawings for aggregate base course (ABC) surfacing. Not to include ABC used in bedding or foundation applications. The locations where aggregate base course surfacing will be used is shown on the Contract Drawings.

- B. Related Sections:

- 1. Division 01 Section "Layout of Work and Surveys".
- 2. Division 01 Section "Contractor Quality Control".
- 3. Division 01 Section "Erosion and Sedimentation Control".
- 4. Division 31 Section "Earth Moving".
- 5. Division 32 Section "Asphalt Pavement".
- 6. Division 32 Section "Concrete Walks, Curbs, and Miscellaneous Flatwork".

1.3 SUBMITTALS

- A. See Division 01 Section "Submittals" for submittal requirements.
- B. Certification: Contractor shall provide a certificate of compliance for any imported Aggregate Base Course materials.
- C. Gradation and Standard Proctor Density Test Results: For imported backfill materials, at a minimum, submit results of gradation tests and standard proctor density test.
- D. Sample: Provide a 1-pound (1#) sample of material(s) for approval.

PART 2 - PRODUCTS

2.1 AGGREGATE BASE COURSE

- A. Aggregate base course shall meet the requirements of Item 703.03 of the Standard Specifications for Road and Bridge Construction of the Colorado Department of Highways, latest revision for Class five (5) or Class (6), or as specified by the Soils Engineer and on Contract Drawings.

2.2 RECYCLED CONCRETE

- A. May be substituted for five (5) or Class (6) Aggregate, if acceptable to the Project Manager.

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2.3 AGGREGATE

- A. The use of this term implies the use of Aggregate Base Course within this Section only.

PART 3 - EXECUTION

3.1 EQUIPMENT

- A. All equipment necessary for the proper construction of this work shall be in working condition, and shall be free of fluid leaks. Project Manager reserves the right to have any piece of equipment removed from the site if it is deemed inoperable and/or is leaking fluids.

3.2 PREPARING SUBGRADE

- A. The underlying subgrade or base course shall be tested at the Contractors expense and accepted by the Project Manager before placing and spreading operations are started. See Division 01 Section "Contractor Quality Control".

3.3 METHOD OF SPREADING

- A. The aggregate material shall be placed on the prepared underlying course and compacted in layers not to exceed six-inches (6") in depth before compaction. The depositing and spreading of material shall commence where designated and shall progress continuously without breaks. The material shall be deposited and spread in a uniform layer and without segregation of size to a uniform thickness.
- B. The aggregate spread shall be of uniform grading with no pockets of fine or coarse materials. During the spreading process, sufficient caution shall be exercised to prevent the incorporation of underlying materials in the aggregate.

3.4 COMPACTION OF AGGREGATE BASE COURSE

- A. Aggregate base course shall be compacted to 95% of Modified Proctor per ASTM D-1557, within 2% of optimum moisture.
- B. Aggregate material shall be placed and mixed in evenly spread layers. After each fill layer has been placed, it shall be uniformly compacted. Fill materials shall be placed such that the thickness of loose material does not exceed eight-inches (8") and the compacted lift thickness does not exceed six-inches (6").
- C. Compaction shall be obtained by the use of vibratory rollers, multiple-wheel pneumatic-tired rollers, or other equipment approved by the Project Manager. Granular fill shall be compacted using vibratory equipment or other equipment approved by the Project Manager. Compaction of each layer shall be continuous over the entire area. Compaction equipment shall make sufficient passes to ensure that the required density is obtained.
- D. Prior to placement of any base or surfacing materials, one-hundred percent (100%) of the subgrade shall be proof rolled with a fully loaded tandem-axle truck.

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3.5 CLEANING

- A. Perform cleaning during installation of the Work and upon completion of the Work. Remove all excess materials, debris, and equipment from site. Repair any damage resulting from installation of aggregate base course.

3.6 PROTECTION AND MAINTENANCE

- A. Spreading of aggregate shall not take place when temperatures are below freezing. When the aggregate base course contains frozen material or the underlying subgrade is frozen, construction shall not occur.
- B. Following the completion of the aggregate base course, the Contractor shall perform all maintenance work necessary to keep the aggregate in a satisfactory condition until final acceptance of the project. The surface shall be kept clean and free from foreign material. The aggregate base course shall be properly drained at all times. Any work, maintenance or necessary repairs shall be performed at the expense of the Contractor.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Measurement will be based on the percentage complete for the lump sum contract amount for Aggregate Base Course.

4.2 PAYMENT

- A. Payment will be made at the lump sum contract price, and shall include required materials, transportation, equipment, labor, excavation, de-watering, stockpiling, placement, grading, compaction, hauling off, watering, dust control, and erosion and sediment control as required in accordance with the Contract Drawings and Specifications.

END OF SECTION 32 11 16

SECTION 32 13 13 CONCRETE WALKS, CURBS, AND MISCELLANEOUS FLATWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes requirements for furnishing, placing, shoring, bracing, and anchorage of formwork, concrete reinforcement, accessories, and placing concrete flatwork, including walks, shelter pad, ramps, and pans, including installation of control and expansion joints, concrete curing and concrete finishing.
- B. Related Sections:
 - 1. Division 01 Section "Layout of Work and Surveys".
 - 2. Division 01 Section "Submittals".
 - 3. Division 01 Section "Contractor Quality Control".
 - 4. Division 01 Section "Erosion and Sedimentation Control".
 - 5. Division 03 Section "Cast-In-Place Concrete".
 - 6. Division 31 Section "Earth Moving".
 - 7. Division 32 Section "Aggregate Base Course".

1.3 REFERENCES

- A. Project Geotechnical Report:
 - 1. Geotechnical Investigation Report, Improvements at Genesee Park, Golden Colorado
 - a. Yeh and Associates, Inc. 2000 Clay St, Ste 200, Denver, CO 80211. June 16, 2014.
- B. Note: All references below shall be from the most current edition.
- C. American Concrete Institute (ACI):
 - 1. ACI 117 - Standard Tolerances for Concrete Construction and Materials.
 - 2. ACI 301 - Specifications of Structural Concrete for Buildings.
 - 3. ACI 304 - Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete.
 - 4. ACI 305 and 306 - Hot and Cold Weather Protection for Concrete.
 - 5. ACI 315 - Details and Detailing of Concrete Reinforcement.
 - 6. ACI 318 - Building Code Requirements for Reinforced Concrete.
 - 7. ACI 347 - Recommended Practice for Concrete Formwork.
- D. American Society for Testing and Materials (ASTM):
 - 1. ASTM A615 - Deformed and Plain Billet-Steel for Concrete Reinforcement.
 - 2. ASTM C33 - Concrete Aggregates.
 - 3. ASTM C94 - Ready-Mixed Concrete.
 - 4. ASTM C150 - Portland Cement.
 - 5. ASTM C260 - Air Entraining Admixtures for Concrete.
 - 6. ASTM C494 - Water Reducing Admixtures for Concrete.

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7. ASTM C618 - Fly Ash Mineral Admixture for Concrete.
8. ASTM C672 - Scaling Resistance of Concrete Surfaces Exposed to Deicing Chemicals.
9. ASTM-C800 - Curing Compound, Concrete, for New and Existing Surfaces.
10. ASTM C1059 - Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete
11. ASTM-C1315 - Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete

E. Concrete Reinforcing Steel Institute (CRSI) - Manual of Standard Practice.

F. Colorado Department of Transportation (CDOT) – Standard Specifications for Road and Bridge Construction, latest edition

G. National Ready Mixed Concrete Association (NRMCA)

1.4 QUALITY CONTROL

A. Pre-Construction Conference: Conduct conference at location approved by the Project Manager.

1. Before submitting design mixtures, review concrete design mixture and examine procedures for ensuring quality of concrete materials. Require representatives of each entity directly concerned with concrete to attend, including the following:
 - a. Contractor's superintendent.
 - b. Independent testing agency responsible for concrete design mixtures.
 - c. Ready-mix concrete manufacturer.
 - d. Concrete subcontractor.
2. Review special inspection and testing and inspecting agency procedures for field quality control, concrete finishes and finishing, cold- and hot-weather concreting procedures, curing procedures, construction contraction and isolation joints, and joint-filler strips, semi-rigid joint fillers, forms and form removal limitations, shoring and reshoring procedures, vapor-retarder installation, anchor rod and anchorage device installation tolerances, steel reinforcement installation, concrete repair procedures, and concrete protection.

1.5 SUBMITTALS

A. Qualification Data: Installer to document for Owner's Representative experience on projects of similar scope and scale successfully completed within the past five (5) years.

B. Product Data and Material Certificates: For each type of product and material indicated on the plans and in this specification.

C. Mix Designs:

1. Submit substantiating data for each concrete mix design specified for use to the Project Manager not less than four (4) weeks prior to first concrete placement. Data for each mix shall, as a minimum, include the following per section 2.7.B:
 - a. Mix identification designation (unique for each mix submitted).
 - b. Statement of intended use for mix.
 - c. Mix proportions.
 - d. Aggregates.
 - e. Admixtures (must be approved by the Project Manager)

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- f. Wet and dry unit weight.
- g. Entrained air content.
- h. Design slump.
- i. Strength qualification data.

- D. Material Test Reports: For the following, from a qualified testing agency, indicating compliance with requirements:
 - 1. Aggregates. Include service record data indicating absence of deleterious expansion of concrete due to alkali aggregate reactivity.
- E. Field quality-control reports.
- F. Minutes of Pre-Construction conference.

1.6 DELIVERY, STORAGE AND HANDLING

- A. General: Materials handling and batching shall conform to applicable provisions of ASTM C94.
- B. Reinforcing: Unload and store reinforcing bars so they are kept free of mud and damage.
- C. Hauling Time for Concrete: Deliver and discharge all concrete transmitted in a truck mixer, agitator, or other transportation device not later than one and one-half (1-1/2) hours from batch time, or three hundred (300) revolutions of the drum after the initial mixing water has been added, whichever is earliest.
- D. Extra Water:
 - 1. Deliver concrete to site in exact quantities required by design mix.
 - 2. Should extra water be required for workability before depositing concrete, and the water/cement ratio of accepted mix design will not be exceeded, the General Contractor's superintendent shall have the sole authority to authorize addition of water. Additional water shall not exceed one (1) gallon/cu. yd. Any additional water added to mix after leaving batch plant shall be indicated on truck ticket and signed by person responsible.
 - 3. Where extra water is added to concrete it shall be mixed thoroughly for thirty (30) revolutions of drum before depositing.
 - 4. Water may be added at the site only once for each batch.
 - 5. A full set of tests shall be performed after addition of water. Excessive slump or other out of range tests will be cause for rejection.

1.7 PROJECT CONDITIONS

- A. Environmental Requirements:
 - 1. Cold Weather Placement:
 - a. When for three successive days prior to concrete placement the average daily outdoor temperature drops below forty degrees (40°) F or when the average outdoor temperature is expected to drop below forty degrees (40°) F on the day of concrete placement, preparation, protection and curing of concrete shall comply with ACI 306R.
 - b. Minimum temperature of concrete upon delivery shall conform to ACI 301 Table 7.6.1.1. Concrete at time of placement shall conform to minimum values of ACI

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306R Table 1.4.1, and shall not exceed minimum values by more than twenty degrees (20°) F.

- c. Subject to acceptance of the Project Manager an accelerating admixture may be used. Admixtures shall meet requirements of Part 2. Calcium Chloride and other chloride-type accelerating admixtures are not allowed.
- 2. Hot Weather Placement:
 - a. When depositing concrete in hot weather, follow recommendations of ACI 305R.
 - b. Temperature of concrete at time of placement shall not exceed eighty-five degrees (85°) F.
 - c. When air temperatures on day of placement are expected to exceed ninety degrees (90°) F, mix ingredients shall be cooled before mixing. Flake ice or well-crushed ice of a size that will melt completely during mixing may be substituted for all or part of mix water.
 - d. Retarding admixture may be used subject to acceptance of the Project Manager. Admixtures shall meet requirements of Part 2.

1.8 RIGHT OF WAY WORK

- A. Contractor shall obtain all necessary permits when working with in the Right of Way.
- B. Contractor shall preserve and protect all permanent land survey control markers. Per the General Contract Conditions Article 319 “Preservation of Permanent land Survey Control Markers”.

PART 2 - PRODUCTS

2.1 FORM MATERIALS

- A. Hand Placed Steel Forms: Hand placed steel forms are only to be used for sections that are straight and have no bend, radii or curvature in the sections to be used.
- B. Wood Forms: Forms shall be made of solid one side grade, sound, undamaged lumber with straight edges.
 - 1. Curved elements (bends, radii, or curvature) shown on plans are to be constructed with smooth-curved plywood forms. Faceted forms composed of straight sections will not be accepted.
- C. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.
 - 1. Formulate form-release agent with rust inhibitor for steel form-facing materials.

2.2 STEEL REINFORCEMENT

- A. Recycled Content: Provide steel reinforcement with an average recycled content of steel so postconsumer recycled content plus one-half of pre-consumer recycled content is not less than twenty five percent (25%).
- B. Reinforcing Bars: ASTM A 615/A 615M, Grade 60; deformed.

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- C. Epoxy-Coated Reinforcing Bars: ASTM A 775/A 775M or ASTM A 934/A 934M; with ASTM A 615/A 615M, Grade 60 deformed bars.
 - 1. Epoxy Repair Coating: Liquid, two-part, epoxy repair coating, compatible with epoxy coating on reinforcement.
- D. Joint Dowel Bars: ASTM A 615/A 615M, Grade 60 plain-steel bars. Cut bars true to length with ends square and free of burrs.
- E. Epoxy-Coated, Joint Dowel Bars: ASTM A 775/A 775M; with ASTM A 615/A 615M, Grade 60, plain-steel bars.
- F. Tie Wire: ASTM A1064, minimum sixteen (16) gauge annealed type.
- G. Hook Bolts: ASTM A 307, Grade A, internally and externally threaded. Design hook-bolt joint assembly to hold coupling against paving form and in position during concreting operations, and to permit removal without damage to concrete or hook bolt.
- H. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete of greater compressive strength than concrete specified, and as follows:
 - 1. Equip wire bar supports with sand plates or horizontal runners where base material will not support chair legs.
 - 2. For epoxy-coated reinforcement, use epoxy-coated or other dielectric-polymer-coated wire bar supports.

2.3 CONCRETE MATERIALS

- A. Provide materials in accordance with ACI 301, unless amended or superseded by requirements of this section or general notes on structural drawings.
 - 1. General: Ready-mixed Concrete: ASTM C94. On-site mixed concrete not allowed.
 - 2. Cement: ASTM C150. Type II
 - 3. Fly Ash: ASTM C618 Class F.
 - 4. Aggregate: ASTM C33.
 - a. All sand and aggregates to meet C-33 Table 3 for Class 4S "Severe Weathering Region".
 - 1) Fine Aggregate: Clean, natural sand.
 - 2) Coarse Aggregate: Clean gravel or crushed stone.
 - 5. Water: ASTM C 94/C 94M, clean and not detrimental to concrete.

2.4 ADMIXTURES

- A. General: Unless specified, no admixtures may be used without specific approval of the Project Manager.
- B. Prohibited Products: Calcium chloride or admixtures containing more than 0.05% chloride ions or thiocyanates are not permitted.
- C. Color Admixture: Color Pigment: ASTM C 979, synthetic mineral-oxide pigments or colored water-reducing admixtures; color stable, nonfading, and resistant to lime and other alkalis.

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1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Davis Colors.
 - b. Dayton Superior Corporation.
 - c. Scofield, L. M. Company.
- E. Color: Omaha Tan by Davis, or equal. Must match integral color of concrete prep table by picnic shelter. Air-Entraining Admixture: ASTM C260.
- F. Water Reducing Admixture: ASTM C494, Type A.
- G. High Range Water Reducing Admixture (Superplasticizer): ASTM C494, Type F or G.
- H. Warm weather admixtures: ASTM C494. Use of admixtures will not relax warm weather placement requirements.
- I. Cold Weather Admixtures: ASTM C494. Use of admixtures will not relax cold weather placement requirements.

2.5 CONCRETE MIX

- A. Refer to the Denver Right of Way Services approved materials list of pre-approved concrete mixes at the following website:
<https://www.denvergov.org/content/denvergov/en/right-of-way-services/engineering-regulatory-analytics/engineering-plan-review/manuals-regulations.html>
- B. All Concrete mixes from the approved list or submitted for approval shall meet the following criteria.
 1. Mix concrete in accordance with ASTM C94 and ACI 301 Chapter 3.
 2. Cement Content: Type II cement, minimum of five hundred twenty-eight (528) pounds per cubic yard.
 3. Fly Ash: Class F per CDOT Standard Specifications for Road and Bridge Construction Section 701.02. Fly ash shall not exceed twenty (20%) of total cementitious material by weight unless approved by the Project Manager.
 4. Maximum water-cement ratio: 0.44.
 5. Slump: Four inches (4") maximum when hand placed.
 6. Air Entrainment: five percent (5%) to eight percent (8%).
 7. Aggregate Size: three quarter-inch (3/4") maximum.
 8. Concrete for Exterior Flatwork, including Pavement, Curb and Gutter, and Drainage Pans shall be Class P, as approved by the Project Manager.

2.6 FIBROUS CONCRETE REINFORCEMENT

- A. Shall be one hundred percent (100%) virgin polypropylene, fibrillated fibers containing no reprocessed olefin materials and specifically manufactured to an optimum gradation utilizing twenty-five (25) individual fiber designs for use as concrete secondary reinforcement. Volume per cubic yard shall be one and one-half (1.5) pounds, or in accordance with manufacturer's recommendations. Fiber manufacturer must document evidence of five (5) year satisfactory performance history, compliance with applicable building codes and ASTM C1116 Type III 4.1.3 and ASTM C1116 Performance Level I.

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1. Fibrous concrete reinforcement shall be utilized in all flatwork applications.

2.7 EXPANSION JOINT MATERIAL

- A. Interior Use or Exterior Use where sealants are specified: Bituminous saturated fiber conforming to ASTM D1751, one half-inch (1/2") thick. Provide manufacturer's certification of compatibility with specified sealants where required.
- B. Pre-molded closed cell polyethylene foam backer rod if required.
- C. Joint Sealant: ASTM D 5893 Type NS, Silicone per CDOT's approved joint and crack sealant list. Where concrete color additive is used, sealant color to match adjacent concrete.

2.8 SLIP JOINTS

- A. Speed Dowel Model PSD09/#4TX, 9" long sleeve to accommodate 18" smooth steel round bar, 5/8" diameter. Manufactured by Sika/Greenstreak, or approved equal.

2.9 CURING MATERIALS

- A. Absorptive Cover: AASHTO M 182, Class 3, burlap cloth made from jute or kenaf, weighing approximately nine (9) oz./sq. yd. dry.
- B. Curing and Sealing Compound: ASTM C309
 1. Products:
 - a. Davis Colorseal II
 - b. Or approved equal.

