Bid Book & Project Manual

for

Dover Outdoor Recreation Area Bicycle Park

October 7, 2024

City of Joplin
602 South Main Street
Joplin, Missouri 64801

Prepared by

SWT Design, Inc.
1925 Central Street
Kansas City, Missouri 64108

00 01 07 - Seals Page

PROJECT CERTIFICATION

I hereby certify that these Drawings and/or Specifications have been prepared by me, or under my supervision. I further certify that to the best of my knowledge these Drawings and/or Specifications are as required by and in compliance with Building Codes of the City of Joplin, Missouri.

DISCLAIMER OF RESPONSIBLITY

I hereby specify that the documents indented to be authenticated by my seal are limited to:

Specifications: (sections)

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00 45 13	00 45 19	00 45 50	00 45 51	00 51 00	00 52 00
00 55 00	00 61 13.13	00 61 13.16	00 62 76.13	00 65 13	00 65 19.13
00 65 19.16	00 72 00	00 73 00	00 73 43	00 73 46	01 11 00
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DT-01	DT-02	DT-03	DT-04	DT-05	DT-06
DT-07	DT-07				

PROFESSIONAL SEAL –



Signature *Date*

10/7/2024

00 01 07 - Seals Page

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Specifications: (sections)

Job Special
Provisions

Drawings: (sheets)

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PROFESSIONAL SEAL – AARON R. TERRY, PE



00 01 07 - Seals Page

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Specifications: (sections)

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26 05 53	26 10 05	26 24 16	26 27 26	26 43 13	26 56 00
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PROFESSIONAL SEAL – LOUIS D WELLER, PE



Exp. 12.31.2024

Signature

10.07.2024
Date

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C: Utility Coordination
D: Utility Services
E: Stormwater Pollution Prevention Plan
F: Pedestrian Bridge
G: Dry Stack Boulder Wall
H: Site Restoration

ATTACHMENTS

The documents listed below are hereby incorporated the Contract Documents. These documents are included as attachments to the Project Manual PDF and are available for download from the City Bid Portal but are not included with printed copies of the Project Manual.

1. Geotechnical Engineering Report, PPI, September 11, 2024
2. Cultural Resources Survey and National Register Evaluation, Missouri State University, July 2024
3. Natural Resources Report, PPI, June 26, 2024
4. Section 401 Water Quality Certification Letter, MDNR, September 3, 2024
5. Section 404 Permit (placeholder)
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Section 00 11 16 - Invitation to Bid

SEALED BIDS for construction of DOVER OUTDOOR RECREATION AREA BICYCLE PARK for the CITY OF JOPLIN, MISSOURI will be received by the CITY OF JOPLIN, MISSOURI at Public Works Department, 602 South Main Street, Joplin, Missouri, until 10:00 A.M. prevailing local time, November 8, 2024. Bids will then be publicly opened and read aloud in the 4th Floor Conference Room at this same address.

The Project involves improvements across the 95-acre Dover Outdoor Recreation Area including parking lots, lighting, a bridge, 10 miles of bike trails, pavilions, a children's bike park, and other bike-centric amenities.

Copies of the plans and specifications are on file and may be viewed at the office of the Director of Public Works located at 602 S. Main Street, 4th floor. Plans are available for online download at the City's Bid Posting Portal: https://www.joplinmo.org/bids.aspx There is no charge to download documents from the City portal.

Black and white paper copy Plans and Specifications may be secured for a non-refundable fee in the amount of $375.00 per set from the Issuing Office of Civil & Survey, LLC. Bidders must request paper copies by email to aaron@civilandsurvey.com. Payment for plans must be made by credit card. Plans will be delivered the next business day if ordered and payment is received by 10:00 am prevailing local time the previous business day.

This project is supported with American Rescue Plan Act (ARPA) funding. Certain restrictions and other federal requirements attach to this opportunity.

A pre-bid conference will be held at 2:00 P.M. prevailing local time on October 17, 2024, via Zoom meeting. **Attendance at the pre-bid conference is mandatory.** Email aaron@civilandsurvey.com for an invitation to the meeting. Bids received from bidders who have not attended the pre-bid conference will be considered nonresponsive.

PLEASE NOTE: It is the sole responsibility of all planholders, whether or not they have received digital downloads or paper copies of the plans and specifications, to return to the City Bid Posting Portal (https://www.joplinmo.org/bids.aspx) periodically to check for Addenda which may have been posted. Neither the Owner nor Engineer have any responsibility for the accuracy, completeness or sufficiency of bid information obtained from sources other than as indicated in these documents. Obtaining these documents from any other source(s) may result in incomplete and inaccurate information and may also result in failure to receive any addenda, corrections, or other revisions to these documents that may be issued.

The City of Joplin is an equal opportunity employer and encourages bids from minority, woman-owned, and small businesses.

Nondiscrimination in Employment: Bidders on this work will be required to comply with the President's Executive Order Number 11246. Requirements for bidders and contractors under this order are explained in the specifications.

The Owner reserves the right to waive any informalities or minor defects or to reject any or all bids and to re-advertise and to rebid.

Each Bidder must deposit with their bid, security in the amount of five percent (5%) of their base bid, which is subject to conditions provided in the Instructions to Bidders.

No Bidder may withdraw their bid within sixty (60) calendar days after the actual date of the opening thereof.

Attention of the Bidder is particularly called to the requirements as to conditions of employment to be observed, and that the Bidder must comply with the payment of hourly wage rates, including all fringe benefits, as established by Sections 290.210-340, RsMO, as amended in 1993, pertaining to the prevailing hourly rate of wages and including fringe benefits, as established by the Department of Labor and Industrial Relations of the State of Missouri. A copy of the determination is provided within the Supplemental General Conditions.

Bidders on this work will be required to comply with the City of Joplin's Affirmative Action Program set forth in City Council Resolution No. 81-57, Sections VI and VII.

Bidders with questions concerning this Invitation may contact Aaron R. Terry, P.E of Civil & Survey, LLC at (314) 754-7479 or email aaron@civilandsurvey.com.

City of Joplin, Missouri

Dan Johnson, Director of Public Works

END OF SECTION 00 11 16

Section 00 21 13 - Instructions to Bidders

BIDS will be received by the City of Joplin, Missouri (herein called the "OWNER") at the Public Works Department, 602 South Main Street, 4th Floor, Joplin, MO 64801 until 10:00 A.M. prevailing local time on November 6, 2024 and then at said office be publicly opened and read aloud.

This project is supported with American Rescue Plan Act (ARPA) funding. Certain restrictions and other federal requirements attach to this opportunity.

A pre-bid conference will be held at 2:00 P.M. prevailing local time on October 17, 2024, via Zoom meeting. **Attendance at the pre-bid conference is mandatory.** Email aaron@civilandsurvey.com for an invitation to the meeting. Bids received from bidders who have not attended the pre-bid conference will be considered nonresponsive.

Bidders must submit any questions before 5:00 P.M. prevailing local time on October 24, 2024 to Aaron R. Terry, PE via email aaron@civilandsurvey.com. Receipt of questions will be confirmed via email within 24 hours. Bidders must consider the absence of a receipt as an unreceived question. A final addendum will be issued on or before October 31, 2024.

Each BID must be submitted in a sealed envelope, addressed to The City of Joplin Public Works Department, 602 South Main Street, 4th Floor, Joplin, Missouri 64801. Opening of Bids will occur in the 4th Floor Conference Room at this same address. Each sealed envelope containing a BID must be plainly marked on the outside as BID DOVER OUTDOOR RECREATION AREA BICYCLE PARK, and the envelope should bear on the outside the name of the BIDDER, their address, and their license number, if applicable. If forwarded by mail, the sealed envelope containing the Bid must be enclosed in another envelope addressed to: Public Works Department, 602 South Main Street, 4th Floor, Joplin, Missouri 64801.

All BIDS must be made on the required BID form, Section 00 41 13 of these specifications, pages 00 41 13-1 through 00 41 13-8. BIDDER must submit a TOTAL BASE BID AMOUNT on the appropriate page, in both words and numerals and BID AMOUNT for TOTAL ADD ALTERNATE 1 BID AMOUNT, TOTAL ADD ALTERNATE 2 BID AMOUNT, TOTAL ADD ALTERNATE 3 BID AMOUNT, TOTAL DEDUCT ALTERNATE 1 BID AMOUNT, AND TOTAL DEDUCT ALTERNATE 2 BID AMOUNT on the appropriate page. TOTAL BASE BID AMOUNT, TOTAL ADD ALTERNATE 1 BID AMOUNT, TOTAL ADD ALTERNATE 2 BID AMOUNT, TOTAL ADD ALTERNATE 3 BID AMOUNT, TOTAL DEDUCT ALTERNATE 1 BID AMOUNT, AND TOTAL DEDUCT ALTERNATE 2 BID AMOUNT must be written in ink or typewritten. BIDDER must complete the BID ITEMS list in its entirety, written in ink or typewritten. Bid form must be executed when submitted. Only one copy of the BID form is required. TOTAL BASE BID AMOUNT will serve as the basis for comparison of bids. Award for the contract shall be based upon the lowest responsible, responsive bid for the TOTAL BASE BID AMOUNT. Based upon available funding, the OWNER will choose to accept either Add Alternates or Deduct Alternates, which be accepted in order of TOTAL ADD ALTERNATE 1 BID, TOTAL ADD ALTERNATE 2 BID, and TOTAL ADD ALTERNATE 3 BID or TOTAL DEDUCT ALTERNATE 1 BID and TOTAL DEDUCT ALTERNATE 2 BID, with the contract price adjusted by the bid amount for the item(s) so elected. Award of the project shall be at the sole discretion of the OWNER.

The OWNER may waive any informalities or minor defects or reject any and all BIDS. Any BID may be withdrawn prior to the above scheduled time for the opening of BIDS or authorized postponement thereof. Any BID received after the time and date specified shall not be considered. No BIDDER may withdraw a BID within sixty (60) calendar days after the actual date of the opening thereof. Should there be reasons why the contract cannot be awarded within the specified period, the time may be extended by mutual agreement between the OWNER and the BIDDER.

BIDDERS must satisfy themselves of the accuracy of the CONTRACT DOCUMENTS by examination of the site and review of the drawings and specifications, including any ADDENDA. After BIDS have been submitted, the BIDDER shall not assert that there was a misunderstanding concerning the quantities of WORK or of the nature of the WORK to be done.

The CONTRACT DOCUMENTS contain the provisions required for the construction of the PROJECT. Information obtained from an officer, agent or employee of the OWNER or any other person shall not affect the risks or obligations assumed by the CONTRACTOR or relieve them from fulfilling any of the conditions of the contract.

Each BID must be accompanied by a BID BOND payable to the OWNER for five percent (5%) of the total amount of the BID. As soon as the BID prices have been compared, the OWNER will return upon request the BONDS of all except the three lowest responsible BIDDERS. When the Agreement is executed, the bonds of the two remaining unsuccessful BIDDERS will be returned upon request. The BID BOND of the successful BIDDER will be retained until the PAYMENT BOND and PERFORMANCE BOND have been executed and approved, after which it will be returned if requested. A certified check may be used in lieu of a BID BOND.