PART 3 - EXECUTION

3.1 FIELD QUALITY CONTROL

- A. Requirements of Regulatory Agencies: Comply with all applicable provisions of the state and local building and safety codes.
- B. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer, unless otherwise approved by Project Manager.
- C. Ready-Mix-Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
 1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities" (Quality Control Manual - Section 3, "Plant Certification Checklist").
- E. Testing: All testing shall be completed by the Contractor at their expense unless otherwise specified by the contract.

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- F. Testing Agency Qualifications: Engage a qualified testing agency to perform material evaluation tests and to design concrete mixtures. Qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.
1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.
- G. Testing Frequency: Obtain at least one composite sample for each one hundred (100) cubic yards, or fraction thereof of each concrete mixture placed each day.
- a. When frequency of testing will provide fewer than five (5) compressive-strength tests for each concrete mixture, testing shall be conducted from at least five (5) randomly selected batches or from each batch if fewer than five (5) are used.
 2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one (1) test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
 3. Air Content: ASTM C 231, pressure method; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
 4. Compression Test Specimens: ASTM C 31/C 31M; cast and laboratory cure one (1) set of four (4) standard cylinder specimens for each composite sample.
 5. Compressive-Strength Tests: ASTM C 39/C 39M; test one specimen at seven days and two specimens at twenty-eight (28) days and keep one for backup in the event a sample should break.
 - a. A compressive-strength test shall be the average compressive strength from two specimens obtained from same composite sample and tested at twenty-eight (28) days.
- H. Strength of each concrete mixture will be satisfactory if average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than two-hundred (200) psi.
- I. Test results shall be reported in writing to Project Manager, concrete manufacturer, and Contractor within forty eight (48) hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at twenty eight (28) days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both seven (7) and twenty eight (28) day tests.
- J. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Project Manager.
- K. Concrete work will be considered defective if it does not pass tests and inspections.
- L. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
- M. Prepare test and inspection reports.
- N. Record of Work: A record shall be kept by the Contractor listing the time and date of placement of all concrete for the structure. Such record shall be kept until the completion of the project and shall be available to the Project Manager for examination at any time.

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- O. Mockups: If requested by the Project Manager, prior to starting any concrete work, provide a sample panel using materials indicated for project work. For each type, color and finish of concrete specified, build panel at the site of full thickness and approximately ten feet (10') by 10 feet (10'), including expansion joints, control joint, scales, fillers, and one radial edge. Provide the workmanship proposed for the work. Correct and replace sample panel until Project Manager's acceptance of the work. Retain panel(s) during construction as a standard for completed paving work.
1. Build panel approximately one-hundred (100) sq. ft. in the location indicated or, if not indicated, as directed by Project Manager.
 2. Approved mockups may become part of the completed Work if approved prior to the construction of the mock up and is undisturbed at time of Substantial Completion.
 3. Notify the Project Manager a minimum of seven (7) days in advance of dates and times when mockups will be constructed.
 4. Obtain the Project Manager's written approval of the mockups before starting construction.
 5. If the Project Manager determines that the mockup does not meet the requirements, demolish and remove from the site and cast another until the mockup is approved.
 6. Maintain the mockups during construction in an undisturbed condition as a standard for judging the completed Work.
 7. Demolish and remove mockups when directed by Project Manager.
- P. Tolerances: Comply with tolerances in ACI 117, the Contract Drawings, and as follows:
1. Elevation and Cross-slope: In conformance with grading plans and ADA.
 2. Thickness: Plus, three eighths-inch (3/8"), minus one quarter-inch (1/4").
 3. Surface: Gap below ten feet (10') long, unlevelled straightedge not to exceed one eighth - inch (1/8").
 4. Lateral Alignment and Spacing of Dowels: one-inch (1").
 5. Vertical Alignment of Dowels: one quarter-inch (1/4").
 6. Joint Spacing: three-inches (3").
 7. Contraction Joint Depth: Plus, one quarter-inch (1/4"), no minus.
 8. Joint Width: Plus, one eighth-inch (1/8"), no minus.

3.2 PREPARATION OF SUBGRADE

- A. Excavate to required depth in accordance with geotechnical report. Remove soft, yielding material and replace with select fill. Compact to minimum ninety-five percent (95%) Standard Proctor within two percent (2%) of optimum moisture.
- B. Refer to Division 31 Section: Earth Moving for requirements for subgrade testing and proof-rolling.
- C. Maintain subgrade in a compacted condition until concrete is placed.

3.3 FORMS

- A. Metal, plastic or uniform warp free lumber, coated with form release agent. Slope forms to give slabs positive drainage and stake securely. Obtain approval of Project Manager for alignment and grade of forms a minimum of forty-eight (48) hours prior to placing concrete. Any concrete work installed without obtaining approval from the Project Manager shall be subject to removal and replacement at the discretion of the Project Manager, at no cost to the City.

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- B. Radii shall be continuous and flowing to avoid angular intersections in the horizontal alignment, radial forming shall use bender board or approved equal as directed by Project Manager.

3.4 CONCRETE PLACEMENT

- A. Prior to placing any new sections of concrete pavement, the entire subgrade shall be scarified to a depth of 6-inches. In areas where existing pavement is to be removed and replaced the existing compacted subgrade may be reused if the subgrade meets specified compaction. In areas of existing subgrade that do not meet the specified compaction, materials shall be removed, replaced and compacted to meet the specified proctor density. Adjust moisture content and compact as hereinafter specified.
- B. Before placing concrete, inspect and complete formwork installation and items to be embedded or cast-in.
- C. Do not place concrete on frozen surfaces.
- D. Moisten subbase to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.
- E. Comply with ACI 301 requirements for measuring, mixing, transporting, and placing concrete.
- F. Do not add water to concrete during delivery.
- G. Deposit and spread concrete in a continuous operation between transverse joints. Do not use vibratory equipment to move concrete into place.
- H. Consolidate concrete according to ACI 301 by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping.
 - 1. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand spreading and consolidation. Consolidate with care to prevent dislocating reinforcement, dowels, and joint devices.
- I. Screed paving surface with a straightedge and strike off.
- J. Commence initial floating using bull floats or darbies to impart an open-textured and uniform surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.
- K. Cold-Weather Placement: Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing, or low temperatures. Comply with ACI 306.1 and the following:
 - 1. When air temperature has fallen to or is expected to fall below forty degrees (40°) F, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than fifty degrees (50°) F and not more than eighty degrees (80°) F at point of placement.
 - 2. If subgrade is frozen, as determined by Geotechnical Engineer and/or Project Manager, thaw subgrade to depth of eight (8") prior to placing concrete.
 - 3. Do not use frozen materials or materials containing ice or snow.

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4. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in design mixtures.
- L. Hot-Weather Placement: Comply with ACI 301 and as follows when hot-weather conditions exist:
 1. Cool ingredients before mixing to maintain concrete temperature below ninety degrees (90°) F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated in total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 2. Cover steel reinforcement with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
 3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

3.5 CONCRETE FINISHING

- A. Allow time for bleed water to appear, then scrape or push off all bleed water. Do not work water into surface.
- B. Final level, light bull float, but do not trowel surface.
- C. After darbying or bullfloating, stop finishing until bleeding has ceased and until concrete can support foot pressure with only about one eighth-inch (1/8") indentation. During or after the first floating, check planeness of surface with a ten foot (10') straightedge applied at not less than two different angles, and then cut down all high spots and fill all low spots to achieve a true plane within one eighth-inch (1/8") in ten feet (10').
- D. Finishes:
 1. Medium Broom Finish: Provide a medium broom finish for all exterior concrete unless otherwise noted. Immediately after float finishing and tool work, roughen surface with fiber-bristle broom to match the approved mockup panel. Confirm direction or pattern of broom finish with the Project Manager prior to commencing slab placement.
- E. Edging: After initial floating, tool edges of paving, gutters, curbs, and joints in concrete with an edging tool to a three eighths-inch (3/8") radius. Final concrete finish to completed following jointing. Surface/edging tool marks are not acceptable.
- F. Do not use evaporative retarders as finishing aid.

3.6 CONCRETE CURING AND SURFACE TREATMENTS

- A. General:
 1. Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Maintain concrete with minimal moisture loss at a relatively constant temperature for the period necessary for hydration of the cement and hardening of concrete.
 2. Curing shall commence as soon as free water has disappeared from the concrete surface after placing and finishing. The curing period shall be seven days for all concrete unless test cylinders, made and kept adjacent to the structure and cured by the same methods, are tested with the average compressive strength equal to seventy percent (70%) of the specified twenty-eight (28) day strength.

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3. Curing shall be in accordance with ACI 301 procedures. Avoid rapid drying at the end of the curing period. During hot and cold weather, cure concrete in accordance with ACI 305R and ACI 306R.
- B. Curing Methods: Perform curing of concrete by curing and sealing compound, by moisture curing, by moisture-retaining cover curing, or by combinations thereof, as herein specified. Coordinate with and choose a curing method that is compatible with the requirements for subsequent material usage on the concrete surface.
1. Provide curing and sealing compound to exterior slabs, walks, curbs, etcetera as follows:
 - a. Apply specified curing and sealing compound to concrete slabs as soon as final finishing operations are complete. Apply uniformly in continuous operation by power-spray or roller in accordance with manufacturer's directions. Recoat areas subjected to rainfall within three hours after initial application.
 - b. Maintain continuity of coating and repair damage during period.
 2. Provide moisture curing by one of the following methods:
 - a. Keep concrete surface continuously wet by covering with water.
 - b. Continuous water-fog spray.
 - c. Covering concrete surface with specified absorptive cover, thoroughly saturating cover with water and keeping it continuously wet. Place absorptive cover to provide coverage of concrete surfaces and edges, with 4-inch lap over adjacent absorptive covers.
- C. Curing Formed Surfaces: Where wooden forms are used, cure formed concrete surfaces by moist curing with forms in place for full curing period or until forms are removed. When forms are removed, continue curing by methods specified above for specified curing time.

3.7 JOINTS

- A. Construct joints true to line with faces perpendicular to surface.
- B. Expansion Joints: Expansion joint material shall be provided at the following locations and shall be in place prior to the placing of concrete:
1. As shown on the Contract Drawings; or
 2. Between sidewalk and driveway slabs or service walks.
 3. Between new concrete and existing concrete.
 4. Between new concrete and fixed vertical objects.
 5. At maximum one hundred twenty foot (120') spacing.
 6. Provide half-inch (1/2") thick by depth of the slab material, allow half-inch (1/2") thickness for joint sealer.
 7. As directed by Project Manager.
 8. Thoroughly clean all surfaces prior to installation of sealant material.
- C. Slip Joints:
1. To be used at all Expansion Joints except at buildings, curbs, ramps and stairs.
 2. Dowels to be placed no closer than twelve-inches (12") from edge of concrete and twenty-four-inches (24") on-center.
 3. Attach bases to the face of concrete forms using a double-headed nail or self-tapping screw.
 4. Center of base shall be centered on form.
 5. Prior to placing concrete, Speed Dowel sleeve shall be slipped over base.

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6. Concrete shall not be placed directly over the Speed Dowel System. Place concrete minimum eighteen-inches (18") from Speed Dowel system and work concrete around the Speed Dowel System.
 7. Concrete forms shall be removed with bases still attached. Bases may be reused.
 8. Install slip dowels to the full depth of the embedded Speed Dowel sleeve and proceed with next concrete pour.
 9. Greasing of dowels is not required. Embedded Speed Dowel Sleeve accommodates expansion and shrinkage movements that may occur.
 10. Bent or badly sheared slip dowels shall not be used. Saw cut dowels recommended, deburr ends.
 11. Place edge forms plumb. Out of plumb forms may result in misaligned dowels.
- D. Contraction (Control) Joints in Walks: Contraction joints shall be formed with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut one eighth-inch (1/8") wide joints into concrete that has hardened sufficiently that cutting action will not tear, abrade, or otherwise damage surface, but before development of random contraction cracks. Saw cut joints shall be spaced as shown on the plans, at a distance equal to the width of the walk, but not over ten feet (10') unless approved by the Project Manager. Depth of joints shall be one-fourth (1/4) the slab thickness.
1. Tooled joints will not be allowed on concrete trails, unless directed by the Project Manager.

3.8 FORM REMOVAL

- A. Remove forms after concrete surface is hard enough so as not to be damaged in any way. Reasonable care is to be used in removing forms. Repair minor defects with high strength grout as per Project Managers direction. Plastering will not be permitted on exposed faces.

3.9 CLEANING

- A. Perform cleaning during installation of the Work and upon completion of the Work. Remove all excess materials, debris, and equipment from the site. Repair any damage resulting from installation of the concrete.
- B. Sweep paving not more than two days before date scheduled for Substantial Completion inspections.

3.10 REPAIRS AND PROTECTION

- A. Remove and replace concrete paving that is broken, damaged, or defective or that does not comply with requirements in this Section. Remove work in complete sections from joint to joint unless otherwise approved by Project Manager.
- B. Drill test cores, where directed by the Project Manager, when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory paving areas with portland cement concrete bonded to paving with epoxy adhesive.
- C. Protect concrete paving from damage. Exclude traffic from paving for at least 14 days after placement. When construction traffic is permitted, maintain paving as clean as possible by removing surface stains and spillage of materials as they occur.

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- D. Maintain concrete paving free of stains, discoloration, dirt, and other foreign material.

3.11 ACCEPTANCE

- A. Concrete work will be accepted when it meets the specified strength and all other requirements of this specification.

PART 4 - MEASUREMENT AND PAYMENT

4.2 MEASUREMENT

- A. Measurement will be based on the percentage complete for the lump sum contract amount for Concrete Walks, Curbs, and Miscellaneous Flatwork.

4.3 PAYMENT

- A. Payment will be made at the lump sum contract price for all paved concrete surfaces, and shall include required materials, transportation, equipment, labor, excavation, stockpiling, disposing, hauling off, watering, dust control, erosion and sediment control, compaction, sub-grade preparation, formwork, placing of concrete, reinforcing, joints, curing, finishing, backfilling and all other items required to complete the work as required in accordance with the Contract Drawings and Specifications.

END OF SECTION 32 13 13

SECTION 32 15 40

CRUSHED STONE PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes requirements for demolition, earthwork, grading, furnishing, and placement of crushed stone paving.
 - 1. Furnish and place crushed stone paving, bonded with fine aggregate, constructed on a prepared underlying base course in accordance with these specifications and in conformity with the dimensions, typical cross section, and the lines and grades shown on the Contract Drawings. The locations where crushed stone paving will be used are shown on the Contract Drawings.
- B. Related Sections:
 - 1. Division 01 Section "Layout of Work and Surveys".
 - 2. Division 01 Section "Contractor Quality Control".
 - 3. Division 01 Section "Erosion and Sedimentation Control".
 - 4. Division 31 Section "Earth Moving".

1.3 REFERENCES

- A. ASTM C117 – Test Method for Materials Finer than No. 200 (75-um) Sieve in Mineral Aggregates by Washing.
- B. ASTM C136 – Method for Sieve Analysis of Fine and Coarse Aggregates.
- C. ASTM D4318 – Test Method for Liquid Limit, Plastic Limit and Plasticity Index of Soils.

1.4 SUBMITTALS

- A. Material Analysis: Contractor shall provide copies of the following test data required by ASTM:
 - 1. ASTM C136 - Sieve Analysis.
 - 2. ASTM C127 - Specific Gravity and Absorption.
 - 3. ASTM C131 - L.A. Abrasion.
- B. Samples: Provide a one (1) quart sample of material for approval.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of conformance with state and federal laws if applicable.
- B. Bulk Materials:

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1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas, plant materials or within critical root zones.
2. Provide erosion-control measures to prevent erosion or displacement of bulk materials, discharge of soil-bearing water runoff, and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
3. Accompany each delivery of bulk materials with appropriate certificates.

C. Rejection of material.

1. Evidence of inadequate protection or improper handling or storage shall be cause for rejection.
2. Any product or material exhibiting signs of damage due to nonconformity to specifications or due to delivery, storage or handling shall be rejected by the Project Manager. Contractor shall be responsible for hauling off-site and disposing of according to general conditions and codes of the governing jurisdiction.

1.6 PROJECT CONDITIONS

- A. Environmental requirements: Work shall occur only when weather and soil conditions permit in accordance with locally accepted practice.
- B. Field Measurements: Verify actual grade elevations, service and utility locations, irrigation system components, and dimensions of plantings and construction contiguous with proposed crushed stone paving areas by field measurements before proceeding with work.
- C. Interruption of Existing Services or Utilities: Do not interrupt services or utilities to facilities occupied by Owner or others.
- D. Existing Conditions:
 1. Utilities: Determine location of existing and proposed underground utilities. Perform work in a manner to avoid damage. Hand excavate, as required.
 2. Excavation: Maintain grade stakes set by others until removal is mutually agreed upon by parties concerned.
- E. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained.

1.7 MAINTENANCE SERVICE

- A. General: Maintain Work in accordance with Division 01.
 1. Maintenance Period: Begin maintenance immediately after Work is completed. Maintain areas until the end of the Warranty period.

1.8 WARRANTY

- A. See Division 01 Section "Warranty".

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PART 2 - PRODUCTS

2.1 CRUSHED STONE PAVING

- A. Type: Crushed granite stone or gravel. Shall be unused material free of shale, lay, friable materials, organics and debris.
 - 1. Size Range: 3/8 inch maximum

<u>Sieve Size</u>	<u>Percent Passing</u>
2 inch	100
3/8 inch	100
No. 4	85
No. 8	63
No. 16	50
No. 30	39
No. 50	29
No. 100	18

- 2. Color: Uniform, tan-beige or as approved by the Project Manager.

2.2 SOIL STABILIZER

- A. Soil stabilizer or binder: Natracil by Gail Materials or approved equal.
 - 1. Local supplier:
 - 2. Swell volume: 35 ml/gm minimum in accordance with USP procedures.
 - 3. 90% minimum shall pass a No. 40 mesh screen.
- B. Factory blended stabilized crushed stone paving. Provide in all locations shown on the drawings.
 - 1. Mix crushed stone paving material with Natracil with a pug mill that includes a weigh-belt feeder.
 - a. Mix fourteen (14) pounds of binder per two thousand (2,000) pounds of aggregate.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas where the Work of this Section will be performed for compliance with requirements and conditions affecting installation and performance.
 - 1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within the work area.
 - 2. Verify that final grades are completed in accordance with the drawings.
- B. Proceed with installation only after unsatisfactory conditions have been corrected and approved by Project Manager.

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3.2 FIELD QUALITY CONTROL

- A. Mock-up: Provide field constructed sample installation of crushed stone paving and prepared subgrade.
 - 1. Mock-up to be ten foot (10') x ten foot (10') and located where directed by Project Manager. Mock-up shall include proposed edge and banding, and surface stabilization if specified.
 - 2. Project Manager shall review mock up within forty-eight (48) hours of notification by the contractor.
 - 3. Make necessary adjustments as directed by Project Manager.
 - 4. Obtain approval from Project Manager before proceeding with the Work.
 - 5. Retain and protect mock-up during construction as a standard for judging completed crushed stone paving work. Do not remove or destroy mock-up until work is completed.
 - 6. Accepted and properly maintained sample installations may remain in completed work if approved in writing by Project Manager.
 - 7. All work shall match accepted field mock-up.