A PERFORMANCE BOND and a PAYMENT BOND, each in the amount of 100% of the CONTRACT PRICE, with a corporate surety approved by the OWNER, will be required for the faithful performance of the contract.

Bonds must be executed with sureties licensed to operate in the State of Missouri and named on the current list of “Surety Companies Acceptable on Federal Bonds” as published in Circular 570 by the Audit Staff Bureau of Accounts, U.S. Treasury Department. Attorneys-in-fact who sign BID BONDS or PAYMENT BONDS and PERFORMANCE BONDS must file with each BOND a certified and effective dated copy of their power of attorney.

The party to whom the contract is awarded will be required to execute the Agreement and to obtain the Performance Bond, the Payment Bond, and certificates of insurance within ten (10) calendar days from the date when NOTICE OF AWARD is delivered to the BIDDER. The NOTICE OF AWARD shall be accompanied by the necessary Agreement and bond forms. In case of failure of the BIDDER to execute the Agreement, the OWNER may, at their option, consider the BIDDER in default, in which case, the BID BOND accompanying the proposal shall be forfeited and shall become the property of the OWNER.

The OWNER, within ten (10) days of the receipt of acceptable Performance Bond, Payment Bond, certificates of insurance, and Agreement signed by the party to whom the Agreement was awarded, shall sign the Agreement and return to such party an executed duplicate of the

Agreement. Should the OWNER not execute the Agreement within such period, the BIDDER may, by WRITTEN NOTICE, withdraw their signed Agreement. Such notice of withdrawal shall be effective upon receipt of the Notice by the OWNER.

A NOTICE TO PROCEED shall be issued within ten (10) calendar days of the execution of the Agreement by the OWNER. Should there be reasons why the NOTICE TO PROCEED cannot be issued within such period, the time may be extended by mutual agreement between the OWNER and CONTRACTOR. If the NOTICE TO PROCEED has not been issued within the ten (10) day period or within the period mutually agreed upon, the CONTRACTOR may terminate the Agreement without further liability on the part of either party.

The OWNER may make such investigations as they deem necessary to determine the ability of the BIDDER to perform the work, and the BIDDER shall furnish to the OWNER all such information and data for this purpose, as the OWNER may request. The OWNER reserves the right to reject any BID if the evidence submitted by, or investigation of, such BIDDER fails to satisfy the OWNER that such BIDDER is properly qualified to carry out the obligations of the Agreement and to complete the work contemplated therein.

A conditional or qualified BID will not be accepted.

Award of the contract will be made to the responsive, responsible BIDDER submitting the lowest TOTAL BASE BID AMOUNT. Following the reading of the BIDS, the BIDDER submitting the lowest TOTAL BASE BID AMOUNT as written in words and having supplied the necessary BID BOND and Anti-Collusion Statement shall be designated the Apparent Low Bidder. Based upon available funding, the OWNER will choose to accept either Add Alternates or Deduct Alternates, which will be accepted in the order of TOTAL ADD ALTERNATE 1 BID, TOTAL ADD ALTERNATE 2 BID, and TOTAL ADD ALTERNATE 3 BID or TOTAL DEDUCT ALTERNATE 1 BID and TOTAL DEDUCT ALTERNATE 2 BID, with the contract price adjusted by the bid amount for the item(s) so elected. Award of the project shall be at the sole discretion of the OWNER.

All applicable laws, ordinances and the rules and regulations of all authorities having jurisdiction over construction of the PROJECT shall apply to the contract throughout.

BIDDER hereby agrees to commence work under this contract on or before a date to be specified in the NOTICE TO PROCEED, and to fully complete the PROJECT within 270 consecutive calendar days thereafter.

Each BIDDER is responsible for inspecting the site and for reading and being thoroughly familiar with the CONTRACT DOCUMENTS. The failure or omission of any BIDDER to do any of the foregoing shall in no way relieve any BIDDER from any obligation in respect to their BID.

The low BIDDER must supply the names and addresses of the major material SUPPLIERS AND SUBCONTRACTORS when requested to do so by the OWNER.

The LANDSCAPE ARCHITECT is SWT DESIGN, INC. The ENGINEER is CIVIL & SURVEY, LLC. Contact: Aaron R. Terry, P.E. (314) 754-7479 or email aaron@civilandsurvey.com.

END OF SECTION 00 21 13

Section 00 41 13 - Bid Form

Proposal of _____(hereinafter called "BIDDER"),

Organized and existing under the laws of the State of _____ doing

business as *_____ to the City of Joplin, Missouri (hereinafter called "OWNER").

In compliance with your Invitation to Bid, the BIDDER hereby proposes to perform all WORK for the construction of Dover Outdoor Recreation Area Bicycle Park in strict accordance with the CONTRACT DOCUMENTS, within the time set forth therein and at the prices stated below.

By submission of this BID, each BIDDER certifies, and in the case of a joint BID, each party thereto certifies as to their own organization, that this BID has been arrived at independently, without consultation, communication, or agreement as to any matter relating to this BID with any other Bidder or with any competitor.

BIDDER hereby agrees that if this Bid is accepted, BIDDER will, within ten (10) calendar days after the date of Notice of Award, enter into an Agreement of form attached herein, and will at that time deliver to the Owner the prescribed Performance Bond, Payment Bond, and all other documents as required in these documents.

As bid security, BIDDER provides herewith a Bid Bond (Cashier's check, Certified check), in the amount of five percent (5%) of the total bid amount, to become the property of the Owner as liquidated damages without condition, at the Owner's option in the event the BIDDER fails to enter into an Agreement, and/or deliver the Bonds and other contract documents within the period of time herein previously established.

BIDDER agrees to provide to the Owner, the certificates of insurance specified in these Documents, and to maintain the scope of insurance throughout the term of the Agreement.

The CONTRACT DOCUMENTS contain the provisions required for the construction of the PROJECT. Information obtained from an officer, agent or employee of the OWNER or any other person shall not affect the risks or obligations assumed by the CONTRACTOR or relieve him from fulfilling any of the conditions of the contract.

BIDDER hereby agrees to commence WORK under this contract on or before a date to be specified in the NOTICE TO PROCEED and to fully complete the PROJECT within 270 consecutive calendar days thereafter. BIDDER agrees to pay as liquidated damages to the OWNER, the sum of $500.00 each consecutive calendar day thereafter as provided in Section 15 of the General Conditions. BIDDER further agrees to reimburse suppliers, manufacturers and other contractors and subcontractors for damages suffered by reason of delays attributable to failure by the BIDDER to fully complete the PROJECT within the established time, as provided in Section 15 of the General Conditions.

*Insert “a corporation”, “a partnership”, or "an individual" as applicable.

BIDDER acknowledges receipt of the following ADDENDA:

NO.	DATE
_____	_____
_____	_____
_____	_____

BID SCHEDULE

BIDDER agrees to perform all WORK described in the Contract Documents for the following unit or lump sum prices.

LUMP SUM BASE BID – DOVER OUTDOOR RECREATION AREA BICYCLE PARK
All Work as described in the specifications and on the drawings including but not limited to, demolition of existing site features, drives, parking and trail development with lighting, earthmoving, landscape enhancements, site utilities, bicycle park features and trial creation, onsite storm water management, and support features including restrooms, shelters, and site furnishings as indicated in the Drawings and Specifications.
TOTAL BASE BID AMOUNT _____ _____ **DOLLARS ($_____)**

BIDDER shall provide lump sum prices for the Add and Deduct Alternates. OWNER will choose to accept either Add Alternates or Deduct Alternates, which will be accepted in the order shown below.

DEDUCT ALTERNATE 1 – LONE ELM ENTRY IMPROVEMENTS
Work in this deduct alternate consists of all work shown on plan sheets C-207, L-108, L-138, and L-158 **except** the 2” asphalt overlay of Adventure Lane, 2” water service, and monument sign.
TOTAL DEDUCT ALTERNATE 1 BID AMOUNT _____ **DOLLARS ($_____)**

DEDUCT ALTERNATE 2 – MONUMENT SIGNS
Work in this deduct alternate consists of removing the two entry monuments shown in details A and B on sheet L-503 and all associated sitework and landscape from the project.
TOTAL DEDUCT ALTERNATE 2 BID AMOUNT _____ **DOLLARS ($_____)**

ADD ALTERNATE 1 – NATIVE SEED AREAS STEWARDSHIP (5 YEARS)
Work in this add alternate consists of establishment and stewardship as outlined in specification section 32 94 00.
TOTAL ADD ALTERNATE 1 BID AMOUNT _____ **DOLLARS ($)**

ADD ALTERNATE 2 – ASPHALT PAVING OF SKILL FEATURES
Work in this add alternate consists of providing an asphalt surface as shown on plan sheet SP-01.
TOTAL ADD ALTERNATE 2 BID AMOUNT _____ **DOLLARS ($_____)**

ADD ALTERNATE 3 – FLY-OVER TABLE TOP BRIDGE
Work in this add alternate consists of all work identified in detail 4 on sheet DT-07.
TOTAL ADD ALTERNATE 3 BID AMOUNT _____ **DOLLARS ($_____)**

BIDDER understands and acknowledges that the preceding TOTAL BASE BID AMOUNT will serve as the basis for comparison of bids.

BID ITEMS

BIDDER hereby certifies that the bid prices for each component of the project will be substantiated by submittal of a detailed cost breakdown of all components of the PROJECT to the ENGINEER prior to release of any payments to the BIDDER for work performed.

BIDDER understands and acknowledges that the bid items shown in this proposal represent a summary of major components of construction required. The bid price for each item shall include the cost of all adjacent or related items that are shown on the plans, called for in the specifications, or are otherwise necessary to provide completely the improvements.

Item	**Value**
Mobilization	$_____
SWPPP Design, Obtain Land Disturbance Permit	$_____
SWPPP Implementation & Maintenance	$_____
SWPPP BMP Removal	$_____
Earthwork & Grading	$_____
Erosion Protection Mat and Blanket	$_____
2” Water Service & Piping	$_____
Electrical Services	$_____
Water Fountains and Hose Bibs	$_____
Site Electrical Conduits, Conductors, & Receptacles	$_____
Parking Lot & Street Lighting Fixtures, Poles, & Bases	$_____
High Mast Lighting Fixtures, Poles, & Bases	$_____
Site Furnishings	$_____
2” BP-2 Asphalt Overlay	$_____
Full Depth Asphalt Pavement	$_____
Full-Depth Pavement Repair (40 Square Yards)	$_____
Class ‘A’ Concrete Sidewalk	$_____
Storm Sewers, Culverts, and Structures	$_____
Sanitary Sewer Pump Station	$_____

Sanitary Sewer Discharge Piping & Structure	$_____
Bicycle Pump Track, including Drainage to Structure SDMH 8	$_____
Children's Bicycle Playground	$_____
Progressive Jumps Area	$_____
Beginner Skills Area	$_____
Flow Lines	$_____
Single-Track Trails	$_____
Dry Stack Boulder Wall Design	$_____
Dry Stack Boulder Wall Installation	$_____
Pedestrian Bridge Design	$_____
Pedestrian Bridge Material	$_____
Pedestrian Bridge Installation	$_____
Creek Bank Grading	$_____
Creek Bank Planting, TRM, Revetment, & Restoration	$_____
Pre-Engineered Restroom Building	$_____
Open-sided Pavilion	$_____
Informational Signage	$_____
Parking & Roadway Signage	$_____
Temporary Tree & Plant Protection	$_____
Amended Topsoil (6” and 2” compost)	$_____
Plantings (trees, shrubs, ornamental grasses, and grasses)	$_____
Groundcovers	$_____
Site Restoration	$_____
Base Bid Total	$_____

UNIT PRICES

BIDDER acknowledges that when changes, additive or deductive, are required in certain portions of the WORK, the following unit prices will be used to compute the value of the change order. BIDDER warrants that the unit prices shown below include the whole cost and expense necessary to furnish and complete installation of each item. Additive change orders will be based on the actual measurement of each item, in place.