3.3 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities, turf areas, existing landscape areas, and trees from damage.
- B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of crushed stone material.
- C. Install edging of type and in locations shown on drawings. Obtain acceptance of layout by Project Manager before excavating or installing. Make minor adjustments as required.

3.4 PLACEMENT OF CRUSHED STONE PAVING

- A. Cut earthwork to width of trail/area to receive crusher fines paving to approximate depth section as specified on the Contract Drawings. Remove, haul and dispose of excess material off site, or use on-site with approval of Project Manager.
- B. Complete excavation required in sub-grade before fine grading and final compaction of sub-grade is performed. Extend sub-grade compaction one foot (1') beyond proposed edge of crushed stone paving or as indicated on drawings.
 - 1. Where earth moving is required the sub-grade shall be compacted to ninety five percent (95%) standard proctor within two percent (2%) of the optimum moisture.
 - 2. Keep areas being graded or compacted shaped and drained during construction. Ruts greater than or equal to 1 inch deep in sub-grade shall be graded out and reshaped as required, and re-compacted before crushed stone paving placement.
 - 3. If the trail is part of a cross slope it should drain in the direction of the slope no greater than two percent (2%). Ensure that no low spots exist so that ponding does not occur.
- C. Prior to placement of Crushed Stone Paving material, the sub-grade shall be proof rolled. Where soft spots are detected, scarify subgrade beneath Crushed Stone Paving trail to a minimum of six-inch (6") depth. Moisture treat and compact to a minimum ninety five percent (95%) proctor density as determined by ASTM D698 or AASHTO T-99. Take moisture density tests every two hundred fifty (250) lineal feet of trail or proof roll. Treat and compact sub-

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grade, leaving it 5-inches below final grade for placement of Crushed Stone Paving. Compact material and retest by proof rolling to achieve approval of Project Manager.

- D. Install crushed stone paving only after excavation and construction work which might injure it have been completed, and after edging has been completely installed on the compacted sub-grade. Install crushed stone paving, over compacted base course in areas indicated on plan.
- E. Spread crushed stone evenly to fifty percent (50%) of specified depth. Avoid segregation of aggregate and contamination with lower courses or sub-grade.
- F. Compact to ninety five percent (95%) of maximum density as determined by ASTM D1557.
 - 1. Maintain surface course moisture content within plus/minus three percent ($\pm 3\%$) of optimum. Add water to quarry fines paving as required to achieve optimum moisture content and a uniform, compacted surface conforming to the finish grades indicated.
 - 2. Compact areas inaccessible to rolling by mechanical tamping.
- G. Protect crushed stone paving from soil or other contaminates during and following installation.
- H. Spread and compact additional crushed stone paving to achieve the required minimum compacted thickness. Compact per 3.3.F above.

3.5 PLACEMENT OF STABILIZED CRUSHED STONE PAVING

- A. Complete items 3.3.A through H above using specified crusher fines material with pre-incorporated specified binder at specified application rates.
- B. Do not allow traffic on stabilized crushed stone paving for two days.

3.6 MAINTENANCE AND REPAIRS:

- A. Crusher Fines Paving:
 - 1. Areas that do not compact, become eroded or are degraded in visual quality and/or performance as determined by the Project Manager are to be removed and/or repaired. Obtain approval of repair methods from Project Manager prior to affecting repairs.
- B. Stabilized Crusher Fines Paving:
 - 1. To repair, excavate damaged area leaving a minimum one-inch (1") depth of existing stabilized crushed stone paving. Apply stabilized crusher fines to existing surface as described above. Compact per 3.3.F above.
 - 2. Do not allow traffic on repaired stabilized crushed stone paving for two days or until paving has fully cured.

3.7 CLEANUP AND PROTECTION

- A. All areas shall be clean at the end of each workday.
- B. The contractor shall maintain protection during installation, curing, and maintenance periods.
 - 1. Erect temporary fencing or barricades and warning signs as required protecting newly installed Crushed Stone Paving areas from traffic, other trades, and trespassers. Maintain fencing and barricades throughout initial maintenance period and remove with approval of Project Manager.

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- C. Project completion: All debris, soil, trash, and excavated and/or stripped material resulting from Crushed Stone Paving operations and unsuitable for or in excess of requirements for completing work of this Section shall be disposed of off-site.
- D. Maintain protection during installation and maintenance periods. See Division 1. Treat, repair or replace damaged work as required.

3.8 QUALITY ASSURANCE

- A. Refer to Division 1 Section "Quality Assurance".

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Measurement will be based on the percentage complete for the lump sum contract amount for Crushed Stone Paving.

4.2 PAYMENT

- A. Payment will be made at the lump sum contract price, and shall include required materials, transportation, equipment, labor, excavation, grading, compacting, watering, stockpiling, disposing, hauling off, watering, dust control, and erosion and sediment control, as required in accordance with the Contract Drawings and Specifications.

END OF SECTION 32 15 40

SECTION 32 17 23**PAVEMENT MARKINGS**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes requirements for furnishing and applying traffic markings as shown on the Contract Drawings and as directed by the Project Manager. All work shall be done in accordance with the City and County of Denver's Traffic Engineering Service Standards which can be found at the following link:

<https://www.denvergov.org/content/denvergov/en/right-of-way-services/engineering-regulatory-analytics/engineering-plan-review/manuals-regulations.html>

- B. Related Sections:

1. Division 31 Section "Asphalt Pavement".
2. Division 31 Section "Concrete Walks, Curbs, and Miscellaneous Flatwork".

1.3 SUBMITTALS

- A. Product Data: For each type of product.
 1. Include technical data and tested physical and performance properties.
- B. Shop Drawings: For pavement markings.
 1. Indicate pavement markings, colors, lane separations, defined parking spaces, and dimensions to adjacent work.
 2. Indicate, with international symbol of accessibility, spaces allocated for people with disabilities.
- C. Samples: For each exposed product and for each color and texture specified; on rigid backing, eight-inches (8") square.

1.4 PROJECT CONDITIONS

- A. Environmental Limitations: Proceed with pavement marking only on clean, dry surfaces and at a minimum ambient or surface temperature of forty degrees (40°) F for alkyd materials, fifty-five degrees (55°) F for water-based materials, and not exceeding ninety five degrees (95°) F.

1.5 WARRANTY

- A. Refer to Division 01.

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PART 2 - PRODUCTS

2.1 PAINT

- A. AASHTO M248-86, Type F, white or yellow traffic paint.

2.2 PREFORMED PLASTIC MATERIAL

- A. Preformed plastic pavement marking material shall conform to ASTM D4505, Type 1, Class B, C, D, or E, and shall have a minimum thickness of sixty (60) mils and shall be non-preheating.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that pavement is dry and in suitable condition to begin pavement marking according to manufacturer's written instructions.
- B. Proceed with pavement marking only after unsatisfactory conditions have been corrected.

3.2 QUALITY CONTROL

- A. Pre-installation Conference: Conduct at Project Site.
 - 1. Review methods and procedures related to marking pavement including, but not limited to, the following:
 - a. Pavement aging period before application of pavement markings.
 - b. Review requirements for protecting pavement markings, including restriction of traffic during installation period.

3.3 PREPARATION

- A. Do not apply pavement-markings until layout, colors, and placement have been verified with the Project Manager.
- B. Allow paving to age for a minimum of thirty (30) days before starting pavement marking.
- C. Thoroughly clean all surfaces where markings are to be applied by brooming, airblasting, or other acceptable method. Surface shall be thoroughly dry prior to application.

3.4 THERMAL PLASTIC PAVEMENT MARKINGS

- A. Crosswalks and Symbols: Apply preformed plastic pavement marking material in accordance with manufacturer's instructions and to the Denver Department of Public Works standards.

3.5 PAINT

- A. Line Location: Before applying paint, chalk all striping locations for approval by the Project Manager to ensure accurate location of line.

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- B. Parking Lot Striping: Lines shall be four-inches (4") wide (+/- one-quarter-inch (1/4")). Double lines shall be six-inches (6") apart. Stop lines shall be twenty four-inches (24") wide (+/- one-quarter-inch (1/4")).
- C. Symbols and Lettering:
 - 1. Apply graphic symbols and lettering with paint-resistant, die-cut stencils, firmly secured to pavement. Mask an extended area beyond edges of each stencil to prevent paint application beyond the stencil. Apply paint so that it cannot run beneath the stencil.
- D. Equipment: Spray machine equipped with mechanical agitator, multiple applicators, and automatic skip control, capable of painting a clean-edged stripe of the designated width with straight edges. Bead dispenser shall be directly behind and synchronized with paint applicator. Spray nozzle and bead dispenser shall be shielded to prevent overspraying. Use adequate hand operated equipment in areas not accessible to striping machine.
- E. Minimum Application Rates:
 - 1. Four-inch (4") Traffic Stripes: Solid, sixteen and one half (16.5) gallons per mile.
 - 2. Legends and Symbols: One one-hundredth (0.01) gallon per square foot.

3.6 CLEANING

- A. Perform cleaning during installation of the Work and upon completion of the Work. Remove all excess materials, debris, and equipment from site. Repair any unsatisfactory markings, overspray, or spills that occurred during the project.

3.7 PROTECTION

- A. Protect pavement markings until dry or bonded.

3.8 QUALITY ASSURANCE

- A. Refer to Division 1 Section "Quality Assurance".

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Measurement will be based on the percentage complete for the lump sum contract amount for Pavement Markings.

4.2 PAYMENT

- A. Payment will be made at the lump sum contract price, and shall include required materials, transportation, equipment, and labor, as required in accordance with the Contract Drawings and Specifications.

END OF SECTION 32 17 23

SECTION 32 91 20**TOPSOIL**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes requirements for placing previously stripped and stockpiled topsoil on a previously prepared subgrade.
- B. Related Sections:
 - 1. Division 01 Section "Erosion and Sedimentation Control".
 - 2. Division 31 Section "Earth Moving".
 - 3. Division 32 Section "Native Seeding".

1.3 DEFINITIONS

- A. Duff Layer: The surface layer of native topsoil that is composed of mostly decayed leaves, twigs, and detritus.
- B. Finish Grade: Elevation of finished surface of planting soil.
- C. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. This includes insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. It also includes substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.
- D. Planting Area: Areas to be planted.
- E. Planting Soil: Existing, native surface topsoil.
- F. Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.
- G. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.
- H. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil; but in disturbed areas such as urban environments, the surface soil can be subsoil.

1.4 SUBMITTALS

- A. See Division 01 Section "Submittals" for submittal requirements.
- B. Testing Agency Qualifications: Project Manager to approve prior to construction.

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- C. Soil Analysis Report: See Quality Control.

1.5 QUALITY CONTROL

- A. Existing On-Site Topsoil:
 1. Sample Collection and Labeling: Samples shall be taken and labeled by the Contractor in the presence of the Project Manager.
 2. A map of the site illustrating the locations of each sample is to be submitted to the Project Manager for approval prior to collecting the samples. Samples shall be collected randomly throughout the areas to receive similar topsoil, including seed/sod, native seeding, planting beds, and gardens.
 3. Follow instructions from soil testing laboratory when collecting samples.
 4. A minimum of five (5) samples for projects up to one (1) acre in size and one (1) additional sample for each additional acre of project size. Individual tests are to be completed for each sample.
 5. Submit soil analysis report for stockpiled on-site topsoil from the State University Agricultural Extension Service or other approved soil testing laboratory. Report shall cover soil textural classification (percentages of sand, silt, and clay), pH, percentage organic matter, and soluble salts (electric conductivity in millimos/centimeter), and shall include additive recommendations.
 6. Testing will be at the expense of the Contractor.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Do not place topsoil in a frozen, wet, or muddy condition.
- B. Protect stored and placed topsoil from vehicular traffic, equipment storage, material storage, or from contaminants or pollution sources. Topsoil that is compacted or tainted during construction is to be removed from site and disposed of at a licensed landfill at no additional cost to the City.

PART 2 - PRODUCTS

2.1 ON-SITE TOPSOIL

- A. Topsoil previously stripped and stockpiled prior to earthwork operations. See Division 31 Section "Earth Moving".

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas where the Work of this Section will be performed for compliance with requirements and conditions affecting installation and performance.
 1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel,

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paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within the work area.

2. Verify that final grades are completed in accordance with the Contract Drawings.

B. Proceed with installation only after unsatisfactory conditions have been corrected and approved by Project Manager.

3.2 PLACING TOPSOIL

A. Scarify compacted subgrade to a four-inch (4") depth to bond topsoil to subsoil. Protect existing tree roots and roughen soil as needed for topsoil adhesion to subsoil. Place topsoil to a minimum depth of four-inches (4") after settlement. Topsoil shall be free from weeds, sod, and material larger than 1-inch (1"), toxic substances, litter or other deleterious material. Spread evenly and grade to elevations and slopes shown on Contract Drawings. Hand rake areas inaccessible to machine grading.

B. Utilize salvaged topsoil as the top layer to the extent available. If sufficient on-site material is not available, the Owner shall furnish native topsoil from other locations in the project area. Topsoil shall be mixed thoroughly with the salvaged topsoil prior to placement.

3.3 PROTECTION AND REPAIR

A. Protect completed areas where topsoil has been spread from traffic which will compact the soil volume. Any areas that, as determined by Project Manager, become compacted due to Contractor's construction traffic shall be reconstructed to specified requirements and approved by the Project Manager.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. There is no separate measurement for stripping, stockpiling and spreading of amended on-site topsoil. It is part of the work associated with the lump sum price for Earth Moving.

4.2 PAYMENT

A. There is not separate payment for topsoil.

END OF SECTION 32 91 20

SECTION 32 92 20**NATIVE SEEDING**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes requirements for the installation of native seed, erosion control material (if applicable), and maintenance of the seeded areas, to be achieved as outlined in the "Maintenance" section below.
- B. Related Sections:
 - 1. Division 01 Section "Erosion and Sedimentation Control".
 - 2. Division 01 Section "Tree Retention and Protection".
 - 3. Division 31 Section "Earth Moving".
 - 4. Division 31 Section "Watering".
 - 5. Division 32 Section "Topsoil".

1.3 DEFINITIONS

- A. Finish Grade: Elevation of finished surface of planting soil.
- B. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. This includes insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. It also includes substances or mixtures intended for use as a plant regulator, herbicide, defoliant, or desiccant.
- C. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. These include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.
- D. Planting Soil: Standardized topsoil; existing, native surface topsoil; existing, in-place surface soil; imported topsoil; or manufactured topsoil that is modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.
- E. Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or top surface of a fill or backfill before planting soil is placed.
- F. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.

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- G. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil, but in disturbed areas such as urban environments, the surface soil can be subsoil.
- H. Weeds: Including but not limited to Puncturevine, Field Bindweed, Twitch, Dandelion, Jimsonweed, Diffuse, Spotted and Russian Napweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canada Thistle, Nutgrass, Blackberry, Tansy Ragwort, Bermuda Grass, Johnsongrass, Poison Ivy, Nut Sedge, Nimble Weed, Bent Grass, Garlic Mustard, Perennial Sorrel, and Broom Grass or any weed listed on Colorado Noxious Weed List and Watch.

1.4 REFERENCES

- A. Comply with U.S. Department of Agriculture Rules and Regulations under the Federal Seed Act and be equal to or better in quality than the standards for Certified Seed.
- B. Colorado Department of Transportation (CDOT) – Standards Specifications for Road and Bridge Construction.

1.5 SUBMITTALS

- A. See Division 01 Section “Submittals” for submittal requirements.
- B. Materials: The Contractor shall submit to the Project Manager for approval a complete list of all materials to be used during this portion of the work prior to delivery of any materials to the site. Include complete data on source, amount and quality. This submittal shall in no way be construed as permitting substitution for specific items described on the plans or in these specifications unless approved in writing by the Project Manager.
 - 1. Certification of Seed: From seed vendor for each seed monostand or mixture stating the botanical and common name, percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging.
 - 2. Native Grass Species (supplied as pure live seed): Submit lab germination test results for all grass species. Submit an affidavit that describes estimated purity for all forb species that are not typically tested.
 - 3. Pesticides: Include product label and manufacturer's application instructions specific to this Project.
 - 4. Product Certificates: For soil amendments and fertilizers, from manufacturer.
- C. Qualification Data: For qualified landscape Installer.
- D. Analysis and standards: Wherever applicable, for non-packaged materials, provide two copies of analysis by recognized laboratory made in accordance with methods established by the Association of Official Agriculture Chemists.
- E. Seeding schedule: Submit, in writing, two (2) copies of proposed seeding schedule, indicating dates for site preparation, seeding, mulching, erosion control, and coordination with plant procurement, planting soil preparation, plant delivery and planting. Schedule all Work during

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specified planting seasons. Once accepted, revise dates only as approved in writing, after documentation of reasons for delays.

- F. Maintenance Instructions: Recommended procedures for maintenance of irrigated and non-irrigated native seed areas during a calendar year. Submit before expiration of required initial maintenance periods.
- G. Contract Closeout Submittals:
 - 1. Operating and Maintenance Data: At completion of work, submit one (1) digital copy and two (2) hard copies to the Project Manager in accordance with Division 01 Section "Contract Closeout". Include directions for mowing and spraying as required for continued and proper maintenance through full growing season and dormant period.
 - 2. Warranty for Native Seed Areas: At completion of work, furnish written warranty to Parks Project Manager based upon specified requirements.
- H. The Project Manager reserves the right to reject the seed at any time prior to acceptance and that fails to meet specification requirements. Promptly remove rejected seed from the site.

1.6 QUALITY CONTROL

- A. Installer Qualifications: A qualified landscape Installer whose work has resulted in successful native grass establishment.
 - 1. Experience: Five years' experience in native seed installation in addition to requirements in Division 01 Section "Quality Control".
 - 2. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
 - 3. Personnel Certifications: Installers shall have certification the following categories from the NALP:
 - a. Landscape Industry Certified Technician - Exterior, with installation maintenance irrigation specialty area(s).
 - 4. Maintenance Proximity: Not more than two hours' normal travel time from Installer's place of business to Project site.
 - 5. Pesticide Applicator: State licensed, commercial.
- B. Soil-Testing Laboratory Qualifications: An independent laboratory or university laboratory, recognized by the State Department of Agriculture, with the experience and capability to conduct the testing indicated and that specializes in types of tests to be performed.
- C. Pre-installation Conference: Conduct conference at Project site to coordinate the process with other trades, to coordinate equipment movement within planting areas and to avoid soil compaction, to review proposed methods of installation, performance criteria, and maintenance procedures. Review underground utility location maps and plans. This meeting shall be coordinated by the Contractor, and comply with requirements in Division 01.
- D. Standards: All materials and methods used during this portion of the work shall meet or exceed applicable federal, state, county, and local laws and regulations. All seed shall be free from insects and disease. Species shall be true to their scientific name as specified.

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1.7 DELIVERY, STORAGE, AND HANDLING

- A. Seed: Shall be furnished in bags or containers clearly labeled to show the name and address of the supplier, the seed name, the lot number, net weight, origin, the percent of weed seed content, the guaranteed percentage of purity and germination, pounds of pure live seed (PLS) of each seed species, and the total pounds of PLS in the container. Seed that has become wet, moldy or damaged in transit or in storage will not be acceptable.
- B. Other Packaged Materials: Deliver packaged materials in original unopened containers bearing weight, analysis and name of supplier.
- C. Fertilizer: Deliver organic or chemical fertilizer to site in original unopened container bearing manufacturer's guaranteed chemical analysis, name, trade name, trademark and conformance to state law, and bearing name and warranty of producer.
- D. Bulk Materials:
 - 1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
 - 2. Provide erosion-control measures to prevent erosion or displacement of bulk materials, discharge of soil-bearing water runoff, and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
 - 3. Seed: Deliver seed materials in original unopened containers, showing bearing weight, analysis and name of supplier.
- E. Material will be inspected upon arrival at project site. Project Manager will reject any opened or unacceptable materials as described above. Store all materials in a manner to prevent wetting and deterioration.
- F. Immediately remove unacceptable material from job site.

1.8 PROJECT/SITE CONDITIONS

- A. Work scheduling: Proceed with and complete landscape work rapidly, as portions of the site become available, working within the specified planting season and approved schedule.
- B. Planting Restrictions: Planting is preferred in spring but may be performed during one of the periods noted below. Variance from the schedule shall be permitted only with written approval from the Project Manager. Coordinate planting periods with initial maintenance periods to provide required maintenance from date of Substantial Completion.
- C. Vehicular accessibility on site shall be as directed by Project Manager. Repair damage to prepared topsoil and existing surfaces, caused by vehicular access and movement during work under this section, to original condition at no additional cost to the City.
- D. Do not drill or sow seed during windy, rainy weather or when ground is frozen or otherwise unable to be tilled.
- E. Seeding Season: Seeding shall generally occur during the specified windows below. Seeding dates may be modified when temperature and moisture conditions are favorable. Verify with local producers and contractors prior to finalizing.

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Seed Type Non-Irrigated Areas

Native Grasses

November 15-April 15

1. Dormant Seeding: No seeding shall be done when the ground is frozen, muddy, covered with snow, or otherwise in a condition unsuitable for seeding. Dormant seeding will not relieve the Contractor from the warranty or the acceptance requirements specified elsewhere in this specification.
- F. Existing conditions:
1. Utilities: Determine location of underground utilities. Perform work in a manner to avoid possible damage. Hand excavate, as required.
 2. Excavation: Maintain grade stakes set by others until removal is mutually agreed upon by parties concerned. When conditions detrimental to plant growth are encountered, such as rubble fill, adverse drainage conditions, noxious materials or obstructions, notify Project Manager before planting.
 3. If weeds are present on site, treat with herbicide prior to preparing soil for installing seed as specified below.
- G. Coordination:
1. Coordinate with construction of utilities on site. Do not begin placing topsoil until underground work is completed in the area.
 2. Coordinate with seeding and landscape Contractor(s) approved schedule. Limit construction access to areas where topsoil has been placed if placement is completed more than three (3) days prior to commencement of landscaping in the area. Limit fine grading to areas that can be prepared for planting within twenty-four (24) hours after fine grading.
 3. Coordinate with Contractors work requiring access to site over seeded areas.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Topsoil: See Division 32 Section "Topsoil".
- B. General:
1. The selected seed mix must be approved by the City Naturalist, and the Project Manager prior to its incorporation into the project.
 2. All seed brands shall be free from Colorado prohibited noxious weed seeds, including but not limited to Canada Thistle, Field Bindweed, Johnsongrass, and Leafy Spurge. The Contractor shall furnish to the Project Manager a signed statement certifying that the seed is from a lot that has been tested by a recognized laboratory for seed testing within six months prior to the date of delivery.
 3. Computation for quantity of seed required on the project is based on Pure Live Seed (PLS).
 4. The formula used for determining the quantity of PLS shall be: Pounds of Seed x (Purity x Germination) = Pounds of PLS.
 5. If seed available on the market does not meet the minimum purity and germination specified, the Contractor must compensate for a lesser percentage of purity or germination by furnishing sufficient additional seed to equal the specified product. Product comparison shall be made on the basis of PLS in pounds, stated on each seed bag.

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C. Seed Mixes:

1. Mid Grass Mix:

Common Name	Scientific Name	PLS lbs/ac	PLS/sf	% of PLS/sf
Blue Grama	Bouteloua gracilis	2.0	35	27.24
Little Bluestem	Schizachyrium scoparium	3.7	17	12.71
Needle and Thread	Stipa comata	1.8	5.0	3.75
Prairie Junegrass	Koeleria cristata	0.5	22	16.75
Indian Ricegrass	Achnatherum hymenoides	1.3	3	2.45
Sand Dropseed	Sporobolus cryptandrus	0.1	10	7.61
Sideoats Grama	Bouteloua curtipendula	5.9	26	20.00
Switchgrass	Panicum virgatum	0.7	6	4.54
Western Wheatgrass	Pascopyrum smithii	2.1	6	4.95
		18.1	130	100

Drill Seeded Rate: 18.1 PLS#/Acre
 Mechanical Broadcast Rate: 18.1 PLS#/Acre
 Hand Broadcast Areas Rate: 36.2 PLS#/Acre

- D. Mulch: Comply with Section 213 – Mulching of the CDOT Standards and Specifications for Road and Bridge Construction.
- E. Fertilizer: None required unless otherwise specified by soils test.
- F. Tackifier: Comply with Section 213 – Mulching of the CDOT Standards and Specifications for Road and Bridge Construction.

2.2 HERBICIDES

- A. General: Herbicide, registered and approved by EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted herbicides unless authorized in writing by Project Manager and authorities having jurisdiction.
- B. Pre-Emergent Herbicide (Selective and Non-Selective): “Journey” by BASF, or approved equal.
- C. Post-Emergent Broadleaf Herbicide: “Plateau” by BASF, or approved equal.

2.3 EROSION-CONTROL MATERIALS

- A. Erosion-Control Blankets: Biodegradable wood excelsior, straw, or coconut-fiber mat enclosed in a photodegradable plastic mesh. Include manufacturer's recommended steel wire staples, 6 inches long.

GENESEE MOUNTAIN PARK OUTDOOR EXPERIENTIAL CENTER

- B. Erosion-Control Fiber Mesh: Biodegradable burlap or spun-coir mesh, a minimum of 0.92 lb/sq. yd., with 50 to 65 percent open area. Include manufacturer's recommended steel wire staples, 6 inches (6") long.
- C. Erosion-Control Mats: Cellular, non-biodegradable slope-stabilization mats designed to isolate and contain small areas of soil over steeply sloped surface, of 3 inch (3") nominal mat thickness. Include manufacturer's recommended anchorage system for slope conditions.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Invisible Structures, Inc.; Slopetame 2.
 - b. Presto Products Company, a business of Alcoa; Geoweb.
 - c. Tenax Corporation - USA; Tenweb.

2.4 SUBSTITUTIONS

- A. All substitutions shall be submitted to and approved by the Project Manager prior to construction.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas to be seeded for compliance with requirements and other conditions affecting performance.
 - 1. Verify that finished grades are consistent with the slopes and grades indicated on the Contract Drawings. Verify grades are in conformance with Division 31 Section "Earth Moving". Obtain the Project Manager's approval of finished grade prior to proceeding with seeding operations.
 - 2. Verify soil prepare of all areas to be seeded is in accordance with the requirements of Division 32 Section "Topsoil". When completed, the soil shall be firmed by float dragging, followed by steel raking, to provide for the proper seeded surface. The seed bed shall be totally free from rock or clay clods over one inch (1") in diameter.
 - 3. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a seeding area. If contamination is present in soil, remove the soil and contamination as directed by the Project Manager and replace with new soil.
- B. Proceed with seeding only after unsatisfactory conditions have been corrected and approved by the Project Manager.
- C. Acceptance: Beginning of installation means acceptance of existing conditions by the Contractor.

3.2 PREPARATION

- A. Notify the Project Manager at least seven (7) working days prior to start of seeding operations.
- B. Protect existing utilities, paving, planting and other facilities from damage caused by seeding operations. Contractor shall repair any damage at no additional cost to the City.

GENESEE MOUNTAIN PARK OUTDOOR EXPERIENTIAL CENTER

- C. Utilize equipment having low unit pressure ground contact within seeding areas.
- D. Limit preparation to areas that can be seeded within twenty-four (24) hours of preparation.
- E. Erosion Control: Take measures and furnish equipment and labor necessary to control and prevent soil erosion, blowing soil and accumulation of wind-deposited materials on the site throughout the duration of work.

3.3 SEEDING

- A. Seed within twenty-four (24) hours after preparation of seed bed. Seeding at other times may only be done if approved by the Project Manager.
- B. Areas outside Contract Limits disturbed as a result of construction operations shall be restored at Contractor's expense.
- C. Seed shall be uniformly applied at the specified rate, (half in one direction and the other half perpendicular to the first application). The direction of the final application shall always be perpendicular to the slope or running in the direction of the contour. Seed shall be installed at a depth between one-quarter inch (1/4") and one-half inch (1/2").
- D. Areas that are too small or steep for mechanical seeding may be hand seeded. Seed shall be uniformly applied at the specified rate utilizing a broadcast spreader and then hand raked in to a depth of no more than one-half inch (1/2"), then roll seed bed to ensure proper contact to the soil.

3.4 EROSION CONTROL MATERIALS

- A. Review erosion control measures with the Project Manager prior to installation.
- B. For erosion control mats, install planting soil in two lifts, with second lift equal to thickness of erosion control mats. Install erosion control mat and fasten as recommended by material manufacturer.
- C. Fill cells of erosion control mat with planting soil and compact before planting.
- D. Install erosion control blanket on slopes exceeding 4:1, and in swales or other areas of concentrated runoff. As shown on the Contract Drawings or as directed by the Project Manager. Install in accordance with manufacturer's instructions.
- E. For erosion-control blanket or mesh, install from top of slope, working downward, and as recommended by material manufacturer for site conditions. Fasten as recommended by material manufacturer.

3.5 MULCHING

- A. Hydromulch Application: Utilize an approved hydromulcher to apply cellulose fiber at a rate of two-thousand (2,000) pounds per acre. Apply tackifier to comply with CDOT Section 213.02 – Mulching. Contractor shall provide verification of application rates in the form of ship tickets.

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- B. Mulching shall not be installed when surface water is present resulting from rain, melting snow, irrigation, or other causes.
- C. Areas not properly mulched, or any damage that may occur during construction is the responsibility of the Contractor and shall be repaired and re-mulched in an acceptable manner at the Contractor's expense. Mulching removed by wind, rain, or other causes prior to acceptance shall be re-established by the Contractor at their own expense.
- D. The seeded area shall be mulched within eight (8) hours of seeding. Areas not mulched within twenty-four (24) hours after seeding must be re-prepped and re-seeded with the specified seed mix at the Contractor's expense.
- E. Contractor shall remove all hydromulch from surface areas not specified for seeding, including but not limited to plant materials, fences, paved areas, signs, mulch beds, irrigation components and all other objects as directed by the Project Manager.

3.6 CLEANING

- A. Perform cleaning during installation of the work and upon completion of the work. Remove from all excess materials, debris and equipment from site. Repair any damage resulting from seeding operations.
- B. Erect temporary fencing or barricades and warning signs as required to protect newly planted areas from traffic. Maintain fencing and barricades throughout initial maintenance period and remove after plantings are established.
- C. Remove non-degradable erosion-control measures after grass establishment period.

3.7 PROTECTION

- A. Restrict vehicular and pedestrian traffic from seeded areas until vegetation is established. Erect signs and barriers as required or directed by the Project Manager at no additional cost to the City.

3.8 MAINTENANCE

- A. Refer to Landscape Maintenance Section 32 97 00.
- B. Maintenance of the native seed area is the responsibility of the Contractor until Final Acceptance.

3.9 ACCEPTANCE

- A. Substantial Completion shall be granted when the seeded areas have a uniform plant growth establishing over the entire seeded area. Refer to the Contract General Conditions, Title 19 – Substantial Completion of the Work.
- B. Final Acceptance will be granted when the following criteria are met:
 - 1. Total vegetation cover in all zones seeded with native seed shall exceed seventy percent (70%) by aerial cover.

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2. At any time during the contract period no more than ten percent (10%) by aerial cover of the seeded area should be dominated by aggressive exotic species such as, but not limited to, red clover (*Trifolium* spp.), white or yellow sweet clover (*Melilotus* spp.), Canada thistle (*Cirsium arvense*), tall fescue (*Festuca elatior*), field bindweed (*Convolvulus arvensis*) etc.
3. During the original warranty period, reseed at once with comparable blend/mix, those areas that have failed to achieve a stand of grass or which in the Project Manager's opinion are unhealthy.
4. Reseeding will not be allowed in any season considerable unfavorable for seeding by the Project Manager.
5. Reseed in a manner to achieve quality as originally specified.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Measurement will be based on the percentage complete of area seeded for the lump sum contract amount for Native Seeding.

4.2 PAYMENT

- A. Payment will be made under the lump sum contract price as follows: 50% at satisfactory completion of seeding and mulching, 25% at germination, and 25% at end of warranty period. Completion shall include required materials, transportation, equipment, labor, earthwork, stockpiling, disposing, hauling off, dust control, erosion and sediment control, and furnishing and installation of seeds and mulches, installation and maintenance of temporary protection by fencing or other means, watering and all maintenance required until Final Acceptance of the work as required in accordance with the Contract Drawings and Specifications.

END OF SECTION 32 92 20

SECTION 32 97 00

LANDSCAPE MAINTENANCE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes requirements for furnishing of all supervision, labor, materials, equipment and transportation required to maintain the seeded areas called for under this contract until final acceptance per criteria defined in Section 32 92 20 "Native Seeding". The work includes but is not limited to: weed control, re-seeding, mowing, weed control, maintenance of erosion control measures (BMP's) including storm water features and coordination with City staff.
- B. Related Sections:
 - 1. Division 01 Section "Erosion and Sedimentation Control".
 - 2. Division 32 Section "Native Seeding".

1.3 SUBMITTALS

- A. See Division 01 Section "Submittals" for submittal requirements.
- B. Material List: Submit a detailed list of materials to be used for herbicides.
- C. Equipment List: submit a detailed list of equipment and chemical controls to be used for weed control operations.

1.4 CONTRACTUAL REQUIREMENTS

- A. Limits of Work Area: All improvements and maintenance within the project work area are included unless otherwise indicated on the Contract Drawings or directed by the Project Manager. Areas outside defined areas, as illustrated on the Contract Drawings, will be maintained by the City.
- B. Performance of Work: The Contractor's work force and equipment shall be accepted by the Project Manager prior to the commencement of the maintenance period. The Contractor shall submit to the Project Manager an outline of the equipment and crew sizes to be utilized throughout the maintenance period. Maintenance work shall not be divided among several Contractors but shall be done by one entity. In the event that the Project Manager finds any items unacceptable, the Contractor shall make the revisions noted by the Project Manager at no cost to the City.
- C. Scheduling / Progress Reports:
 - 1. Notification: The Contractor shall be required to notify the Project Manager a minimum forty-eight (48) hours in advance of all major work so the Project Manager has the option of being present at the time of the work. Examples of such work are: clean cultivation, mowing, spraying, seeding, mulching or other activities relating to the repair of landscape

GENESEE MOUNTAIN PARK OUTDOOR EXPERIENTIAL CENTER

- items. In the event that proper notification is not given by the Contractor, the Project Manager shall have the right to require the Contractor to reschedule any such work until such time that the Project Manager is available. The above provision applies only to work which could be perceived as normal or regularly scheduled maintenance, emergency repairs do not apply.
2. Progress Reports: The Contractor shall submit quarterly progress reports during the growing season and quarterly progress reports through the winter. The written progress reports shall be sent to the Project Manager outlining work completed, damage incurred, and problems encountered. Progress reports shall contain digital photo documentation of work.
 3. Site Meetings: The Contractor shall meet, on site, with the Project Manager and City staff on a quarterly basis to review the project status.
 4. After Hours Contact: The Contractor shall provide one (1) after hours contact and telephone number.
- D. Maintenance Coordination: The Contractor shall coordinate maintenance operations and activities with the Project Manager.
- E. Failure to Perform: In the event that, in the Project Manager's opinion, action has not been taken on the part of the Contractor to properly maintain the project, the Project Manager may take whatever action that is deemed necessary to affect such repairs and any costs incurred will be deducted from the Contract amount.
- F. Licenses, Taxes, and Insurance:
1. Licenses: The Contractor agrees to obtain and pay for all licenses required by the City, State, and Federal governments that are necessary for legally conducting business. The Contractor shall maintain all licenses and permits required for maintenance activities (e.g. pesticide application).
 2. Taxes: The Contractor shall pay all applicable taxes, including sales taxes on materials supplied.
 3. Insurance: The Contractor shall maintain all insurance policies in accordance with the General Contract Conditions of the contract through the entire term of the Maintenance and Guarantee period.
- G. Payment Schedule: Payments shall be made as indicated in Measurement and Payment section.

PART 2 - PRODUCTS

2.1 Herbicides:

- A. For Native Grass areas: "Milestone", as manufactured by Dow AgroSciences.

PART 3 - EXECUTION

3.1 NATIVE SEEDING AREAS

- A. Refer to Native Seeding section 32 92 20 for satisfactory establishment criteria

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- B. Maintain and establish native seed areas by weeding, mowing, trimming, replanting, watering and performing other operations as required to establish healthy, viable stand of grasses. Roll, regrade, and replant bare or eroded areas and re-mulch as needed. Provide materials and installation the same as those used in the original installation.
1. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace materials and meadow damaged or lost in areas of subsidence.
 2. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch and anchor as required to prevent displacement.
 3. Apply treatments as required to grasses free of pests and pathogens or disease. Use integrated pest management practices whenever possible to minimize the use of pesticides and reduce hazards.
- C. Weed Control:
1. Mowing: Mowing of undesirable species shall be done per the approval of the City Naturalist and the Project Manager as a weed control method. Undesirable species shall not be allowed to seed on the site. Avoid distribution of weed seeds by catching all clippings, bagging clippings and removing them from the site. Existing grass stands to remain shall not be mowed until late fall or early spring to encourage seed drop.
 2. Hand Removal: Hand-removal shall include the removal of all above-ground and below-ground stems, roots and flower masses prior to the development of seed.
 3. Chemical Control: If necessary, apply to perennial and annual weeds by a licensed applicator trained in plant identification at no additional cost to the City. Obtain the Project Manager's approval prior to applying herbicide. Apply per manufacturer's recommendations. Contractor is responsible for ensuring seed establishment and that seed is not adversely affected by herbicide applications. The Contractor shall use herbicides for specific species as recommended by CSU Agricultural Extension Service or the City Naturalist.
 4. Spot Application Chemical Control: Apply herbicide by hand applicator directly to invasive annual and perennial weeds. Allow a minimum two (2) weeks between application and any seeding activities.
- D. Reseeding:
1. Evaluate native grass areas every ninety (90) days or as needed until Final Acceptance. Use the following criteria:
 - a. Reseed all areas that meet the following conditions:
 - 1) Areas of bare or dead grass greater than twenty-four inches (24") by twenty-four inches (24") square.
 - 2) Areas of weed density greater than twelve (12) plants per square foot.
 - 3) Areas with general density of specified grasses less than twelve (12) plants per square foot.
 2. Reseed unacceptable areas as defined above. Where drill seeding is not feasible, hand broadcast seed and rake into the soil to achieve 1/4- to 1/2-inch coverage of soil. The seed application rate shall be doubled in all areas where it is mechanically broadcast and quadrupled in areas requiring hand broad casting. Hydroseeding is not allowed.
 3. Timing of reseeding shall be as specified herein. Upon the Project Manager's written approval, the Contractor may reseed at a later date mutually agreed upon.