UNIT PRICES – DOVER OUTDOOR RECREATION AREA BICYCLE PARK			
Item No.	Item Description	Unit	Price per Unit
1	Earthwork, as required.	CY	$_____
2	Unrippable rock excavation, as required.	CY	$_____
3	Haul-off of contaminated material off-site and legally disposed, as required.	CY	$_____
4	Class 'A' Concrete Sidewalk, including base, compaction, and finish.	SY	$_____
5	Class 'B' Concrete Sidewalk, including, base, compaction, and finish.	SY	$_____
6	Pavement Repair including excavation, disposal, geogrid and crushed stone (or concrete), and asphalt. Contractor must include an allowance in the Base Bid for 40 square yards of Pavement Repair.	SY	$_____
7	BP-2 Asphalt Paving including tack coat and compaction.	TON	$_____
8	Drinking Fountain	EA	$_____
9	Frost-free Hose Bib	EA	$_____
10	1" Water Line, complete and installed.	LF	$_____
11	2" Empty Electrical Conduit, complete and installed.	LF	$_____
12	Acer rubrum 'PNI 0268' (October Glory Red Maple) 3" Cal., B&B	EA	$_____
13	Acer saccharum 'PNI 0285' (Green Mountain Sugar Maple) 3" Cal., B&B	EA	$_____
14	Nyssa sylvatica (Tupelo) 2.5" Cal., B&B	EA	$_____
15	Quercus bicolor (Swamp White Oak) 3" Cal., B&B	EA	$_____
16	Quercus muehlenbergii (Chinkapin Oak) 3" Cal., B&B	EA	$_____
17	Quercus rubra (Northern Red Oak) 3" Cal., B&B	EA	$_____

18	Aesculus pavia (Red Buckeye) 8’ HT., B&B	EA	$_____
19	Amelanchier x grandiflora 'Robin Hill' (Robin Hill Apple Serviceberry) 2” Cal., B&B	EA	$_____
20	Carpinus caroliniana (American Hornbeam) 8’ Ht., B&B, MS 3-5 trunks	EA	$_____
21	Cercis canadensis (Eastern Redbud) 2” Cal., B&B	EA	$_____
22	Cornus florida (Flowering Dogwood) 2” Cal., B&B	AE	$_____
23	Cladrastis kentukea (American Yellowwood) 2” Cal., B&B	EA	$_____
24	Magnolia virginiana (Sweetbay Magnolia) 8’ Ht., B&B, MS 3-5 trunks	EA	$_____
25	Aronia melanocarpa (Snowfire™ Black Chokeberry) #5	EA	$_____
26	Buxus x 'Green Velvet (Green Velvet Boxwood) #5	EA	$_____
27	Hydrangea arborescens 'Abetwo' (Incrediball® Hydrangea) #5	EA	$_____
28	Itea virginica 'Little Henry (Little Henry Sweetspire) #5	EA	$_____
29	Ilex verticillata 'Red Sprite' (Red Sprite Winterberry) #5	EA	$_____
30	Ilex verticillata 'Jim Dandy' (Jim Dandy Winterberry) #5	EA	$_____
31	Rhus aromatica 'Gro-Low' (Gro-Low Fragrant Sumac) #5	EA	$_____
32	Viburnum x burkwoodii (Burkwood Viburnum) #5	EA	$_____
33	Viburnum dentatum 'Synnestvedt' (Arrowwood Viburnum) #5	EA	$_____
34	Bouteloua gracilis (Blue Grama Grass) plug	EA	$_____
35	Schizachyrium scoparium (Little Bluestem) plug	EA	$_____
36	Scottish Links Low Grow Mix; per specification	SY	$_____
37	Bridge Native Mix (Shady): per specification	SY	$_____
38	Meadow Plantings: per specification	SY	$_____
39	BMP Plantings: per specification	SY	$_____
40	Lone Elm Native Mix (Sun - Mowable): per specification	SY	$_____
41	Carex muskingumensis (Palm Sedge) plugs	EA	$_____

42	Carex pensylvanica (Pennsylvania Sedge) plugs	EA	$_____
43	Triticum aestivum x Elymus trachycaulu (Regreen): hydroseed	SY	$_____
46	Double Ground Hardwood Mulch	CY	$_____
47	Chip Seal Connector Trail (south of bridge)	LF	$_____
48	Chip Seal Technical Trail	LF	$_____
49	Natural Surface Technical Trail	LF	$_____
50	Crusher Fine Technical Trail	LF	$_____

The OWNER shall award the project to the lowest responsive, responsible BIDDER based on a comparison of the TOTAL BASE BID AMOUNT. Based upon available funding, the OWNER will choose to accept either Add Alternates or Deduct Alternates, which will be accepted in the order of TOTAL ADD ALTERNATE 1 BID, TOTAL ADD ALTERNATE 2 BID, and TOTAL ADD ALTERNATE 3 BID or TOTAL DEDUCT ALTERNATE 1 BID and TOTAL DEDUCT ALTERNATE 2 BID, with the contract price adjusted by the bid amount for the item(s) so elected. Award of the project shall be at the sole discretion of the OWNER.

The BIDDER agrees that this bid shall be good and may not be withdrawn for a period of sixty (60) consecutive calendar days after the scheduled closing time for receiving bids.

Respectfully submitted,

ATTEST:

_____
Name of Contractor

By_____ By_____

_____ _____

Title Title

_____

(SEAL)
(If Bid is a Corporation)

_____
Address (Including Zip Code)

END OF SECTION 00 41 13

Section 00 43 13 - Bid Bond

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned _____

as Surety, are hereby held and firmly bound unto the CITY OF JOPLIN, MISSOURI, as OWNER, in the penal sum of _____

_____DOLLARS ($_____

_____) for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, successors and assigns.

Signed this _____day of_____, 20__.

The Condition of the above obligation is such that whereas the principal has submitted to the CITY OF JOPLIN, MISSOURI a certain BID, attached hereto and hereby made a part hereof to enter into a contract in writing, for the: Dover Outdoor Recreation Area Bicycle Park

NOW, THEREFORE,

(a) If said BID shall be rejected, or

(b) If said BID shall be accepted and the Principal shall execute and deliver a contract in the Form of Contract attached hereto (properly completed in accordance with said BID) and shall furnish BONDS for his faithful performance of said contract, and for the payment of all persons performing labor or furnishing materials in connection therewith and shall in all other respects perform the agreement created by the acceptance of said BID.

then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its BOND shall be in no way impaired, diminished, or affected by any extension of the time within which the OWNER may reject or accept the Principal's BID, and Surety does hereby waive notice of any extension.

IN WITNESS WHEREOF, the Principal and Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

_____(L.S.)
Principal

_____

Surety

By_____

IMPORTANT – Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570, as amended) and be authorized to transact business in the state where the project is located.

END OF SECTION 00 43 13

Section 00 45 13 - Contractor Statement of Qualifications

ARTICLE 1—GENERAL INFORMATION

1.01 Provide contact information for the Business:

Legal Name of Business:			
Corporate Office			
Name:		Phone number:	
Title:		Email address:	
Business address of corporate office:			
Local Office			
Name:		Phone number:	
Title:		Email address:	
Business address of local office:			

1.02 Provide information on the Business's organizational structure:

Form of Business:	☐ Sole Proprietorship ☐ Partnership ☐ Corporation
☐ Limited Liability Company ☐ Joint Venture comprised of the following companies:	
	1.
	2.
	3.
Provide a separate Qualification Statement for each Joint Venturer.	

Date Business was formed:		State in which Business was formed:	
Is this Business authorized to operate in the Project location?	☐ Yes ☐ No ☐ Pending		

1.03 Identify all businesses that own Business in whole or in part (25% or greater), or that are wholly or partly (25% or greater) owned by Business:

Name of business:		Affiliation:	
Address:			
Name of business:		Affiliation:	
Address:			
Name of business:		Affiliation:	
Address:			

1.04 Provide information regarding the Business's officers, partners, and limits of authority.

Name:		Title:	
Authorized to sign contracts: ☐ Yes ☐ No		Limit of Authority:	$
Name:		Title:	
Authorized to sign contracts: ☐ Yes ☐ No		Limit of Authority:	$
Name:		Title:	
Authorized to sign contracts: ☐ Yes ☐ No		Limit of Authority:	$
Name:		Title:	

ARTICLE 2—LICENSING

2.01 Provide information regarding licensure for Business:

Name of License:			
Licensing Agency:			
License No:		Expiration Date:	
Name of License:			
Licensing Agency:			
License No:		Expiration Date:	

ARTICLE 3—DIVERSE BUSINESS CERTIFICATIONS

3.01 Provide information regarding Business's Diverse Business Certification, if any. Provide evidence of current certification.

Certification		Certifying Agency	Certification Date
☐ Disadvantaged Business Enterprise			
☐ Minority Business Enterprise			
☐ Woman-Owned Business Enterprise			
☐ Small Business Enterprise			
☐ Disabled Business Enterprise			
☐ Veteran-Owned Business Enterprise			
☐ Service-Disabled Veteran-Owned Business			
☐ HUBZone Business (Historically Underutilized) Business			
☐ Other			
☐ None			

ARTICLE 4—SAFETY

4.01 Provide information regarding Business's safety organization and safety performance.

Name of Business's Safety Officer:	

Safety Certifications		
Certification Name	Issuing Agency	Expiration

4.02 Provide Worker's Compensation Insurance Experience Modification Rate (EMR), Total Recordable Frequency Rate (TRFR) for incidents, and Total Number of Recorded Manhours (MH) for the last 3 years and the EMR, TRFR, and MH history for the last 3 years of any proposed Subcontractor(s) that will provide Work valued at 10% or more of the Contract Price. Provide documentation of the EMR history for Business and Subcontractor(s).