3.2 INSPECTION AND ACCEPTANCE

- A. Contract Completion Inspection and Acceptance: The Contractor must give seven (7) days of notice to the Project Manager requesting a Contract Completion Inspection. During the

GENESEE MOUNTAIN PARK OUTDOOR EXPERIENTIAL CENTER

inspection, the Project Manager shall prepare a list of any defects discovered during the inspection (“Punch List”) and submit the punch list to the Contractor. If, in the opinion of the Project Manager, all work has been completed or performed per the contract documents, the Project Manager will provide the Contractor with written notice of Contract Completion and Acceptance.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. There is not a separate measurement for landscape maintenance; landscape maintenance is considered part of the work for native seeding.

4.2 PAYMENT

- A. There is not a separate payment for landscape maintenance.

END OF SECTION 32 97 00

SECTION 33 44 00

STORM SEWERAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This section includes requirements for the construction of a complete storm sewerage system, including manholes, inlets, piping, and outfall structures. All work shall conform to the City and County of Denver Wastewater Storm Drainage and Sanitary Construction details and specifications document available at the following website:

<https://www.denvergov.org/content/denvergov/en/right-of-way-services/engineering-regulatory-analytics/engineering-plan-review/manuals-regulations.html>

- B. Related Work:

1. Division 01 Section "Layout of Work and Surveys".
2. Division 01 Section "Contractor Quality Control".
3. Division 01 Section "Erosion and Sedimentation Control".
4. Division 01 Section "Materials and Equipment".
5. Division 01 Section "Tree Retention and Protection".
6. Division 31 Section "Earth Moving".
7. Division 31 Section "Excavation and Backfilling of Trenches".

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Measurement will be based on the percentage complete for the lump sum contract amount for Storm Sewerage.

4.2 PAYMENT

- A. Payment will be made at the lump sum contract price, and shall include required materials, transportation, equipment, labor, earthwork, stockpiling, disposing, hauling off, fittings, joints, joint materials, trenching, bedding materials, connections to other pipes or structures, compaction watering, dust control, erosion and sediment control, and fine grading as required in accordance with the Contract Drawings and Specifications.

END OF SECTION 33 44 00

SECTION 33 55 00

POTHOLING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This section consists of potholing to expose and verify the location of existing utilities as directed. This section does not absolve the Contractor the responsibility to pothole under other sections as incidental work nor pay for that work that is incidental to other sections.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Measurement will be per hour of work performed potholing when directed by the City.

4.2 PAYMENT

- A. Payment will be per hour of work performed when directed by the City.

END OF SECTION 33 55 00

CITY AND COUNTY OF DENVER
STATE OF COLORADO



DEPARTMENT OF PUBLIC WORKS

Construction Plan Set

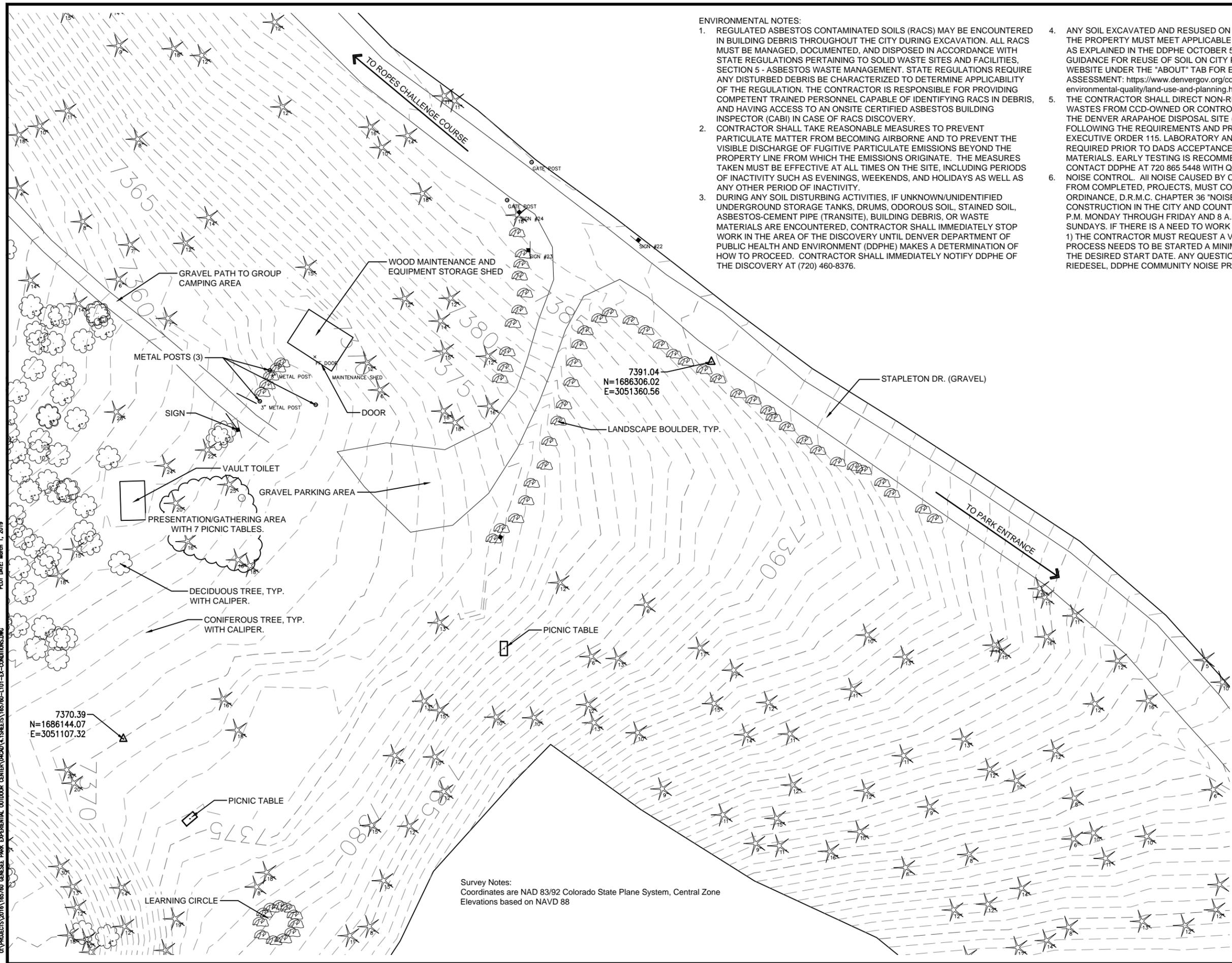
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Genesee Park Base Camp

April 29, 2019

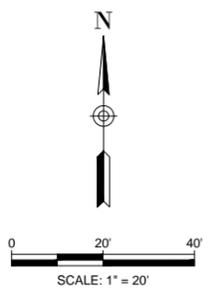
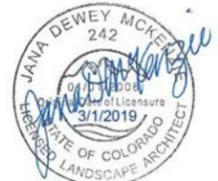
PROJECTS 2018 165760 GENESSEE PARK EXPERIENTIAL OUTDOOR CENTER (04/01/18 SHEETS) 165760-101-EX-CONDITIONS.DWG
 PLOT DATE: March 1, 2019



ENVIRONMENTAL NOTES:

- REGULATED ASBESTOS CONTAMINATED SOILS (RACS) MAY BE ENCOUNTERED IN BUILDING DEBRIS THROUGHOUT THE CITY DURING EXCAVATION. ALL RACS MUST BE MANAGED, DOCUMENTED, AND DISPOSED IN ACCORDANCE WITH STATE REGULATIONS PERTAINING TO SOLID WASTE SITES AND FACILITIES, SECTION 5 - ASBESTOS WASTE MANAGEMENT. STATE REGULATIONS REQUIRE ANY DISTURBED DEBRIS BE CHARACTERIZED TO DETERMINE APPLICABILITY OF THE REGULATION. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING COMPETENT TRAINED PERSONNEL CAPABLE OF IDENTIFYING RACS IN DEBRIS, AND HAVING ACCESS TO AN ONSITE CERTIFIED ASBESTOS BUILDING INSPECTOR (CABI) IN CASE OF RACS DISCOVERY.
- CONTRACTOR SHALL TAKE REASONABLE MEASURES TO PREVENT PARTICULATE MATTER FROM BECOMING AIRBORNE AND TO PREVENT THE VISIBLE DISCHARGE OF FUGITIVE PARTICULATE EMISSIONS BEYOND THE PROPERTY LINE FROM WHICH THE EMISSIONS ORIGINATE. THE MEASURES TAKEN MUST BE EFFECTIVE AT ALL TIMES ON THE SITE, INCLUDING PERIODS OF INACTIVITY SUCH AS EVENINGS, WEEKENDS, AND HOLIDAYS AS WELL AS ANY OTHER PERIOD OF INACTIVITY.
- DURING ANY SOIL DISTURBING ACTIVITIES, IF UNKNOWN/UNIDENTIFIED UNDERGROUND STORAGE TANKS, DRUMS, ODOROUS SOIL, STAINED SOIL, ASBESTOS-CEMENT PIPE (TRANSITE), BUILDING DEBRIS, OR WASTE MATERIALS ARE ENCOUNTERED, CONTRACTOR SHALL IMMEDIATELY STOP WORK IN THE AREA OF THE DISCOVERY UNTIL DENVER DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT (DDPHE) MAKES A DETERMINATION OF HOW TO PROCEED. CONTRACTOR SHALL IMMEDIATELY NOTIFY DDPHE OF THE DISCOVERY AT (720) 460-8376.
- ANY SOIL EXCAVATED AND RESUSED ON THE PROPERTY OR IMPORTED TO THE PROPERTY MUST MEET APPLICABLE SOIL REUSE ACCEPTANCE CRITERIA AS EXPLAINED IN THE DDPHE OCTOBER 5, 2017, MEMORANDUM TITLED GUIDANCE FOR REUSE OF SOIL ON CITY PROJECTS LOCATED ON OUR WEBSITE UNDER THE "ABOUT" TAB FOR ENVIRONMENTAL REVIEW AND ASSESSMENT: <https://www.denvergov.org/content/denvergov/en/environmental-health/environmental-quality/land-use-and-planning.html>
- THE CONTRACTOR SHALL DIRECT NON-RECYCLABLE, NON-HAZARDOUS WASTES FROM CCD-OWNED OR CONTROLLED PROPERTY OR FACILITIES TO THE DENVER ARAPAHOE DISPOSAL SITE (DADS) LANDFILL FOR DISPOSAL, FOLLOWING THE REQUIREMENTS AND PROCEDURAL GUIDANCE PER CCD EXECUTIVE ORDER 115. LABORATORY ANALYTICAL RESULTS WILL BE REQUIRED PRIOR TO DADS ACCEPTANCE FOR SOIL AND POSSIBLY OTHER MATERIALS. EARLY TESTING IS RECOMMENDED; DDPHE CAN ASSIST. CONTACT DDPHE AT 720 865 5448 WITH QUESTIONS.
- NOISE CONTROL. ALL NOISE CAUSED BY CONSTRUCTION OF, OR RESULTING FROM COMPLETED, PROJECTS, MUST COMPLY WITH DENVER'S NOISE ORDINANCE, D.R.M.C. CHAPTER 36 "NOISE CONTROL," EXEMPTED HOURS FOR CONSTRUCTION IN THE CITY AND COUNTY OF DENVER ARE FROM 7 A.M. TO 9 P.M. MONDAY THROUGH FRIDAY AND 8 A.M. TO 5 P.M. ON SATURDAYS AND SUNDAYS. IF THERE IS A NEED TO WORK OUTSIDE OF THE EXEMPTED HOURS: 1) THE CONTRACTOR MUST REQUEST A VARIANCE, AND 2) THE VARIANCE PROCESS NEEDS TO BE STARTED A MINIMUM OF THREE MONTHS PRIOR TO THE DESIRED START DATE. ANY QUESTIONS SHOULD BE DIRECTED TO PAUL RIEDESEL, DDPHE COMMUNITY NOISE PROGRAM, 720-865-5410.

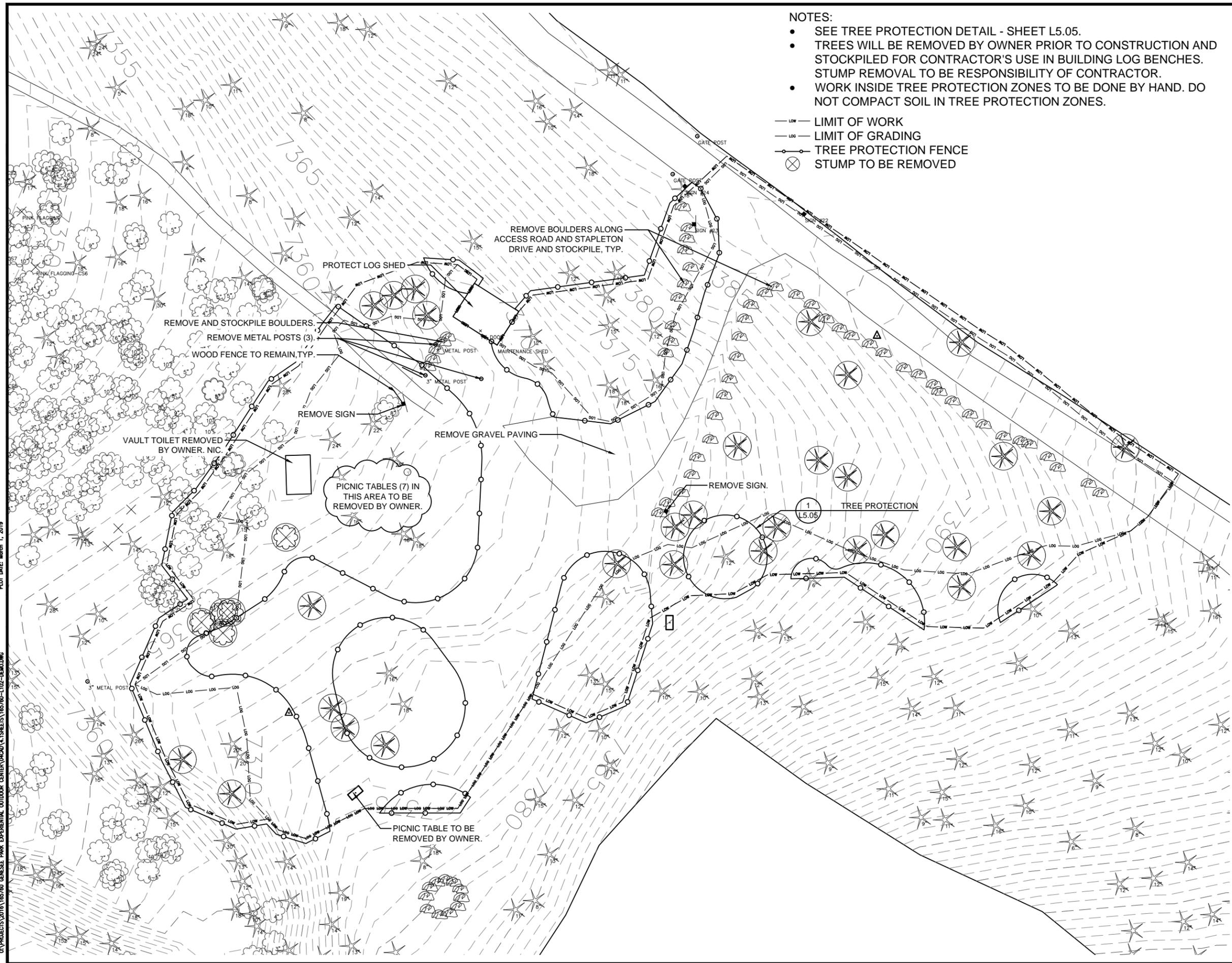
Survey Notes:
 Coordinates are NAD 83/92 Colorado State Plane System, Central Zone
 Elevations based on NAVD 88



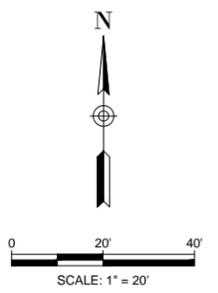
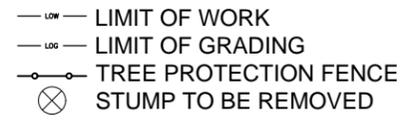
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CALL UNCC TWO WORKING DAYS BEFORE YOU DIG 1-800-922-1987 UTILITY WORKS CENTER OF COLORADO		###	###	###	###	###	###	###	###
CITY AND COUNTY OF DENVER DEPARTMENT OF PUBLIC WORKS ENGINEERING DIVISION CAPITAL PROJECTS MANAGEMENT 2000 W. 3RD AVE. DENVER, CO 80223 TEL.: (303) 446-3617 FAX: (303) 446-3647									
GENESSEE MOUNTAIN PARK OUTDOOR EXPERIENTIAL CENTER		PROJECT MASTER NO: 2018-PROJ/MSTR-0000103 EXISTING CONDITIONS							
DRAWN BY: DLA		DESIGNED BY: MWC/JDM							
APPROVED BY:		DRAWING NAME: 165760-101-Ex-Conditions.dwg							
DATE: 3/1/19		SHEET NO.: L1.01							

PLOT DATE: March 1, 2019

CA PROJECTS 2018\165760 GENESSEE PARK EXPERIENTIAL OUTDOOR CENTER\04\04\1 SHEETS\165760-1102-DEMOLING



- NOTES:
- SEE TREE PROTECTION DETAIL - SHEET L5.05.
 - TREES WILL BE REMOVED BY OWNER PRIOR TO CONSTRUCTION AND STOCKPILED FOR CONTRACTOR'S USE IN BUILDING LOG BENCHES. STUMP REMOVAL TO BE RESPONSIBILITY OF CONTRACTOR.
 - WORK INSIDE TREE PROTECTION ZONES TO BE DONE BY HAND. DO NOT COMPACT SOIL IN TREE PROTECTION ZONES.



NO.	DESCRIPTION OF REVISIONS	DATE	BY
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CALL UNCC
TWO WORKING DAYS
BEFORE YOU DIG
1-800-922-1987
UTILITY WORK CENTER OF
COLORADO

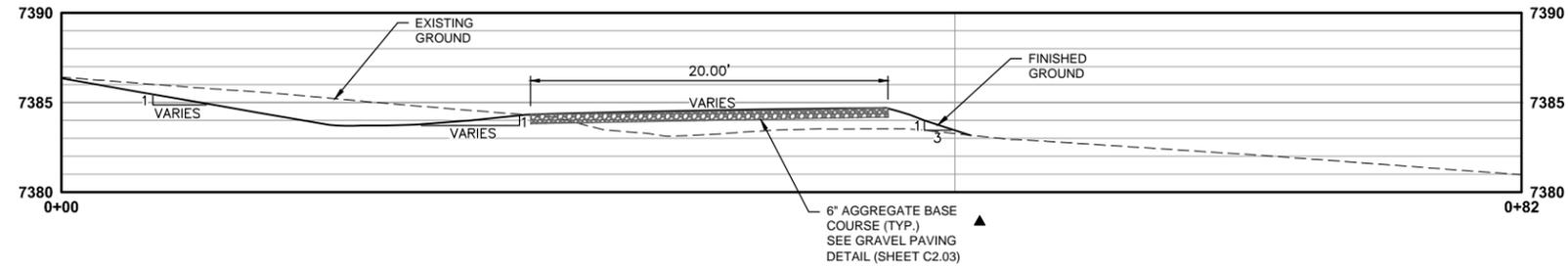
CITY AND COUNTY OF DENVER
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION
CAPITAL PROJECTS MANAGEMENT
2000 W. 3RD AVE. DENVER, CO 80223
TEL.: (303) 446-3617 FAX: (303) 446-3647

GENESSEE MOUNTAIN PARK
OUTDOOR EXPERIENTIAL CENTER
PROJECT MASTER NO: 2018-PROJMSTR-0000103
DEMOLITION AND TREE PROTECTION PLAN

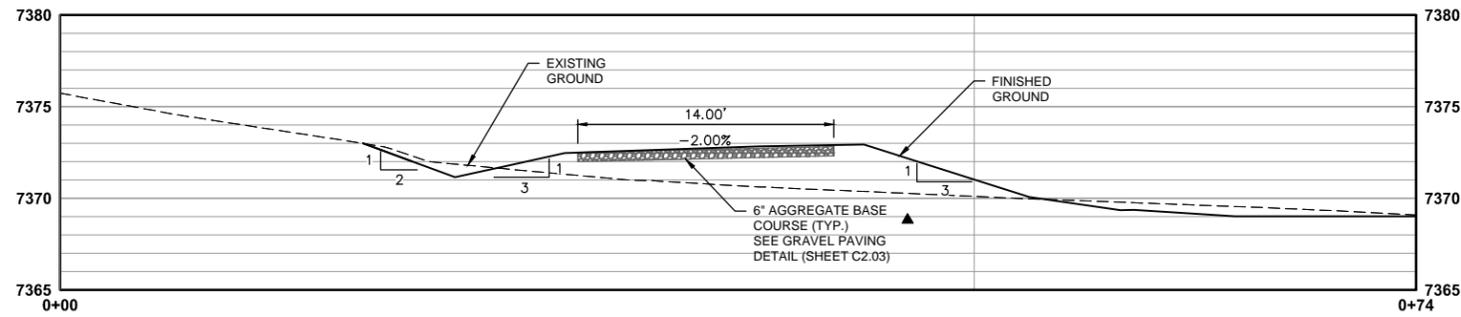
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DESIGNED BY:	MWC/JDM
APPROVED BY:	
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DATE:	3/1/19
SHEET NO.:	L1.02

PLOT DATE: February 27, 2019

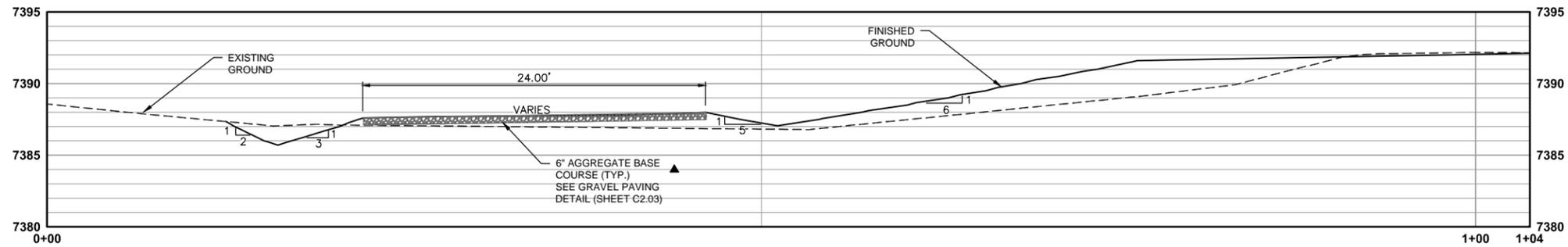
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(A) SECTION

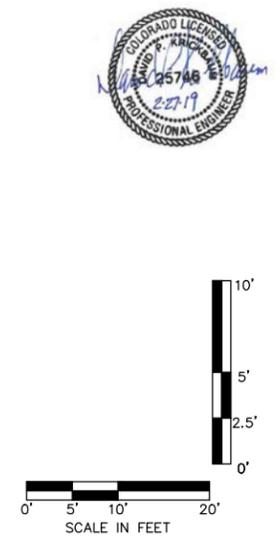


(B) SECTION



(C) SECTION

▲ PRIOR TO PLACING AGGREGATE BASE COURSE, THE SUBGRADE SHALL BE SCARIFIED TO A DEPTH OF 12-INCHES AND RECOMPACTED TO AT LEAST 95% OF THE MAXIMUM DRY DENSITY AND WITHIN 5% OF THE OPTIMUM MOISTURE CONTENT.



NO.	DESCRIPTION OF REVISIONS	DATE	BY
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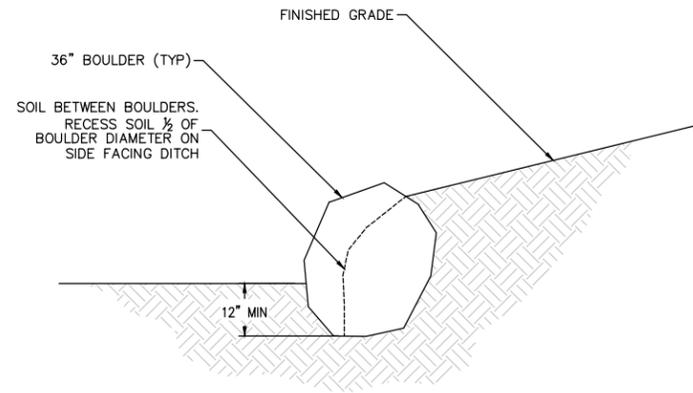
CITY AND COUNTY OF DENVER
DEPARTMENT OF PUBLIC WORKS
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CAPITAL PROJECTS MANAGEMENT
2000 W. 3RD AVE. DENVER, CO 80223
TEL.: (303) 446-3617 FAX: (303) 446-3647

GENESEE PARK EXPERIENTIAL
OUTDOOR CENTER
PROJECT MASTER NO: 2018PROJMSTR-0000103
TYPICAL SECTIONS

DRAWN BY:	KP
DESIGNED BY:	KP
APPROVED BY:	DK
DRAWING NAME:	W_TYP_SECTIONS_71517.dwg
DATE:	2/27/2019
SHEET NO.:	C2.02

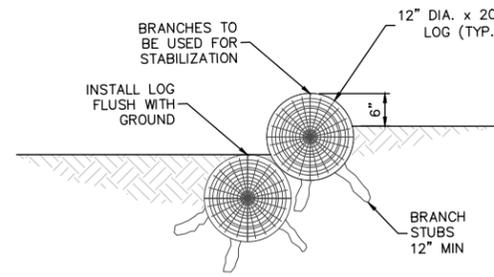
PLOT DATE: February 27, 2019

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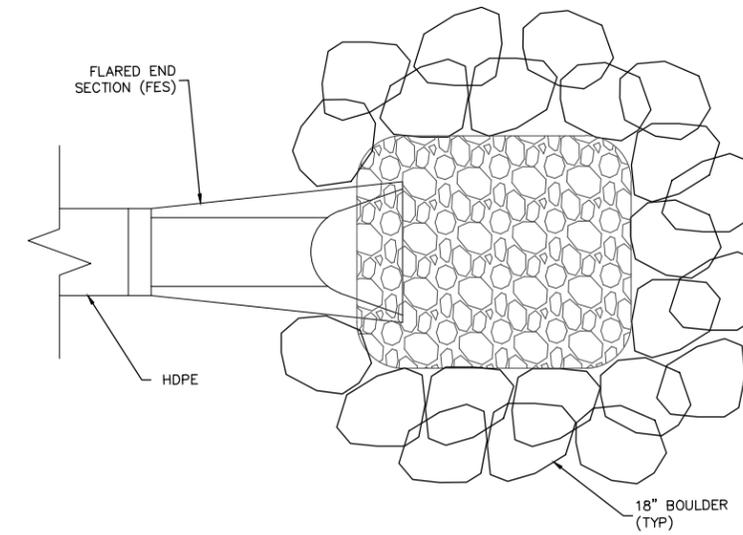


36" DIA. BOULDER WALL

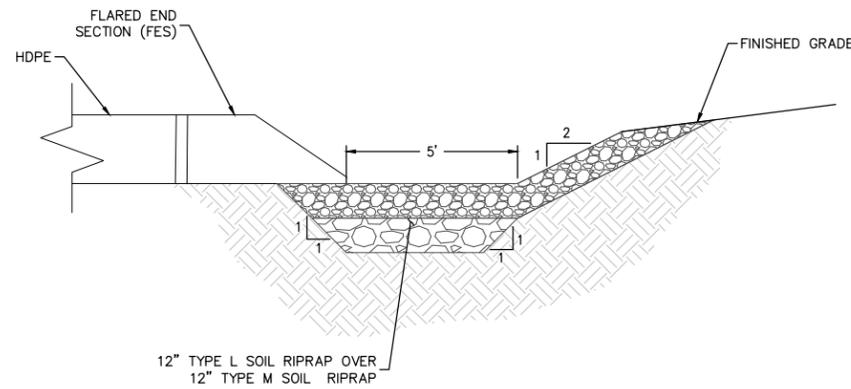
NOTE:
CHECK VOIDS BETWEEN BOULDERS
EXCEEDING 3'.



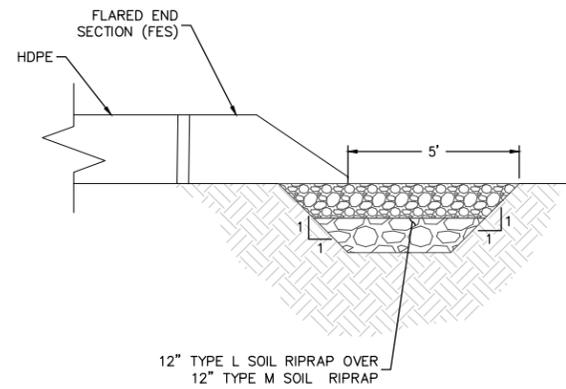
LOG SPREADER



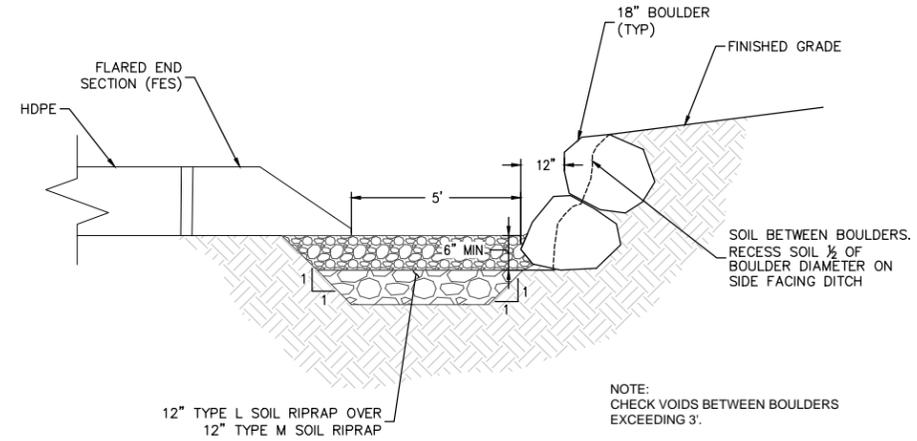
INLET PLAN VIEW
18" DOUBLE STACKED
BOULDER BASIN



INLET PROFILE VIEW
RIPRAP LINED BASIN

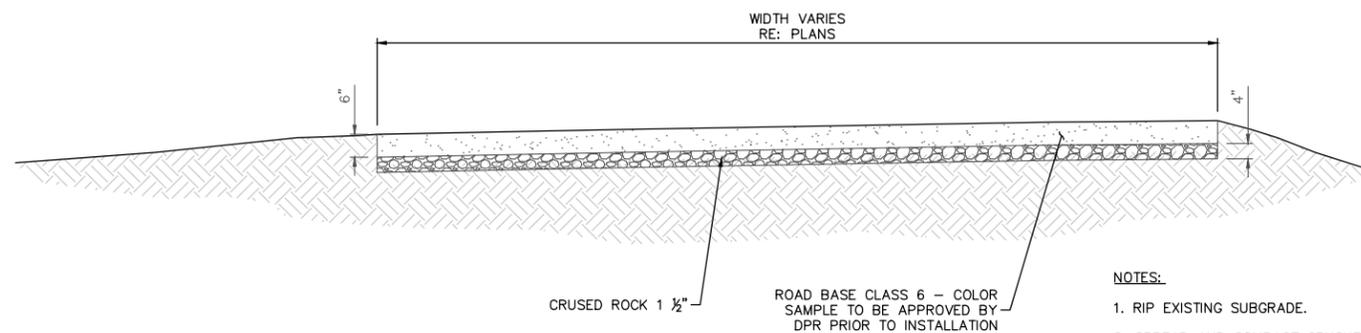


OUTLET PROFILE VIEW
RIPRAP LINED



INLET PROFILE VIEW
18" DOUBLE STACKED
BOULDER BASIN

NOTE:
CHECK VOIDS BETWEEN BOULDERS
EXCEEDING 3'.



GRAVEL PAVING

CRUSHED ROCK 1 1/2"
ROAD BASE CLASS 6 - COLOR
SAMPLE TO BE APPROVED BY
DPR PRIOR TO INSTALLATION

NOTES:

1. RIP EXISTING SUBGRADE.
2. SPREAD AND COMPACT CRUSHED ROCK AND ROAD BASE.
3. GRADE AS PER GRADING PLAN.
4. DRESS EDGES WITH ON-SITE SOIL.



NO.	DESCRIPTION OF REVISIONS	DATE	BY
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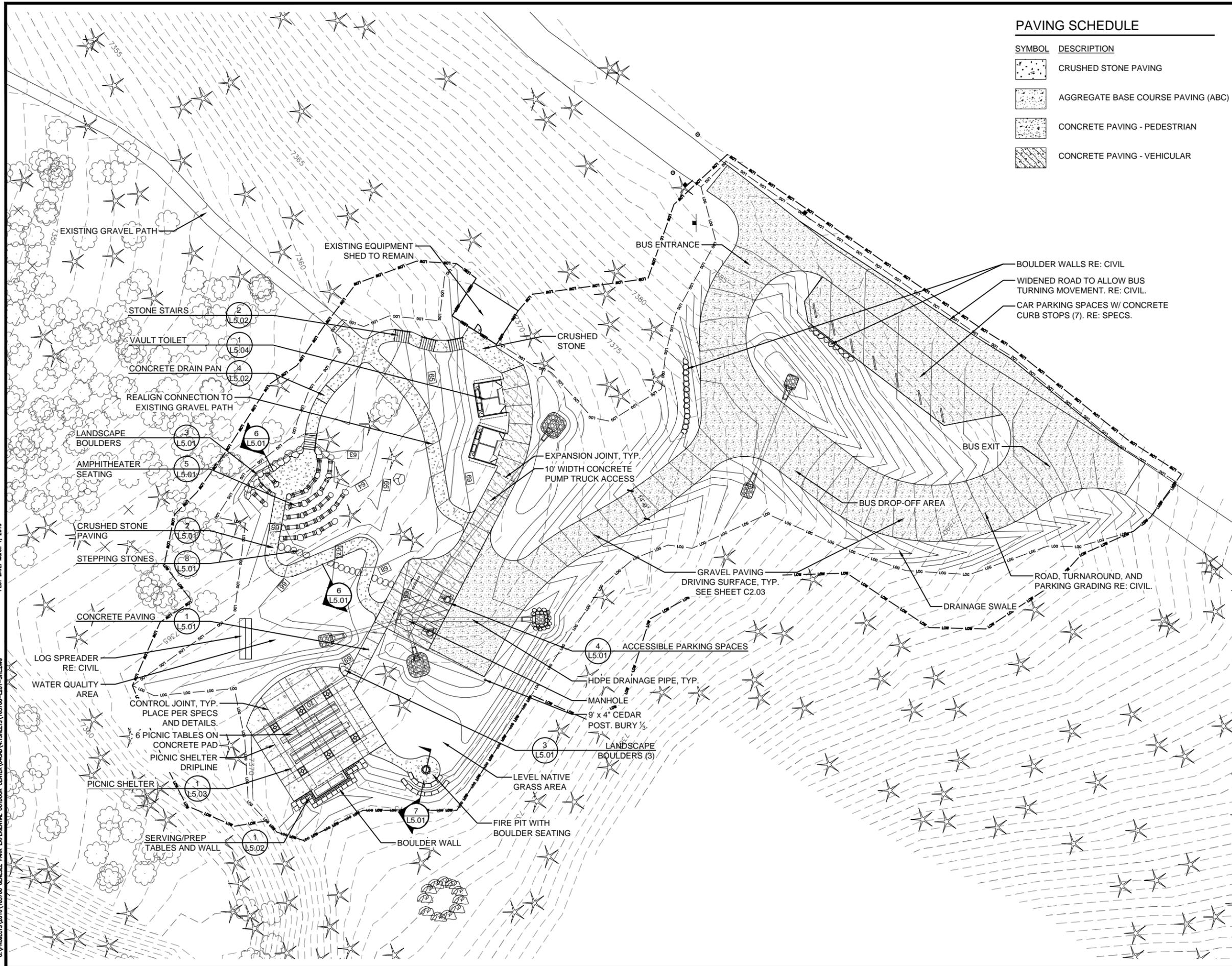
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ENGINEERING DIVISION
CAPITAL PROJECTS MANAGEMENT
2000 W. 3RD AVE. DENVER, CO 80223
TEL.: (303) 446-3617 FAX: (303) 446-3647

EXPERIENTIAL OUTDOOR CENTER
GENESEE MOUNTAIN PARK
PROJECT MASTER NO: 2018PROJMSTR-0000103
DETAILS

DRAWN BY:	KP
DESIGNED BY:	KP
APPROVED BY:	DK
DRAWING NAME:	W_STM_DTLS_71517.dwg
DATE:	2/27/2019
SHEET NO.:	C2.03

PLOT DATE: March 1, 2019

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PAVING SCHEDULE

SYMBOL	DESCRIPTION
	CRUSHED STONE PAVING
	AGGREGATE BASE COURSE PAVING (ABC)
	CONCRETE PAVING - PEDESTRIAN
	CONCRETE PAVING - VEHICULAR



- BOULDER WALLS RE: CIVIL
- WIDENED ROAD TO ALLOW BUS TURNING MOVEMENT. RE: CIVIL.
- CAR PARKING SPACES W/ CONCRETE CURB STOPS (7). RE: SPECS.