Year									
Company	EMR	TRFR	MH	EMR	TRFR	MH	EMR	TRFR	MH

ARTICLE 5—CONSTRUCTION EXPERIENCE

5.01 Provide information that will identify the overall size and capacity of the Business.

Average number of current full-time employees:	
Estimate of revenue for the current year:	
Estimate of revenue for the previous year:	

5.02 Provide information regarding the Business's previous contracting experience.

Years of experience with projects like the proposed project:				
As a general contractor:		As a joint venturer:		
Has Business, or a predecessor in interest, or an affiliate identified in Paragraph 1.03:				
Been disqualified as a bidder by any local, state, or federal agency within the last 5 years? ☐ Yes ☐ No				
Been barred from contracting by any local, state, or federal agency within the last 5 years? ☐ Yes ☐ No				
Been released from a bid in the past 5 years? ☐ Yes ☐ No				
Defaulted on a project or failed to complete any contract awarded to it? ☐ Yes ☐ No				
Refused to construct or refused to provide materials defined in the contract documents or in a change order? ☐ Yes ☐ No				

Been a party to any currently pending litigation or arbitration? ☐ Yes ☐ No
Provide full details in a separate attachment if the response to any of these questions is Yes.

5.03 List all projects currently under contract in Schedule A and provide indicated information.

5.04 List a minimum of three projects completed in the last 5 years in Schedule B and provide indicated information to demonstrate the Business's experience with projects similar in type and cost of construction.

Schedule B must include no less than three projects containing each of the following elements:

A. Bicycle pump track
B. Technical mountain bike trails of the nature shown on the Drawings
C. Pre-engineered building
D. Prefabricated bridge, including deep foundations

Bidder may elect to provide information on projects performed by its subcontractors.

5.05 In Schedule C, provide information on key individuals whom Business intends to assign to the Project. Provide resumes for those individuals included in Schedule C. Key individuals include the Project Manager and Project Superintendent. Resumes may be provided for Business's key leaders as well.

In the event the Bidder proposes to use projects performed by its subcontractors to fulfil the requirements of Paragraph 5.04, the Bidder must additionally provide information on its subcontractor's key individuals.

ARTICLE 6—REQUIRED ATTACHMENTS

6.01 Provide the following information with the Statement of Qualifications:

A. If Business is a Joint Venture, separate Qualifications Statements for each Joint Venturer, as required in Paragraph 1.02.

B. Diverse Business Certifications if required by Paragraph 3.01.

C. Attachments providing additional information as required by Paragraph 5.02.

D. Schedule A (Current Projects) as required by Paragraph 5.03.

E. Schedule B (Previous Experience with Similar Projects) as required by Paragraph 5.04.

F. Schedule C (Key Individuals) and resumes for the key individuals listed, as required by Paragraph 5.05.

G. Additional items as pertinent.

This Statement of Qualifications is offered by:

Business: _____
(typed or printed name of organization)

By: _____
(individual's signature)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Date: _____
(date signed)

(If Business is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest: _____
(individual's signature)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Address for giving notices:

_____

_____

_____

Designated Representative:

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Address:

_____

_____

_____

Phone: _____

Email: _____

Schedule A—Current Projects

Name of Organization				
Project Owner		Project Name		
General Description of Project				
Project Cost		Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager
Name				

Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner		Project Name		
General Description of Project				
Project Cost		Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager
Name				

Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner		Project Name		
General Description of Project				
Project Cost		Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager
Name				

Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Schedule B—Previous Experience with Similar Projects

Name of Organization				
Project Owner		Project Name		
General Description of Project				
Project Cost		Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager
Name				

Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)

	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner		Project Name		
General Description of Project				
Project Cost		Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager
Name				

Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)

	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner		Project Name		
General Description of Project				
Project Cost		Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager
Name				

Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)

	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Schedule B—Previous Experience with Similar Projects

Name of Organization				
Project Owner		Project Name		
General Description of Project				
Project Cost		Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager
Name				

Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)

	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner		Project Name		
General Description of Project				
Project Cost		Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager
Name				

Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)

	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner		Project Name		
General Description of Project				
Project Cost		Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager
Name				

Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)

	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Schedule C—Key Individuals

Project Manager			
Name of individual			
Years of experience as project manager			
Years of experience with this organization			
Number of similar projects as project manager			
Number of similar projects in other positions			
Current Project Assignments			
Name of assignment		Percent of time used for this project	Estimated project completion date
Reference Contact Information (listing names indicates approval to contact named individuals as a reference)			
Name		Name	
Title/Position		Title/Position	
Organization		Organization	
Telephone		Telephone	
Email		Email	
Project		Project	
Candidate's role on project		Candidate's role on project	

Project Superintendent			
Name of individual			
Years of experience as project superintendent			
Years of experience with this organization			
Number of similar projects as project superintendent			
Number of similar projects in other positions			
Current Project Assignments			
Name of assignment		Percent of time used for this project	Estimated project completion date
Reference Contact Information (listing names indicates approval to contact named individuals as a reference)			
Name		Name	
Title/Position		Title/Position	
Organization		Organization	
Telephone		Telephone	
Email		Email	
Project		Project	
Candidate's role on project		Candidate's role on project	

Safety Manager			
Name of individual			
Years of experience as project manager			
Years of experience with this organization			
Number of similar projects as project manager			
Number of similar projects in other positions			
Current Project Assignments			
Name of assignment		Percent of time used for this project	Estimated project completion date
Reference Contact Information (listing names indicates approval to contact named individuals as a reference)			
Name		Name	
Title/Position		Title/Position	
Organization		Organization	
Telephone		Telephone	
Email		Email	
Project		Project	
Candidate's role on project		Candidate's role on project	

Quality Control Manager			
Name of individual			
Years of experience as project superintendent			
Years of experience with this organization			
Number of similar projects as project superintendent			
Number of similar projects in other positions			
Current Project Assignments			
Name of assignment		Percent of time used for this project	Estimated project completion date
Reference Contact Information (listing names indicates approval to contact named individuals as a reference)			
Name		Name	
Title/Position		Title/Position	
Organization		Organization	
Telephone		Telephone	
Email		Email	
Project		Project	
Candidate's role on project		Candidate's role on project	

Section 00 45 19 - Anti-Collusion Statement

STATE OF MISSOURI CITY/COUNTY OF _____

_____

being first duly sworn, deposes and says that he/she is

_____

Title of Person Signing

of_____

_____

Name of Bidder

that all statements made and facts set out in the proposal for the ARPA Sanitary Sewer Renovations project are true and correct; and the bidder (The person, firm, association, or corporation making said bid) has not, 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 said bid or any contract which may result from its acceptance.

Affiant further certifies that bidder is not financially interested in, or financially affiliated with, any other bidder for the above project.

BY_____

BY_____

BY_____

SWORN to before me this _____ day of_____ 20 _____.

_____

Notary Public

My Commission Expires _____

END OF SECTION 00 45 19

Section 00 45 50 - Affidavit of Compliance with Section 285.500 RSMo, Work Authorization

Affidavit of Compliance with Section 285.500, RSMo., et seq.
For All Agreements In Excess Of $5,000.00.
Effective January 1, 2009

STATE OF _____)
) ss.
COUNTY OF _____)

Before me, the undersigned Notary Public, in and for the County of _____, State of _____, personally appeared_____ *(Name)* who is _____ *(Title)* of _____ *(Name of company),* a *(circle one)* corporation, partnership, sole proprietorship, limited liability company, and is competent and authorized to make this affidavit, and being duly sworn upon oath deposes and says as follows:

(1) that said company is enrolled in and participates in a federal work authorization program with respect to the employees working in connection with the contracted services; and

(2) that said company does not knowingly employ any person who is an unauthorized alien in connection with the contracted services.

The terms used in this affidavit shall have the meaning set forth in Section 285.500 RS.Mo., et seq.

Documentation of participation in a federal work authorization program is attached to this affidavit.

_____
Signature

Print Name: _____

Subscribed and sworn to before me this ____ day of _____

_____
Notary Public

My commission expires: _____

SECTION 00 45 51 - Affidavit of Compliance with Section 292.675 RSMo, OSHA Training

Affidavit of Compliance with Section 292.675 R.S.Mo., Et Seq.
For Any Public Works Project Contract Effective
August 28, 2009

STATE OF _____)
) ss.
COUNTY OF _____)

Before me, the undersigned Notary Public, in and for the County of _____, State of _____, personally appeared _____*(Name)* who is _____ *(Title)* of _____ *(Name of company),*(a corporation), (a partnership), (a sole proprietorship), (a limited liability company), and is competent and authorized to make this affidavit, and being duly sworn upon oath deposes and says as follows:

(1) that said company has verified the completion of a 10-hour construction safety program with respect to the employees working in connection with the contracted services.

The terms used in this affidavit shall have the meaning set forth in Sections 292.675 R.S.Mo., et seq.

_____
Signature

Name: _____

Subscribed and sworn to before me this _____ day of _____, _____.

_____
Notary Public

My commission expires: _____

Section 00 51 00 - Notice of Award

TO: _____

_____

_____

_____

PROJECT Description: Dover Outdoor Recreation Area Bicycle Park

The OWNER has considered the BID submitted by you on _____, 2024 for the above-described WORK in response to its Invitation to Bid, and Information for Bidders.

You are hereby notified that your BID has been accepted in the amount of _____ _____DOLLARS ($_____).

You are required by the Information for Bidders to execute the Agreement and furnish the required CONTRACTOR'S PERFORMANCE BOND, PAYMENT BOND, and certificates of insurance within ten (10) calendar days from the date of this Notice to you.

If you fail to execute said Agreement and to furnish said Bonds within ten (10) days from the date of this Notice, said OWNER will be entitled to consider all your rights arising out of the OWNER'S acceptance of your BID as abandoned and as a forfeiture of your BID BOND. The OWNER will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this NOTICE OF AWARD to the

OWNER. Dated this _____ day of_____,2024.

OWNER:

THE CITY OF JOPLIN, MISSOURI

By_____

Title: Director of Public Works

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE OF AWARD is hereby

acknowledged By _____

Title:_____

this the _____ day of _____, 2024

END OF SECTION 00 51 00

Section 00 52 00 - Agreement Between Owner and Contractor

AGREEMENT
BETWEEN
CITY OF JOPLIN
AND

CITY		CONTRACTOR	
CITY OF JOPLIN **602 S. MAIN STREET** **JOPLIN, MO 64801**		Name: Address:	
Attention:		Attention:	
Department:		Phone:	Fax:
Phone:	Fax:		

THIS AGREEMENT made and entered into this _____ day of _____, 20____, by the parties identified above.

WITNESSETH: That whereas, the Contractor has become the lowest responsible bidder for furnishing the supervision, labor, tools, equipment, materials and supplies and for constructing the following City improvements:

DOVER OUTDOOR RECREATION AREA BICYCLE PARK

The City and Contractor agree to the following:

1. Manner and Time for Completion. The Contractor will furnish all supervision, labor, tools, equipment, materials and supplies necessary to perform, and to perform said work at Contractor's own expense in accordance with the contract documents and any applicable City ordinances and state and federal laws within 270 calendar days from the date Contractor is ordered to proceed, which order shall be issued by the Director of Public Works within 30 days after the date of this contract.

2. Prevailing Wages. All labor utilized in the construction of the aforementioned improvements shall be paid a wage of no less than the "prevailing hourly rate of wages" for work of a similar character in this locality, as established and amended at any time by the Department of Labor and Industrial Relations of the State of Missouri. At any time, the contractor is found to not have paid prevailing wages, the contractor shall forfeit as a penalty to the city one hundred dollars for each underpaid worker employed, for each calendar day, or portion thereof such worker is paid less than the said stipulated rates for any work done under this contract.

3. Insurance Requirements. Without limiting any of the other obligations or liabilities of the Contractor, the Contractor shall secure and maintain at its own cost and expense, throughout the duration of this Contract and until the work is completed and accepted by the City of Joplin, insurance of such types and in such amounts as may be necessary to protect it and the interests of the City of Joplin against all hazards or risks of loss as hereunder specified or which may arise out of the performance of the Contract Documents. The form and limits of such insurance, together with the underwriter thereof in each case, are subject to approval by the City of Joplin. Regardless of such approval, it shall be the responsibility of the contractor to always maintain adequate insurance coverage during the term of the Contract. Failure of the Contractor to maintain coverage shall not relieve it of any contractual responsibility or obligation or liability in general or under the Contract Documents.

The certificates of insurance, including evidence of the required endorsements hereunder or the policies, shall be filed with the City within ten (10) days after the date of the receipt of Notice of Award of the Contract to the Contractor and prior to the start of work. All insurance policies shall require that the insurance company in question provide thirty (30) days written notice prior to modification or cancellation of such insurance. Such notices shall be mailed, certified mail, return receipt requested, to:

City of Joplin - Public Works, 602 S. Main Street, Joplin, MO 64801

Such policies shall name the City as an additional insured, with limits of liability not less than the sovereign immunity limits for Missouri public entities calculated by the Missouri Department of Insurance as of January 1 each calendar year and published annually in the Missouri Register pursuant to Section 537.610, RSMo. (See, http://insurance.mo.gov/industry/sovimmunity.php)

As of January 1, 2024, the minimum coverage for the insurance referred to herein shall be as set out below:

a. Workers' Compensation.... Statutory coverage per RSMo 287.010 et seq

Employer's Liability...$1,000,000.00

b. Commercial General Liability Insurance, including coverage for Premises, Operations, Products and Completed Operations, Contractual Liability, Broad Form Property Damage, Independent Contractors, Explosion, Collapse, and Underground Property Damage and endorsed for blasting if blasting required. Such coverage shall apply to bodily injury and property damage on an “Occurrence Form Basis” with limits of at least Three Million Three Hundred Seventy Thousand One Hundred Thirty Seven and no/100 Dollars ($3,370,137.00) for all claims arising out of a single accident or occurrence and at least Five Hundred Five Thousand Five Hundred Twenty and no/100 Dollars ($505,520.00) with respect to injuries and/or death of any one person in a single occurrence and an amount not less than at least $1,000,000 for all claims to property arising out of a single occurrence and at least $100,000 to any one owner with respect to damages to property. Contractor agrees that the proceeds of such insurance policy shall first be used to pay any award, damages, costs, and/or attorneys’ fees incurred by or assessed against City, its employees, officers and agents, before payment of any award, damages, costs or attorneys’ fees of Contractor, its employees, officers or agents. Contractor agrees to cause its insurer to name City as an additional insured on such insurance policy, including the City as an

additional insured for coverage under its products-completed operations hazard, and said policy shall be primary and noncontributory.

c. Automobile Liability Insurance covering bodily injury and property damage for owned, non-owned and hired vehicles, with limits of at least Three Million Three Hundred Seventy Thousand One Hundred Thirty Seven and no/100 Dollars ($3,370,137.00) for all claims arising out of a single accident or occurrence and at least Five Hundred Five Thousand Five Hundred Twenty and no/100 Dollars ($505,520.00) with respect to injuries and/or death of any one person in a single accident or occurrence.

d. Owner's and Contractor's Protective Liability Insurance to protect the City, its agents, servants and employees from claims which may arise from the performance of this Contract, with limits of at least Three Million Three Hundred Seventy Thousand One Hundred Thirty Seven and no/100 Dollars ($3,370,137.00) for all claims arising out of a single accident or occurrence and at Five Hundred Five Thousand Five Hundred Twenty and no/100 Dollars ($505,520.00) with respect to injuries and/or death of any one person in a single accident or occurrence.

The Owner's and Contractor's Protective Liability Insurance must:

(1) Be a separate policy with the named insured being: The City of Joplin, and

(2) Contain an endorsement that disclaims coverage for any claim barred by the doctrines of sovereign immunity or official immunity, except attorney's fees and other litigation costs incurred in defending a claim. Nothing contained in this policy (or this endorsement thereto) shall constitute any waiver of whatever kind of these defenses or sovereign immunity or official immunity for any monetary amount whatsoever.

e. Builders Risk Insurance for contracts involving unoccupied structures. The Contractor shall secure All Risk Builder's Risk Insurance. Unless specifically authorized by the City, the amount of such insurance shall not be less than the total contract price.

f. Subcontracts. In case any or all of this work is sublet, the Contractor shall require the subcontractor to procure and maintain all insurance required in subparagraphs (a), (b) and (c) hereof and in like amounts. Contractor shall require any and all subcontractors with whom it enters into a contract to perform work on this project to protect the City of Joplin through insurance against applicable hazards or risks and shall, upon request of the City, provide evidence of such insurance.

g. Notice. The Contractor and/or subcontractor shall furnish the City prior to beginning the work, the policy as specified in subparagraph (d), and satisfactory proof of carriage of all the insurance required by this contract, with the provision that policies shall not be canceled, modified or non-renewed without thirty (30) days written notice to the City of Joplin.

h. Legislative or Judicial Changes. In the event the scope or extent of the City's tort liability as a governmental entity as described in Section 537.600 through 537.650 RSMo is broadened or increased during the term of this agreement by legislative or judicial action, the City may require Contractor, upon 10 days written notice, to execute a contract addendum whereby the Contractor agrees to provide, at a price not exceeding Contractor's actual increased premium cost, additional liability insurance coverage as the City may require to protect the City from increased tort liability exposure as the result of such legislative or judicial action. Any such additional insurance coverage shall be evidenced by an appropriate certificate of insurance and shall take effect within the time set forth in the addendum.

4. Performance, Labor, and Materials Payment Bond: The Contractor shall furnish a Performance Bond and a Labor and Materials Payment Bond with surety approved by the City and on the forms approved by the City, each bond shall be in the amount of _____ (_____) (full amount of contract) conditioned upon the full and faithful performance of all major terms and conditions of this contract and payment of all labor and material suppliers. It is further mutually agreed between the parties hereto that if at any time after the execution of this agreement and the surety bond(s) hereto attached for its faithful performance and payment of labor and material suppliers, the City shall deem the surety or sureties upon such bond(s) to be unsatisfactory, or if, for any reason, such bond(s) ceases to be adequate to cover the performance of the work, the Contractor shall, at its expense, within five (5) days after the receipt of notice from the City to do so, furnish an additional bond or bonds, in such form and amount, and with such surety or sureties as shall be satisfactory to the City. In such event no further payment to the Contractor shall be deemed to be due under this contract until such new or additional security for the faithful performance of the work and the payment of labor and material suppliers shall be furnished in a manner and form satisfactory to the City. The corporate surety on any performance or payment bond must be licensed by the State of Missouri and if the required bond exceeds $25,000.00 must be listed in United States Treasury Circular 570.

5. Certification Regarding Disbarment, Eligibility, Indictments, Convictions or Civil Judgements for all Federal Aid Projects: By signing and submitting the bid, the president or authorized official of the bidder, under penalty of perjury under the laws of the USA, shall certify that, except as noted in the exceptions, the company or any person associated therewith in the capacity of owner, partner, director, officer, principal investor, project director, manager, auditor or any position involving the administration of federal funds: (Reference can be made to "The System for Award Management" website as a helpful resource).

a. Is not currently under suspension, debarment, voluntary exclusion or determination of ineligibility by any federal agency.

b. Has not been suspended, debarred, voluntarily excluded or determined ineligible by any federal agency within the past three years.

c. Does not have a proposed debarment or suspension pending.

d. Has not been indicted, convicted or had a civil judgment rendered against any of the listed parties by a court of competent jurisdiction in any matter involving fraud or official misconduct within the past three years.

5.1 If there are any exceptions, the bidder shall submit the exceptions on company letterhead, signed by the bidder and inserted inside the bid submitted. Exceptions will not necessarily result in denial of award, but will be considered in determining bidder responsibility. For any exception noted, the bidder shall indicate to whom it applies, the initiating agency, and dates of action. Providing false information may result in criminal prosecution or administrative sanctions.

5.2 By signing the contract, the contractor shall further certify that all related subcontracts of $25,000 shall comply with this requirement. This includes all subcontractors, material suppliers and vendors.

6. Contractor's responsibility for subcontractors. The Contractor shall be as fully responsible to the City for the acts and omissions of its subcontractors, and of persons either directly or indirectly employed by them, as Contractor is for the acts and omissions of persons it directly employs. Contractor shall cause appropriate

provisions to be inserted in all subcontracts relating to this work, to bind all subcontractors to Contractor by all the terms herein set forth, and insofar as applicable to the work of subcontractors and to give Contractor the same power regarding termination of any subcontract as the City may exercise over Contractor under any provisions of this contract. Nothing contained in this contract shall create any contractual relation between the subcontractor and the City or between any subcontractors.

7. General Independent Contractor Clause. This agreement does not create an employee/employer relationship between the parties. It is the parties' intention that the Contractor will be an independent contractor and not the City's employee for all purposes, including, but not limited to, the application of the Fair Labor Standards Act minimum wage and overtime payments, Federal Insurance Contribution Act, the Social Security Act, the Federal Unemployment Tax Act, the provisions of the Internal Revenue Code, Missouri Revenue and Taxation laws, Missouri Workers' Compensation and Unemployment Insurance laws. The Contractor will retain sole and absolute discretion in the judgment of the manner and means of carrying out the Contractor's activities and responsibilities hereunder. The Contractor agrees that it is a separate and independent enterprise from the public employer, that it has a full opportunity to find other business, that it has made its own investment in its business, and that it will utilize a high level of skill necessary to perform the work. This agreement shall not be construed as creating any joint employment relationship between the Contractor and the City, and the City will not be liable for any obligation incurred by the Contractor, including but not limited to unpaid minimum wages and/or overtime premiums.

8. Liquidated Damages. Time of completion of work by the Contractor is of the essence. Should Contractor, or in the case of default, the surety, fail to complete the work within the time specified in the contract, or within such extra time as may be allowed in accordance with City of Joplin Standard Specifications, Division 0000, General Requirements and Provisions, Section 0400.19, (http://mo-joplin.civicplus.com/DocumentCenter/View/3460) Contractor (or surety) shall be liable to the City in the amount of $500.00 per day for each and every calendar day that the contract remains uncompleted after the time allowed for completion, as liquidated damages, and not as a penalty, it being stipulated that actual damages to the City and the public arising from Contractor's failure to timely complete the work would be difficult, if not impossible, to ascertain. The amount assessed as liquidated damages may be withheld from any moneys otherwise due to Contractor from the City.