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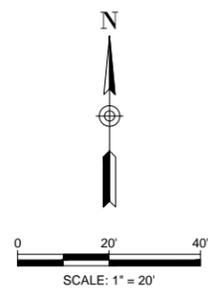
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UTILITY WORKS CENTER OF
COLORADO



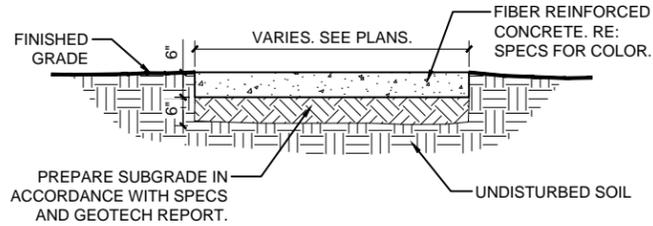
CITY AND COUNTY OF DENVER
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CAPITAL PROJECTS MANAGEMENT
2000 W. 3RD AVE. DENVER, CO 80223
TEL.: (303) 446-3617 FAX: (303) 446-3647

GENESSEE MOUNTAIN PARK
OUTDOOR EXPERIENTIAL CENTER
PROJECT MASTER NO: 2018-PROJ/MSTR-0000103

DRAWN BY:	DLA
DESIGNED BY:	MWC/JDM
APPROVED BY:	
DRAWING NAME:	165760-L201-Site.dwg
DATE:	3/1/19
SHEET NO.:	L2.01

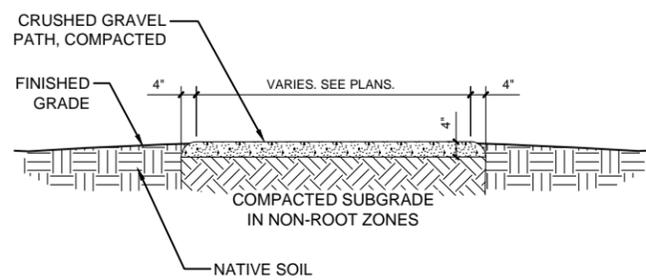


SITE PLAN



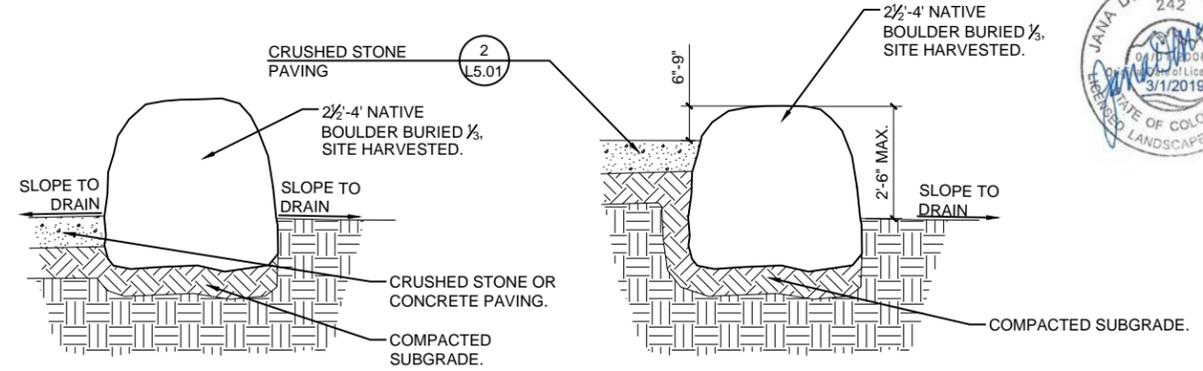
- NOTES:
1. LOCATIONS OF PEDESTRIAN AND VEHICULAR PAVEMENTS AS INDICATED ON PLANS.
 2. 1.5% CROSS SLOPE UNLESS INDICATED OTHERWISE.
 3. 0-5% MAX. GRADE.

1 CONCRETE PAVING
N.T.S. P-CI-GPEOC-15

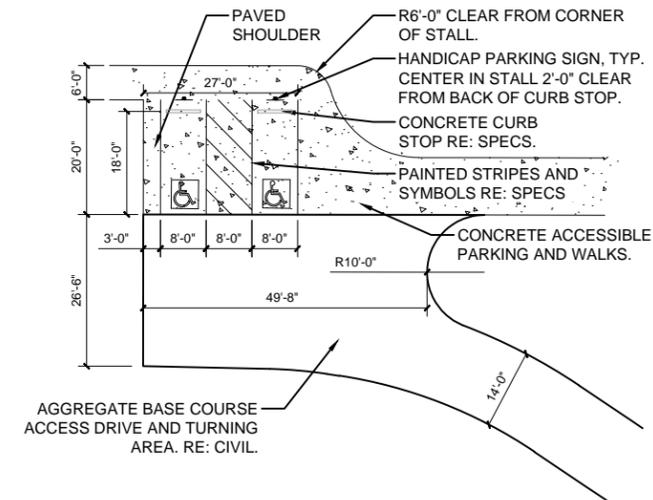


- NOTES:
1. SLOPE TO DRAIN. MAX CROSS SLOPE 2%.

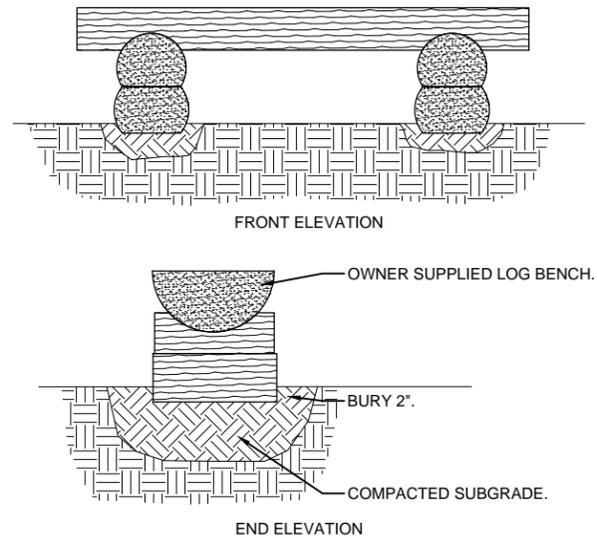
2 CRUSHED STONE PAVING
N.T.S. P-CI-GPEOC-13



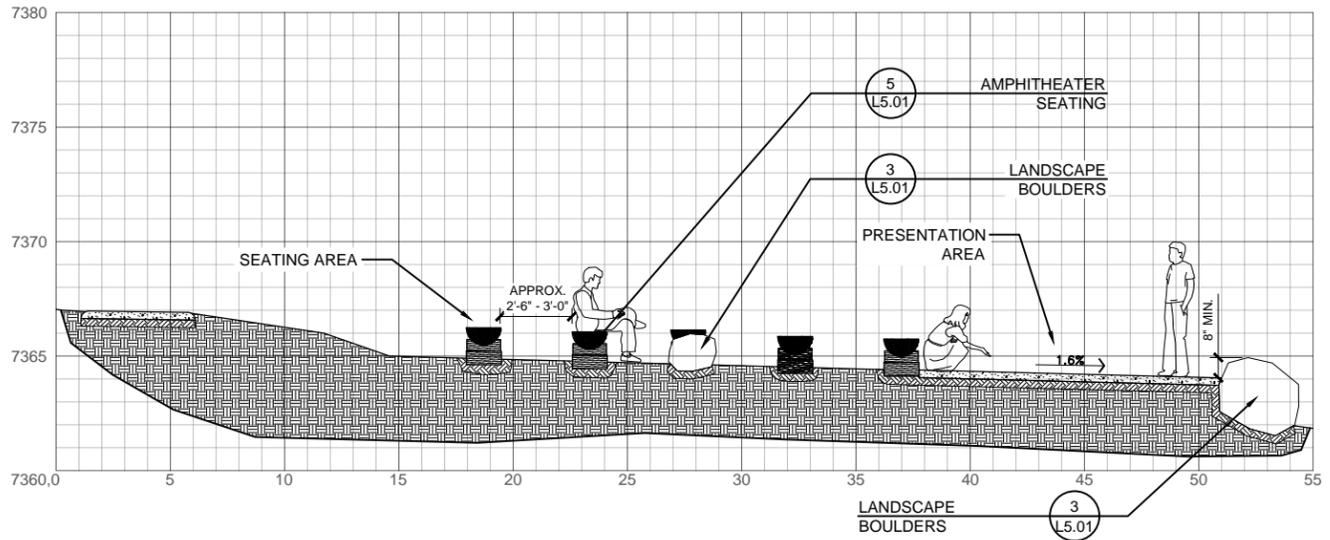
3 LANDSCAPE BOULDERS
1" = 1'-0" P-CI-GPEOC-10



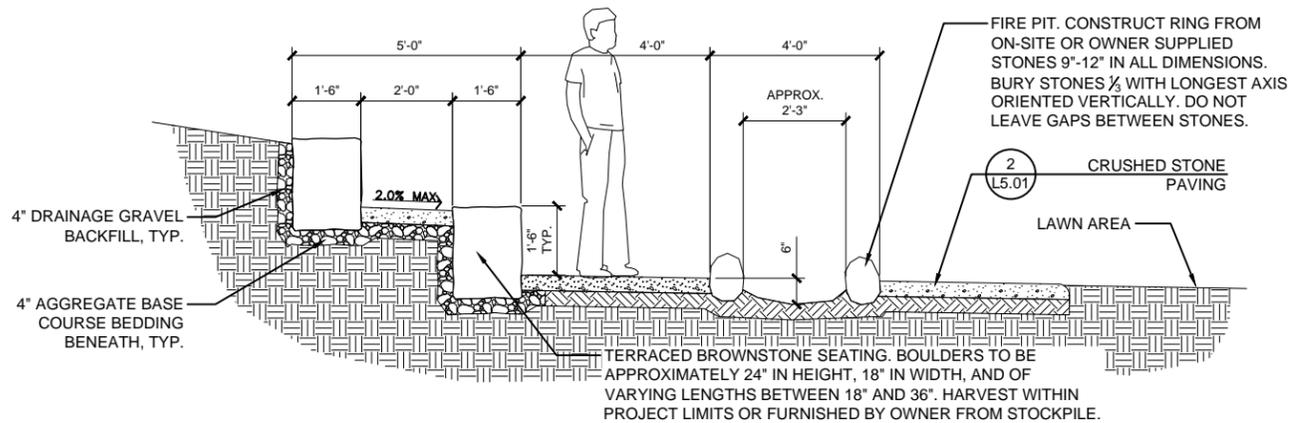
4 ACCESSIBLE PARKING SPACES
1/16" = 1'-0" P-CI-GPEOC-11



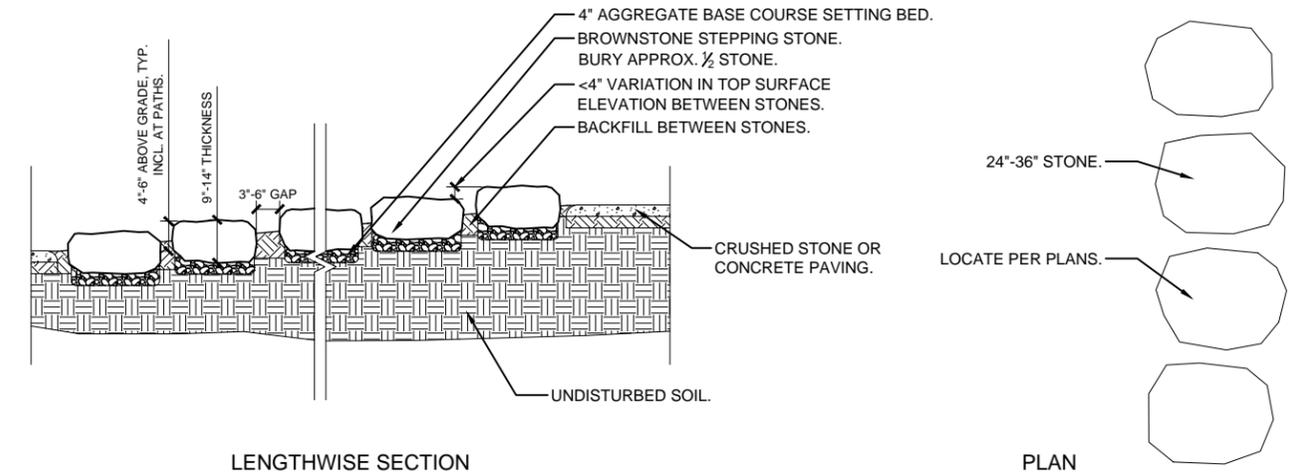
5 AMPHITHEATER SEATING
N.T.S. P-CI-GPEOC-07



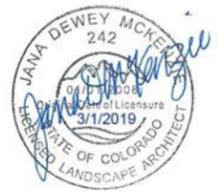
6 AMPHITHEATER SECTION
1/4" = 1'-0" P-CI-GPEOC-06



7 FIRE PIT AND BOULDER SEATING
1/2" = 1'-0" P-CI-GPEOC-09



8 STEPPING STONES
1/2" = 1'-0" P-CI-GPEOC-14



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GENESSEE MOUNTAIN PARK
OUTDOOR EXPERIENTIAL CENTER

PROJECT MASTER NO: 2018-PROJMASTER-0000103

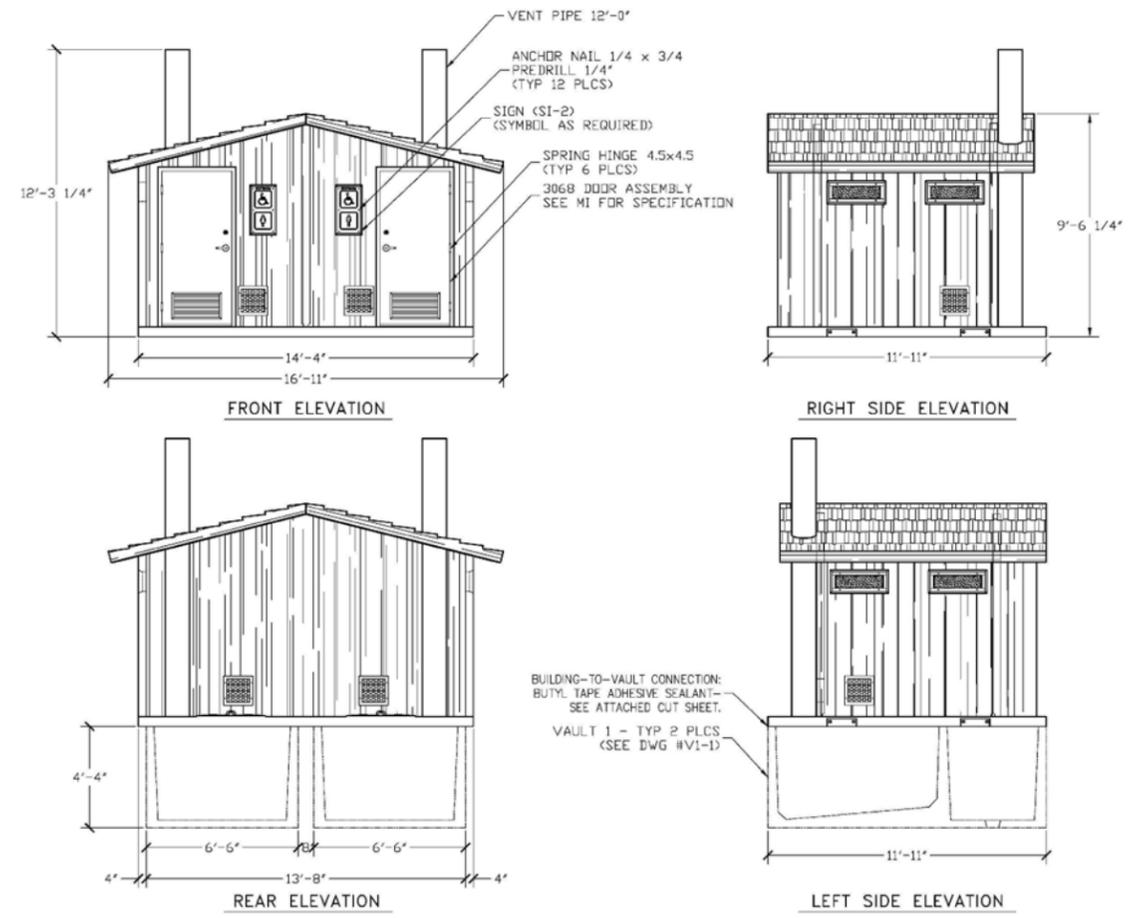
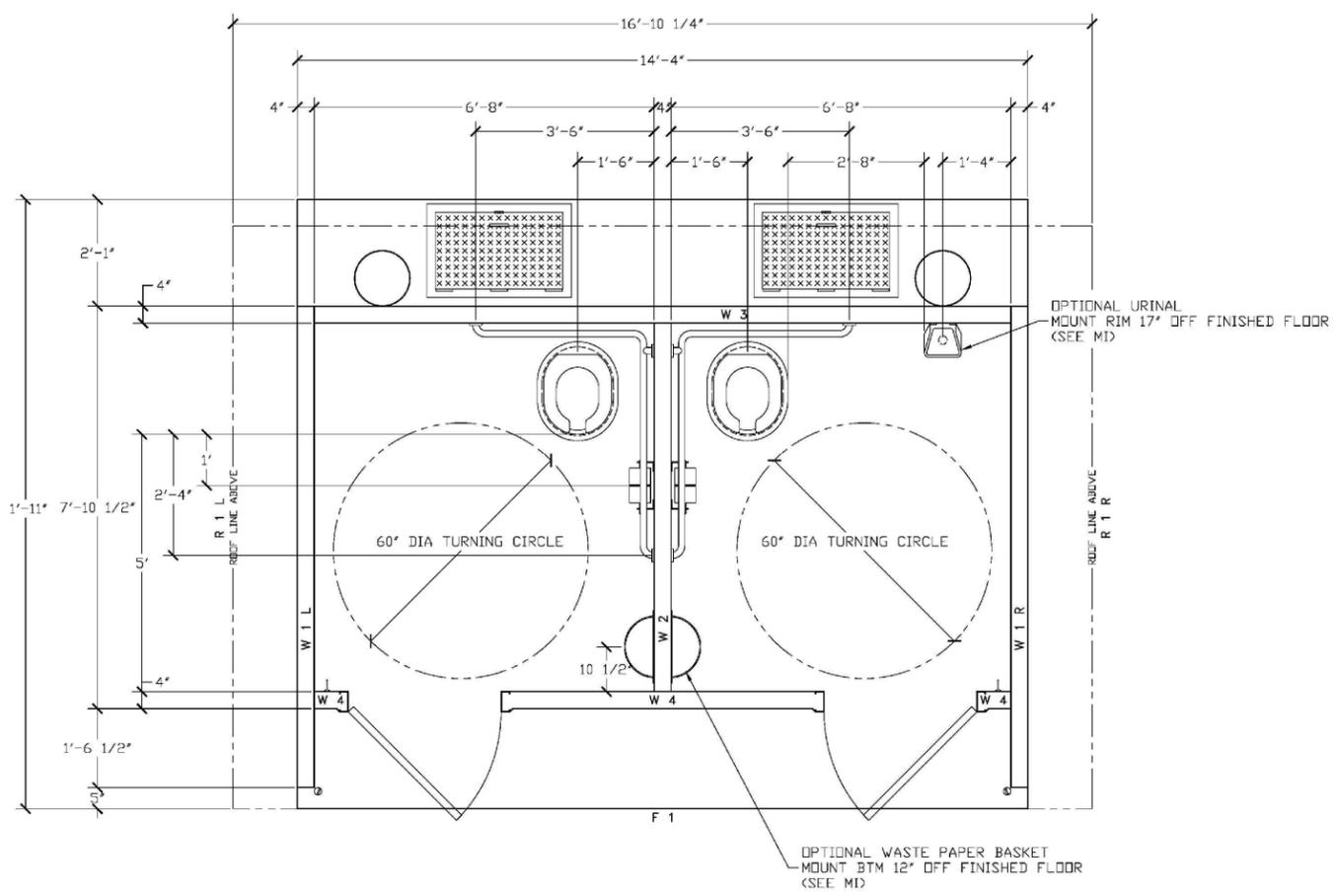
SITE DETAILS