9. Termination. The City reserves the right to terminate this contract by giving at least five (5) days prior written notice to the Contractor, without prejudice to any other rights or remedies of the City should the Contractor be adjudged a bankrupt, or if Contractor should make a general assignment for the benefit of its creditors, or if a receiver should be appointed for Contractor or for any of its property, or if Contractor should persistently or repeatedly refuse or fail to supply enough properly skilled workmen or proper material, or if Contractor should refuse or fail to make prompt payment to any person supplying labor or materials for the work under the contract, or persistently disregard instructions of the City or fail to observe or perform any provisions of the contract.

10. City's Right to Proceed. In the event this contract is terminated pursuant to Paragraph 8, then the City may take over the work and prosecute the same to completion, by contract or otherwise, and Contractor and its sureties shall be liable to the City for any costs over the amount of this contract thereby occasioned by the City. In any such case, the City may take possession of, and utilize in completing the work, such materials, appliances and structures as may be on the work site and are necessary for completion of the work. The foregoing provisions are in addition to, and not in limitation of, the rights of the City under any other provisions of the contract, city ordinances, and state and federal laws.

11. Termination for Convenience of City. The City shall have the right at any time by written notice to

Contractor to terminate and cancel this contract, without cause, for the convenience of the City, and Contractor shall immediately stop work. In such event City shall not be liable to Contractor except for payment for actual work performed prior to such notice in an amount proportionate to the completed contract price and for the actual costs of preparations made by Contractor for the performance of the cancelled portions of the contract, including a reasonable allowance of profit applicable to the actual work performed and such preparations. Anticipatory profits and consequential damages shall not be recoverable by Contractor.

12. Guards and Lights. The Contractor agrees that during the performance of said work, adequate barricades, guards and warning signs, lights or devices consistent with the requirements contained in the Manual on Uniform Traffic Control Devices shall be provided by Contractor during construction.

13. Liability and Indemnity.

a. In no event shall the City be liable to the Contractor for special, indirect, or consequential damages, except those caused by the City's gross negligence or willful or wanton misconduct arising out of or in any way connected with a breach of this contract. The maximum liability of the City shall be limited to the amount of money to be paid or received by the City under this contract.

b. The Contractor shall defend, indemnify and save harmless the City, its elected or appointed officials, agents and employees from and against any and all liability, suits, damages, costs (including attorney fees), losses, outlays and expenses from claims in any manner caused by, or allegedly caused by, or arising out of, or connected with, this contract, or the work or any subcontract thereunder (the Contractor hereby assuming full responsibility for relations with subcontractors), including, but not limited to, claims for personal injuries, death, property damage, or for damages from the award of this contract to Contractor, notwithstanding any possible negligence, whether sole or concurrent, on the part of the City, its officials, agents and employees.

c. The Contractor shall indemnify and hold the City harmless from all wages or overtime compensation due any employees in rendering services pursuant to this agreement or any subcontract, including payment of reasonable attorneys' fees and costs in the defense of any claim made under the Fair Labor Standards Act, the Missouri Prevailing Wage Law or any other federal or state law.

d. The indemnification obligations of Contractor hereunder shall not be limited by any limitations as to the amount or type of damages, compensation or benefits payable by or for the Contractor, under any federal or state law, to any person asserting the claim against City, its elected or appointed officials, agents and employees, for which indemnification is sought.

e. The indemnification obligations herein shall not negate, abridge or reduce in any way any additional indemnification rights of the City, its elected or appointed officials, agents and employees, which are otherwise available under statute, or in law or equity.

f. Contractor affirms that it has had the opportunity to recover the costs of the liability insurance required in this agreement in its contract price. Contractor's obligation under this agreement to defend, indemnify, and hold harmless any person from that person's own negligence or wrongdoing is limited to the coverage and limits of the applicable insurance required of the Contractor under this agreement.

g. The Contractor shall indemnify and hold the City harmless for any penalties, fines, fees or costs, including costs of defense, which are charged or assessed by any Federal, state or local agency including, but not limited to, Environmental Protection Agency or Department of Natural Resources.

14. Payment for Labor and Materials. The Contractor agrees and binds itself to pay for all labor done, and

for all the materials used in the construction of the work to be completed pursuant to this contract.

15. Payment. The City will pay the Contractor in accordance with the rate set forth in the contract documents on file in the Public Works Department and by this reference made a part hereof, which shall constitute full and complete compensation for the Contractor's work provided hereunder. Such compensation will be paid in progress payments (less five (5) percent retainage), as established by the City, subject to receipt of a requisition for payment and a statement of work provided by the Contractor and agreement by both the City and the Contractor that the Contractor has fully performed the work to be paid for in such progress payments in conformance with the contract. If the City or the architect or engineer determines that a higher rate of retainage is required to ensure performance of the contract, the City may withhold up to ten (10) percent retainage until the work is fully completed and accepted by the City.

16. Contract Documents. The contract documents shall consist of the following:

a. This Contract
b. All Change Orders
c. Bid Plans and Specifications
d. City of Joplin Standard Specifications (Latest Revised Edition)
e. Invitation to Bid
f. Instructions to Bidders
g. Bid
h. Contractors Statement of Qualifications
i. Anti-Collusion Statement
j. Agreement
k. Notice of Award
l. Notice to Proceed
m. Performance Bond
n. Payment Bond (Labor and Materials)
o. General Conditions of Contract
p. Supplemental General Conditions
q. All Addenda

Notice to Contractors: This contract, together with the other documents enumerated in this paragraph, forms the contract between the parties. These documents are as fully a part of the contract as if attached hereto or repeated herein. The Contractor agrees to perform all of the work described in the contract documents and to comply with the terms and conditions defined therein for a total sum of _____ ($_____) dollars, said amount being subject to any approved addenda or change order.

17. Subsurface Conditions. Contractor agrees that information contained in the published reports and public actions of the Missouri Division of Geology and Land Survey shall be conclusive and binding upon the Contractor as to what subsurface conditions at the job site are reasonably anticipated or reasonably foreseeable. Contractor acknowledges and agrees that it shall not be entitled to any adjustment in the Contract Sum or Contract Times for any concealed condition of any nature, including but not limited to unknown physical conditions of an unusual nature which differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, in addition to the information contained in the published reports and public actions of the Missouri Division of Geology and Land Survey. Contractor recognizes that it has assumed the risks of concealed conditions and is being compensated for assuming these risks.

18. Conflict of Interest. In accepting this contract, Contractor certifies that no member or officer of its firm or corporation is an officer or employee of the City of Joplin, Missouri, or any of its boards or agencies, and further that no officer or employee of the City has any financial interest, direct or indirect, in this contract. All

applicable federal regulations and provisions of R.S.Mo. Section 105.450 et seq. shall not be violated.

19. Assignment. The Contractor shall not assign any interest in this contract, and shall not transfer any interest in the same (whether by assignment or novation), without prior written consent of the City thereto, provided, however, that claims for money due or to become due to the Contractor from the City under this Contract may be assigned to a bank, trust company, or other financial institution without such approval. Notice of such assignment or transfer shall be furnished in writing promptly to the City and the bond surety. Any such assignment is expressly subject to all rights and remedies of the City under this agreement, including the right to change or delete activities from the Contract or to terminate the same as provided herein, and no such assignment shall require the City to give any notice to any such assignee of any actions which the City may take under this agreement.

20. Nondiscrimination. The Contractor agrees in the performance of this contract not to discriminate on the ground or because of race, creed, color, national origin or ancestry, sex, religion, handicap, age, status as a protected veteran or status as a qualified individual with a disability, or political opinion or affiliation, against any employee of Contractor or applicant for employment and shall include a similar provision in all subcontracts let or awarded hereunder. The parties hereby incorporate the requirements of 41 C.F.R. §§ 60-1.4(a)(7), 29 C.F.R. Part 471, Appendix A to Subpart A, 41 C.F.R. § 60-300.5(a)ii and 41 C.F.R. § 60-741.5(a), if applicable.

a. This contractor and subcontractor shall abide by the requirements of 41 C.F.R. § 60-300.5(a). This regulation prohibits discriminations against qualified protected veterans and requires affirmative action by covered prime contractors and subcontractors to employ and advance in employment qualified protected veterans.

b. This contractor and subcontractor shall abide by the requirements of 41 C.F.R. § 60-741.5(a). This regulation prohibits discrimination against qualified individuals on the basis of disability and requires affirmative action by covered prime contractors and subcontractors to employ and advance in employment qualified individuals with disabilities.

21. Nonresident/Foreign Contractors. The Contractor shall procure and maintain during the life of this contract:

a. If the Contractor is a foreign corporation, a certificate of authority to transact business in the State of Missouri from the Secretary of State, unless exempt pursuant to the provisions of Section 351.570 R.S.Mo.

b. A certificate from the Missouri Director of Revenue evidencing compliance with the transient employer financial assurance law, unless exempt pursuant to the provisions of Section 285.230 RSMo.

22. Notices. All notices required or permitted hereinunder and required to be in writing may be given by FAX or by first class mail addressed to City and Contractor at the addresses shown above. The date of delivery of any notice given by mail shall be the date falling on the second full day after the day of its mailing. The date of delivery of notice by FAX transmission shall be deemed to be the date transmission occurs, except where the transmission is not completed by 5:00 p.m. on a regular business day at the terminal of the receiving party, in which case the date of delivery shall be deemed to fall on the next regular business day for the receiving party.

23. Records and Audits. The Contractor shall maintain accounts and records, including personnel, property, and financial records, adequate to identify and account for all costs pertaining to the Contract and such other records as may be deemed necessary by the City to assure proper accounting for all project funds. These records will be made available for audit purposes to the City or any authorized representative and will be retained for three years after the expiration of this Contract.

24. Authorized Employees. Contractor acknowledges that Section285.530, RSMo, prohibits any business entity or employer from knowingly employing, hiring for employment, or continuing to employ an unauthorized alien to perform work within the State of Missouri. Contractor therefore covenants that is not knowingly in violation of subsection 1 or Section 285.530, RSMo, and that it will not knowingly employ, hire for employment, or continue to employ any unauthorized aliens to perform work on the Project, and that its employees are lawfully to work in the United States.

25. Interest of Contractor and Employees. The Contractor covenants that he/she presently has no interest and shall not acquire interest, direct or indirect, in the study area or any parcels therein or any other interest which would conflict in any manner or degree with the performance of his services hereunder. The Contractor further covenants that in the performance of this Contract, no person having any such interest shall be employed.

26. Interest of Members of a City. No member of the governing body of the City and no other officer, employee, or agent of the City who exercises any functions or responsibilities in connection with the planning and carrying out of the program, shall have any personal financial interest, direct or indirect, in this Contract, and the Contractor shall take appropriate steps to assure compliance.

27. Interest of Other Local Public Officials. No member of the governing body of the locality and no other public official of such locality, who exercises any functions or responsibilities in connection with the planning and carrying out of the program, shall have any personal financial interest, direct or indirect, in this Contract, and the Contractor shall take appropriate steps to assure compliance.

28. Affidavit for Contracts Over $5,000.00. That pursuant to Missouri Revised Statute Sections 285.525 through 285.550, if this contract exceeds the amount of $5,000.00 and Contractor is associated with a business entity, Contractor shall provide an acceptable notarized affidavit stating that the associated business entity is enrolled in and participates in a federal work authorization program with respect to the employees working in connection with the contracted services, and that said business entity does not knowingly employ any person who is an unauthorized alien in connection with the contracted services. Additionally, Contractor must provide documentation for said business entity evidencing current enrollment in a federal work authorization program.

29. City Benefits. The Contractor shall not be entitled to any of the benefits established for the employees of the City nor be covered by the Worker's Compensation Program of the City.

30. Occupational License: The Contractor shall obtain and maintain an occupational license with the City of Joplin, Missouri, if required by city code and any required state or federal license. The cost for this occupational license shall be borne by the Contractor. No contract will be executed by the City until this occupational license has been obtained and that the Contractor is current on any City taxes is verified.

31. Safety Training. Pursuant to Missouri Revised Statute Section 292.675, Contractors and subcontractors who sign a contract to work on public works projects must provide a 10-hour OSHA construction safety program, or similar program approved by the Department of Labor and Industrial Relations, to be completed by their on-site employees within sixty (60) days of beginning work on the construction project. Contractors and subcontractors in violation of this provision will forfeit to the public body $2,500 plus $100 a day for each employee who is employed without training. Public bodies and contractors may withhold/assess these penalties from the payment due to those contractors and subcontractors if found to be in non-compliance.

32. Compliance with Laws. Contractor agrees to comply with all applicable federal, state and local laws or rules and regulations applicable to the provision of services and products hereunder. Contractor affirmatively states that payment of all local, state, and federal taxes and assessments owed by Contractor is current.

33. Entire Agreement. This agreement contains the entire agreement of the parties. No modification, amendment, or waiver of any of the provisions of this agreement shall be effective unless in writing specifically referring hereto, and signed by both parties.

34. Remedies. Except as may be otherwise found in the contract documents, all claims, disputes, counter-claims, and other matters in question between the Owner and Contractor arising out of or related to this agreement or the breech thereof, will be decided by arbitration if the parties hereto mutually agree, or in a court of competent jurisdiction within the state in which the Owner is located.

35. Jurisdiction. This agreement and every question arising hereunder shall be construed or determined according to the laws of the State of Missouri. Should any part of this agreement be adjudicated, venue shall be proper only in the Circuit Court of Jasper County, Missouri.

IN WITNESS WHEREOF, the parties hereto have set their hands and seals on the day and year herein stated.

CERTIFICATE OF DIRECTOR OF FINANCE

I certify that the expenditure contemplated by this document is within the purpose of the appropriation to which it is to be charged and that there is an unencumbered balance of appropriated and available funds to pay therefor.

_____

Leslie Haase, Director of Finance

APPROVED AS TO FORM

_____

Peter Edwards, City Attorney

CONTRACTOR:

By: _____

Printed Name: _____

Title: _____

CITY OF JOPLIN, MISSOURI

By:_____

Daniel Johnson, P.E.
Public Works Director

Section 00 55 00 - Notice to Proceed

TO_____ Date_____

_____ Project CITY OF JOPLIN

_____ Dover Outdoor Recreation Area Bicycle Park

_____ Joplin, Missouri

You are hereby notified to commence WORK in accordance with the Agreement dated ____, 20__ on or before _____, 20__, and you are to complete the WORK within 270 consecutive calendar days thereafter.

The date of completion of all WORK is therefore_____ 20_____.

CITY OF JOPLIN, MISSOURI

By: _____

Title: Director of Public Works

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO PROCEED

is hereby acknowledged by

_____

this the _____ day of_____, 20__

By_____

Title_____

END OF SECTION 00 55 00

Section 00 61 13.13 - Performance Bond Form

KNOW ALL MEN BY THESE PRESENTS: that

_____

(Name of Contractor)

_____

(Address of Contractor)

a _____, (Corporation, Partnership, or Individual) hereinafter called Principal, and

_____

(Name of Surety)

_____

(Address of Surety)

hereinafter called Surety, are held and firmly bound unto

City of Joplin, Missouri

(Name of Owner)

City Hall, 602 S. Main Street, Joplin, MO 64801

(Address of Owner)

hereinafter called OWNER, in the penal sum of _____

_____Dollars ($_____) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain

contract with the OWNER, dated the _____day of ___, 20__, a copy of which is hereto attached and made a part hereof for the construction of:

Dover Outdoor Recreation Area Bicycle Park

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term thereof, and any extensions thereof which may be granted by the OWNER, with or without notice to the Surety and during the one year guaranty period, and if he shall satisfy all claims and demands incurred under such contract, and shall fully indemnify and save harmless the OWNER from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the OWNER all outlay and expense which the OWNER may incur in making good any default, then this obligation shall be void; otherwise to remain in full force and effect.

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 WORK to be performed thereunder or the SPECIFICATIONS accompanying the same shall in any wise affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the WORK or to the SPECIFICATIONS.

PROVIDED, FURTHER, that no final settlement between the OWNER and CONTRACTOR shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in four (4) counterparts, each one of which shall be deemed an original,

this the _____ day of _____,20____.

ATTEST:

_____
Principal

_____

By_____

(SEAL)
(Witness as to Principal)

_____
(Address)

_____
(Address)

_____

_____
(Surety)

ATTEST:

_____

_____
(Surety) Secretary

Attorney-in-Fact

(SEAL)
(Witness as to Surety)

_____

_____
(Address)

_____
(Address)

_____

NOTE: Date of BOND must not be prior to date of Contract.
If CONTRACTOR is Partnership, all partners should execute BOND.

IMPORTANT: Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the PROJECT is located.

END OF SECTION 00 61 13.13

Section 00 61 13.16 - Payment Bond Form

KNOW ALL MEN BY THESE PRESENTS: that

_____
(Name of Contractor)

_____
(Address of Contractor)

a _____(Corporation, Partnership, or Individual) hereinafter called

Principal, and _____
(Name of Surety)

_____
(Address of Surety)

hereinafter called Surety, are held and firmly bound unto City of Joplin, Missouri
(Name of Owner)
602 S. Main Street, Joplin, MO 64801
(Address of Owner)

hereinafter called OWNER, in the penal sum of _____
_____DOLLARS ($_____) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain

contract with the OWNER, dated the _____ day of _____, 20_____, a copy of which is hereto attached and made a part hereof for:

Dover Outdoor Recreation Area Bicycle Park

NOW, THEREFORE, if the Principal shall promptly make payment to all persons, firms, SUBCONTRACTORS, and corporations furnishing materials for or performing labor in the prosecution of the WORK provided for in such contract, and any authorized extension or modification thereof, including all amounts due for materials, lubricants, oil, gasoline, coal and coke, repairs on machinery, equipment and tools, consumed or used in connection with the construction of such WORK, and all insurance premiums on said WORK, and for all labor, performed on such WORK whether by SUBCONTRACTOR or otherwise, then this obligation shall be void; otherwise to remain in full force and effect.

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 the WORK to be performed thereunder or the SPECIFICATIONS accompanying the same shall in any wise affect its obligations on this BOND, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the WORK or to the SPECIFICATIONS.

PROVIDED, FURTHER, that no final settlement between the OWNER and the CONTRACTOR shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in four (4) counterparts, each of which shall be deemed an original, this the

_____ day of _____, 20_____.

ATTEST:

_____
(Principal) Secretary)

(SEAL)

_____
Witness to Principal

_____
(Address)

_____

_____
(Principal)

By_____

_____
(Address)

_____

_____
(Surety)

ATTEST: By_____
(Attorney-in-Fact)

_____
Witness to Surety

_____
(Address)

_____
(Address)

_____

_____

NOTE: Date of BOND must not be prior to date of Contract.
If CONTRACTOR is Partnership, all partners should execute BOND.

IMPORTANT: Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the State where the PROJECT is located.

END OF SECTION 00 61 13.16

Section 00 62 76.13 - Sales Tax Exemption Form

Missouri State Statutes 144.062, effective August 28, 1994, and as clarified by subsequent amendment(s), allows for issuance of a sales tax exemption to contractors constructing, repairing, or remodeling facilities or purchasing personal property and materials to be incorporated into and consumed in the construction of projects for a tax-exempt entity. The tax-exempt entity shall furnish to the Contractor a signed Missouri Project Exemption Certificate authorizing such purchases for the construction, repair, or remodeling project. The Contractor shall furnish the certificate to all subcontractors.

For further information, the Contractor shall contact the Missouri Department of Natural Resources, P.O. Box 176, Jefferson City, Missouri 65102, telephone (573) 751-1300; or the Missouri Department of Revenue, P.O. Box 840, Jefferson City, Missouri 65105, telephone (573) 751-2836.

Included with this section is a copy of the Missouri Project Exemption Certificate, which has been approved by the Missouri Department of Revenue.

Reset Form Print Form

MISSOURI DEPARTMENT OF REVENUE

Form 5060 Project Exemption Certificate

This form is to be completed and given to your contractor.

Exempt Entity and Project Information

Name of Exempt Entity Issuing the Certificate			Missouri Tax Exemption Number
Address	City	State	ZIP Code
E-mail Address			
Project Number	Project Begin Date (MM/DD/YYYY) __ __ / __ __ / __ __ __ __	Estimated Project End Date (MM/DD/YYYY) __ __ / __ __ / __ __ __ __	
Description of Project			
Project Location		Certificate Expiration Date (MM/DD/YYYY) __ __ / __ __ / __ __ __ __	

Provide a signed copy of this certificate, along with a copy of the exempt entity's Missouri Sales and Use Tax Exemption Letter to each contractor or subcontractor who will be purchasing tangible personal property for use in this project. It is the responsibility of the exempt entity to ensure the validity of the information on the certificate. The exempt entity must issue a new certificate if any of the information changes.

Signature of Authorized Exempt Entity	Printed Name of Authorized Exempt Entity	Date (MM/DD/YYYY) __ __ / __ __ / __ __ __ __

Contractor

The Missouri exempt entity named above hereby authorizes the purchase, without sales tax, of tangible personal property to be incorporated or consumed in the construction project identified herein and no other, pursuant to **Section 144.062, RSMo.** Under penalties of perjury, I declare that the above information and any attached supplement is true, complete, and correct.

Name of Purchasing Contractor	Signature of Contractor	Date (MM/DD/YYYY) __ __ / __ __ / __ __ __ __
Address	City	State / ZIP Code

Subcontractor

Contractors - Present this to your supplier in order to purchase the necessary materials tax exempt. Complete the Subcontractor portion if extending the certificate to your subcontractor. The contractor must sign the form in the space provided below.