DRAWN BY: DLA
DESIGNED BY: MWC/JDM
APPROVED BY:

DRAWING NAME: 165760-L501-Details.dwg
DATE: 3/1/19
SHEET NO.: L5.01

PLOT DATE: March 1, 2019
C:\PROJECTS\2018\165760 GENESSEE PARK EXPERIENTIAL OUTDOOR CENTER\04\04\1 SHEETS\165760-L501-DETAILS.DWG

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1 VAULT TOILET
1" = 1"

P-CI-GPEOC-05

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GENESEE MOUNTAIN PARK
OUTDOOR EXPERIENTIAL CENTER
PROJECT MASTER NO: 2018-PROJMASTER-0000103
TREE PROTECTION DETAILS AND NOTES

DRAWN BY:	DLA
DESIGNED BY:	MWC/JDM
APPROVED BY:	
DRAWING NAME:	165760-L501-Details.dwg
DATE:	3/1/19
SHEET NO.:	L5.04

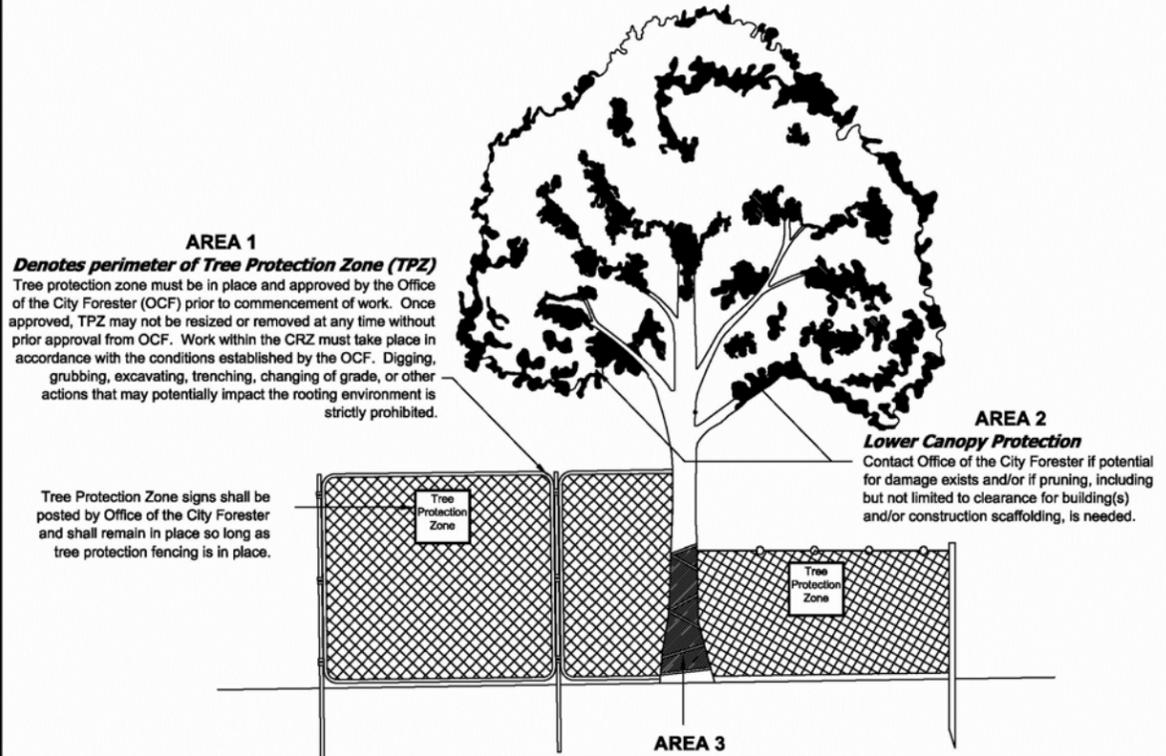


TREE PROTECTION ZONES

The Tree Protection Zone (TPZ) shall be equal to eighteen inches (18") radially from the tree for every one inch of trunk diameter at breast height (DBH = 4.5' above soil line).

The Critical Root Zone (CRZ) shall be equal to twelve inches (12") radially from the tree for every one inch of trunk diameter at breast height (DBH = 4.5' above soil line).

The Structural Root Zone (SRZ) shall be equal to 0.9' (10.8") radially from the tree for every one inch of trunk diameter at breast height (DBH = 4.5' above soil line).



AREA 1
Denotes perimeter of Tree Protection Zone (TPZ)
Tree protection zone must be in place and approved by the Office of the City Forester (OCF) prior to commencement of work. Once approved, TPZ may not be resized or removed at any time without prior approval from OCF. Work within the CRZ must take place in accordance with the conditions established by the OCF. Digging, grubbing, excavating, trenching, changing of grade, or other actions that may potentially impact the rooting environment is strictly prohibited.

AREA 2
Lower Canopy Protection
Contact Office of the City Forester if potential for damage exists and/or if pruning, including but not limited to clearance for building(s) and/or construction scaffolding, is needed.

Tree Protection Zone signs shall be posted by Office of the City Forester and shall remain in place so long as tree protection fencing is in place.

AREA 3
Trunk protection is required if construction occurs within ten feet or less of trunk. Construction inside CRZ is only permitted when equipment is operated exclusively on existing hardscape, and no soil compaction takes place. **Any work in CRZ must be approved by Office of the City Forester prior to commencement of activity.**

NOTES

- Office of the City Forester Tree Retention and Protection Specifications shall be followed throughout duration of project.
- Damage to protected trees is subject to penalty per City Ordinance.
- Tree protection shall be installed prior to commencement of demolition/construction activities, approved by Office of the City Forester staff, and shall remain in place until Certificate of Occupancy is issued by the City & County of Denver.
- Once approved by the Office of the City Forester, the Tree Protection Zone shall not be resized, modified, removed, or altered in any manner without prior written approval.
- Entrance/access to the Tree Protection Zone is not permitted without prior written approval from the Office of the City Forester.
- No materials, debris, equipment, or site amenities shall be stored within the Tree Protection Zone without prior written approval from the Office of the City Forester.
- While tree protection fencing is in place, trees shall be deep-root watered at an interval of once per week when temperatures are at or above 50-degrees F. Trees shall be watered at the rate of 10 gallons per inch caliper.
- Minimum Tree Protection Zone, Area 1 fencing shall be "orange plastic safety fencing," min. 48" in height, top secured to metal T-posts with 12-gauge wire woven through top of fencing for entire length.
 - Heavy duty T-posts shall be placed so that wire & fence are taut.
 - Chain link fencing is recommended and may be required by the Office of the City Forester where heavy construction activity is adjacent to existing trees.
 - "Tree Protection Zone" signs shall remain in place as posted by Office of the City Forester and shall be maintained in the condition in which they were installed.

MARK	BULLETIN	DATE	PREPARED BY OFFICE OF THE CITY FORESTER (OCF) PARKS AND RECREATION DEPARTMENT	CITY AND COUNTY OF DENVER 201 W. COLFAX AVE. DENVER, COLORADO 80202	STANDARD TREE DETAIL FOR TREE PROTECTION ZONE	NOT TO SCALE
						DATE: Oct. 2017
						DIAGRAM P-3

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GENESEE MOUNTAIN PARK
OUTDOOR EXPERIENTIAL CENTER
PROJECT MASTER NO: 2018-PROJ/MSTR-0000103
TREE PROTECTION DETAILS AND NOTES

DRAWN BY:	DLA
DESIGNED BY:	MWC/JDM
APPROVED BY:	
DRAWING NAME:	165760-L501-Details.dwg
DATE:	3/1/19
SHEET NO.:	L5.05

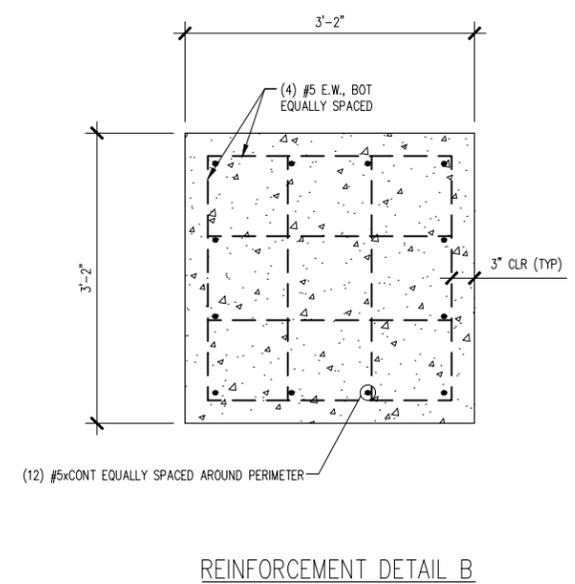
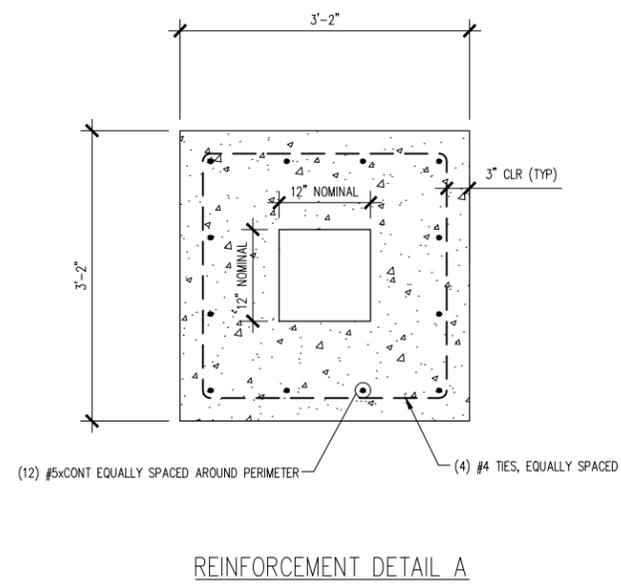
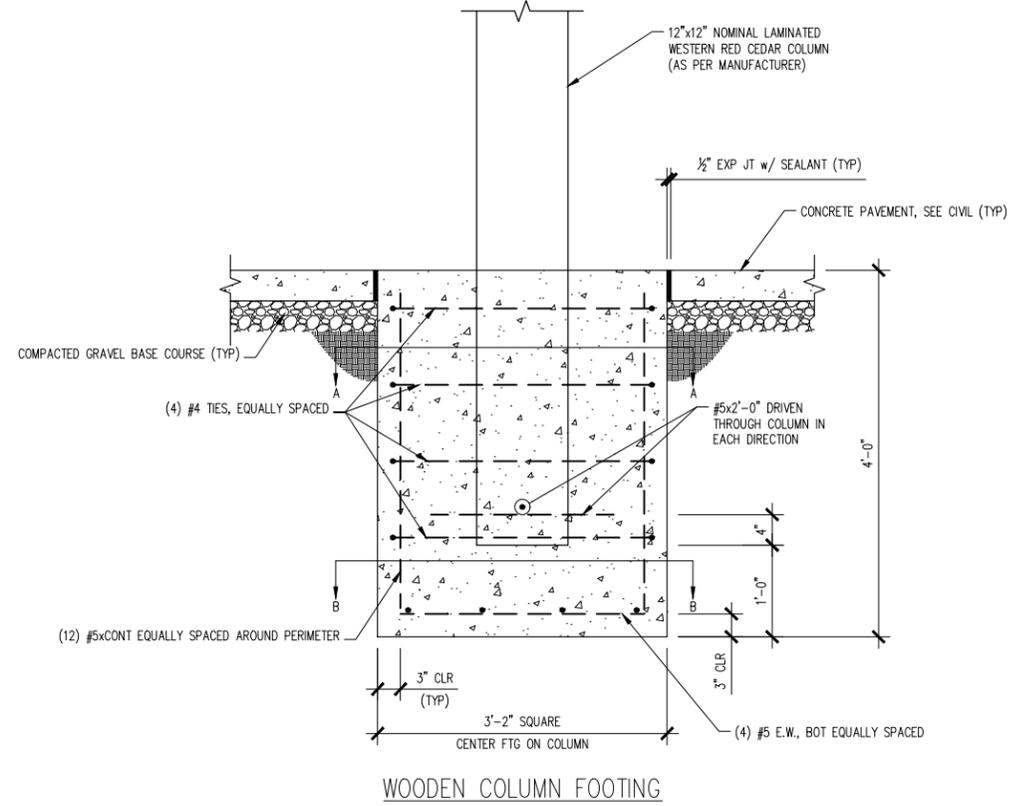
C:\PROJECTS\2018\165760_GENESEE PARK EXPERIENTIAL OUTDOOR CENTER\04\04\1\SHEETS\165760-L501-DETAILS.DWG PLOT DATE: March 1, 2019

GENERAL STRUCTURAL NOTES

- CODE: 2015 INTERNATIONAL BUILDING CODE
- DEAD LOAD 15.0 PSF
- LIVE LOAD 20.0 PSF w/ NO TRIBUTARY REDUCTION
- SNOW
 - GROUND SNOW LOAD (Pg) 80.0 PSF
 - SNOW EXPOSURE CATEGORY (Ce) 1.1
 - SNOW IMPORTANCE FACTOR (Iw) 1.0
 - SNOW THERMAL FACTOR (Ct) 1.2
 - FLAT-ROOF SNOW LOAD (Pf) 74.0 PSF
- WIND
 - BASIC WIND SPEED (V) 115 MPH
 - WIND EXPOSURE CATEGORY C
 - INTERNAL PRESSURE COEFF (GCpi) ±0.0
- SEISMIC
 - SEISMIC USE GROUP II
 - SEISMIC SITE CLASS C
 - SEISMIC IMPORTANCE FACTOR 1.0
 - SEISMIC DESIGN CATEGORY B
 - SPECTRAL RESPONSE COEFF (Ss) 24.1%
 - SPECTRAL RESPONSE COEFF (S1) 6.0%
- ALL CAST IN PLACE CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH SECTION 03 30 00 OF THE SPECIFICATIONS, AS APPLICABLE TO THE PROJECT.
- FOUNDATION DESIGN IS BASED ON A NET SOIL BEARING PRESSURE OF 3,000 PSF PER THE RECOMMENDATIONS OF THE GEOTECHNICAL INVESTIGATION REPORT BY YEH & ASSOCIATES, DATED JUNE 16, 2014 (YA PROJECT NO. 214-086). CONTRACTOR IS RESPONSIBLE FOR ASSURING THAT A MINIMUM 3,000 PSF SOIL BEARING PRESSURE IS OBTAINED PRIOR TO PLACEMENT OF THE FOUNDATION.
- ALL CONCRETE SHALL BE CDOT CLASS B.
- CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF ACI 301.
- MINIMUM 28 DAY COMPRESSIVE STRENGTH (F'c) AND DENSITY SHALL BE:

CAST-IN-PLACE FOOTINGS	STRENGTH	DENSITY
	4,500 PSI	145 PCF
- REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60, U.N.O.
- THE MINIMUM COVER FOR REINFORCING STEEL SHALL BE, U.N.O.:

UNFORMED SURFACE IN CONTACT WITH GROUND	3"
FORMED SURFACES EXPOSED TO EARTH AND WEATHER:	
#6 BARS AND LARGER	2"
#5 BARS AND SMALLER	1½"
FORMED SURFACES NOT EXPOSED TO EARTH OR WEATHER:	
BEAMS AND COLUMNS	1½"
SLABS, WALLS, AND JOISTS	
#14 AND #18 BARS	1½"
#11 BARS AND SMALLER	¾"
- STRUCTURAL CONCRETE SHALL BE MECHANICALLY CONSOLIDATED IN ACCORDANCE WITH ACI 309.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STABILITY OF THE STRUCTURE DURING CONSTRUCTION.
- PICNIC SHELTER SUPPLIER TO SUBMIT ERECTION DRAWINGS, REACTIONS AND DESIGN CALCULATIONS FOR REVIEW AND APPROVAL BY OLSSON ASSOCIATES' ENGINEER-OF-RECORD PRIOR TO FABRICATION FOR CONFIRMATION OF FINAL FOOTING SIZES.



PROGRESS PRINT
 NOT FOR CONSTRUCTION
 DATE **May 18, 2018 - 10:46 am**
 OLSSON ASSOCIATES



201 East 2nd Street
 P.O. Box 1072
 Grand Island, NE 68802-1072
 TEL: 308.384.8750
 FAX: 308.384.8752
 Project No. 017-1517
 www.oaconsulting.com

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GENESEE MOUNTAIN PARK EXPERIENTIAL OUTDOOR CENTER PRO TRACKING NO: ### PROJECT MASTER NO: ### SHELTER FOOTING NOTES AND DETAILS			
DRAWN BY: FAV			
DESIGNED BY: CRS			
APPROVED BY: MDS			
DRAWING NAME: S1.01.dwg			
DATE: 5/17/2018			
SHEET NO.: S1.01			

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 PLOT DATE: May 18, 2018