Name of Purchasing Subcontractor			
Address	City	State	ZIP Code
Signature of Contractor	Contractor's Printed Name	Date (MM/DD/YYYY) __ __ / __ __ / __ __ __ __	

Form 5060 (Revised 11-2019)

END OF SECTION 00 62 76.13

Section 00 65 13
Certificate of Compliance with Prevailing Wage Law

COMPLIANCE WITH THE PREVAILING WAGE LAW

Before me, the undersigned Notary Public, in and for the County of _____, State of Missouri, personally came and appeared

_____
(Name) (Position)

of the _____
(Name of the Company)
(A corporation) (a partnership) (a proprietorship) and after being duly sworn, did depose and say that all provisions and requirements set out in Chapter 290, Sections 290.210 through and including 290.340, Missouri Revised Statutes, pertaining to the payment of wages to workmen employed on public works projects have been fully satisfied and there has been no exception to the full and complete compliance with said provisions and requirements with Wage Determination No.(s). _____issued by the Division of Labor Standards on the _____ day of_____, 20_____in carrying out the contract and work in connection with the construction of Dover Outdoor Recreation Area Bicycle Park, in Jasper County, Missouri, and completed on the _____ day of _____, 20_____.

_____
(Signature)

Subscribed and sworn to me this_____ day of_____, 20 _____.

My Commission expires:_____

_____
Notary Public

END OF SECTION 00 65 13

Section 00 65 19.13 - Affidavit of Payment of Debts

_____certifies that they are the ____
(Name) (Title)

of_____of _____
(Name of Contractor) (Address)

the Contractor, in a Contract dated _____, 20 _____
entered into between the Contractor and CITY OF JOPLIN, MISSOURI of 602 S. Main Street, Joplin, Missouri 64801, the Owner, for the construction of Dover Outdoor Recreation Area Bicycle Park, the Project; and that they are legally authorized to and does make this certificate on behalf of said Contractor.

The undersigned, further certifies; (1) that all persons who have provided labor for the above-named Project, have been paid in full, and (2) that the names of suppliers, materialmen, subcontractors and others providing materials and/or services for the Project, and the kind or kinds of materials and/or services so provided are listed and attached hereto; and that a Waiver and Release of Lien executed by each and all suppliers, materialmen, subcontractors and others providing materials and/or services has been obtained and delivered to the Owner.

By_____

Date_____

For_____

END OF SECTION 00 65 19.13

Section 00 65 19.16 - Affidavit of Release of Liens

STATE OF MISSOURI
COUNTY OF _____

TO WHOM IT MAY CONCERN

WHEREAS the undersigned has been employed by (1) _____
to furnish (2) _____
for the premises known as (3) _____
of which (4) _____ is the owner.

The undersigned, for and in consideration of (5) $_____ dollars, and other good and valuable consideration, the receipt whereof is hereby acknowledged does hereby waive and release any and all lien or claim of, or right to, lien under the statutes of the State of Missouri relating to mechanic liens with respect to and on said above described premises and the improvements thereon and on the material fixtures apparatus or machinery furnished and on the money, funds or other consideration now due or to become due from the owner on account of labor, services, material, fixtures, apparatus or machinery heretofore furnished or which may be furnished at any time hereafter, by the undersigned for the above described premises.

Given under _____ hand and seal this _____ of _____ 20_____.
Signature and Seal: (7) _____

NOTE: All waivers must be for the full amount paid. If waiver is for a corporation, corporate name should be used, corporate seal affixed and title of officer signing waiver should be set forth. If waivers for a partnership, the partnership name should be used, partner should sign and designate himself as partner.

CONTRACTORS AFFIDAVIT

STATE OF MISSOURI
COUNTY OF _____

TO WHOM IT MAY CONCERN:
THE undersigned, being duly sworn deposes and says that they are (8) _____
of the (10)_____ who is the contractor for the (11) _____
work on (12) Dover Outdoor Recreation Area Bicycle Park owned by (13) the City of Joplin, Missouri; That the total amount of the contract including extras is (14) $_____
on which they have received payment of (15) $_____ prior to this payment. That all waivers are true, correct and genuine and delivered unconditionally and that there is no claim either legal or suitable to defeat the validity of said waivers. That the following are the names of all parties who have furnished material or labor, or both for said work and all parties having contracts or sub contracts for specific portions of said work or for material entering into the construction thereof and the amount due or to become due to each and that the items mentioned include all labor and material required to complete said work according to plans and specifications:

NAMES (16)	WHAT FOR	CONTRACT PRICE	AMOUNT PAID	THIS PAYMENT	BALANCE DUE

That there are no other contracts for said work outstanding, and that there is nothing due or to become due to any person for material, labor or other work of any kind done or to be done upon or in connection with said work other than above stated.

Signed this _____ day of _____, 20_____. Signature: (17) _____

Subscribed and sworn to before me this _____ day of _____, 20_____.

Signature: (18) _____

INSTRUCTIONS FOR WAIVER OF LIEN

1. The sub should name the party who hired him, either the general or the owner.

2. Name the trade (electric, plumbing, etc.)

3. Address of property

4. Owner's name

5. The amount the sub is waiving out in both words and figures.

6. The date signed.

7. The sub-contractor's signature and company name.

8, 9 & 10. The name of the subcontractor signing the waiver, his corporate title, and the name of his company.

11. Name the trade

12. Address of property

13. Owner's name

14. Total contract (including extras)

15. Amount paid prior to this draw

16. If material delivered to site by a material supplier1 list sub's name, the material (concrete), contract price, amount paid, this payment, and balance owed. These amounts can change; i.e., the contract amount can go up or down as can the balance owed. If a contractor has supplied you with a partial waiver on a previous draw and then does not use that supplier anymore, you will have to obtain a final waiver from that supplier, if only for a token dollar amount.

17. This affidavit must be notarized, and the notary's date must match the waiver date.

Special note: If a contractor is supplying only labor or only material then the affidavit side of the waiver is not required.

Managers do not have authority (normally) to sign waivers. If you see a manager's signature on a waiver, we must have a letter on file from that corporation that their corporate resolutions have been amended to allow that manager to sign for their corporation.

END OF SECTION 00 65 19.16

Section 00 72 00 - General Conditions of Contract

1. Definitions
2. Additional Instructions & Detail Drawings
3. Schedules, Reports & Records
4. Drawings & Specifications
5. Shop Drawings
6. Materials, Services & Facilities
7. Inspection & Testing
8. Substitutions
9. Patents
10. Surveys, Permits, Regulations
11. Protection of Work, Property, Persons
12. Supervision by Contractor
13. Changes in the Work
14. Changes in Contract Price
15. Time for Completion & Liquidated Damages
16. Correction of Work
17. Subsurface Conditions
18. Suspension of Work, Termination & Delay
19. Payments to Contractor
20. Acceptance of Final Payment as Release
21. Insurance
22. Contract Security
23. Assignments
24. Indemnification
25. Separate Contracts
26. Subcontracting
27. Engineer's Authority
28. Land & Rights-of-Way
29. Guaranty
30. Taxes

1. DEFINITIONS

1.1. Wherever used in the CONTRACT DOCUMENTS, the following terms shall have the meanings indicated which shall be applicable to both the singular and plural thereof:

1.2. ADDENDA: Written or graphic instruments issued prior to the execution of the Agreement which modify or interpret the CONTRACT DOCUMENTS, DRAWINGS and SPECIFICATIONS, by additions, deletions, clarifications or corrections.

1.3. BID: The offer or proposal of the BIDDER submitted on the prescribed form setting forth the prices for the WORK to be performed.

1.4. BIDDER: Any person, firm, or corporation submitting a BID for the WORK.

1.5. BONDS: Performance, and Payments Bonds and other instruments of security, furnished by the CONTRACTOR and his surety in accordance with the CONTRACT DOCUMENTS.

1.6. CHANGE ORDER: A written order by the OWNER to the CONTRACTOR authorizing an addition, deletion, or revision in the WORK within the general scope of the CONTRACT DOCUMENTS, or authorizing an adjustment in the CONTRACT PRICE or CONTRACT TIME.

1.7. CONTRACT DOCUMENTS: The Contract, including Advertisement For Bids, Information For Bidders, BID, Agreement, Payment Bond, Performance Bond, NOTICE OF AWARD, NOTICE TO PROCEED, CHANGE ORDER, DRAWINGS, SPECIFICATIONS and ADDENDA.

1.8. CONTRACT PRICE: The total monies payable to the CONTRACTOR under the terms and conditions of the CONTRACT DOCUMENTS.

1.9. CONTRACT TIME: The number of calendar days stated in the CONTRACT DOCUMENTS for the completion of the WORK.

1.10. CONTRACTOR: The person, firm, or corporation with whom the OWNER has executed the Agreement.

1.11. DRAWINGS: The part of the CONTRACT DOCUMENTS which show the characteristics and scope of the WORK to be performed and which have been prepared or approved by the Engineer.

1.12. ENGINEER: The person, firm, or corporation named as such in the CONTRACT DOCUMENTS.

1.13. FIELD ORDER: A written order effecting a change in the WORK not involving an adjustment in the CONTRACT PRICE or an extension of the CONTRACT TIME, issued by the ENGINEER to the CONTRACTOR during construction.

1.14. NOTICE OF AWARD: The written notice of the acceptance of the BID from the OWNER to the successful BIDDER.

1.15. NOTICE TO PROCEED: Written communication issued by the OWNER to the CONTRACTOR authorizing him to proceed with the WORK and establishing the date of commencement of the WORK.

1.16. OWNER: A public or quasi-public body or authority, corporation, association, partnership, or individual for whom the WORK is to be performed.

1.17. PROJECT: The undertaking to be performed as provided in the CONTRACT DOCUMENTS.

1.18. RESIDENT PROJECT REPRESENTATIVE: The authorized representative of the ENGINEER who is assigned to the PROJECT site or any part thereof.

1.19. SHOP DRAWINGS: All drawings, diagrams, illustrations, brochures, schedules, and other data which are prepared by the CONTRACTOR, a SUBCONTRACTOR, manufacturer, SUPPLIER, or distributor, which illustrate how specific portions of the WORK shall be fabricated or installed.

1.20. SPECIFICATIONS: A part of the CONTRACT DOCUMENTS consisting of written descriptions of a technical nature of materials, equipment, construction system standards and workmanship.

1.21. SUBCONTRACTOR: An individual, firm, or corporation having a direct contract with the CONTRACTOR or with any other SUBCONTRACTOR for the performance of a part of the WORK at the site.

1.22. SUBSTANTIAL COMPLETION: That date as certified by the ENGINEER when the construction of the PROJECT is sufficiently completed, in accordance with the CONTRACT DOCUMENTS, so that the PROJECT can be utilized for the purposes for which it is intended. At the date of substantial completion, all waivers and Releases of Lien and Contractor's Certificates have been delivered to the OWNER as required by the Supplementary Conditions, and all facilities shall have been placed in the start- up phase for the purpose of testing equipment to assure compliance with the DRAWINGS and SPECIFICATIONS.

1.23. SUPPLEMENTAL GENERAL CONDITIONS: Modifications to General Conditions required a Federal agency for participation in the PROJECT and approved by the agency in writing prior to inclusion in the CONTRACT DOCUMENTS or such requirements that may be imposed by applicable state laws.

1.24. SUPPLIER: Any person or organization who supplies materials or equipment for the WORK, including that fabricated to a special design, but who does not perform labor at the site.

1.25. WORK: All labor necessary to produce the construction required by the CONTRACT DOCUMENTS, and all materials and equipment incorporated or to be incorporated in the PROJECT.

1.26. WRITTEN NOTICE: Any notice to any party of the Agreement relative to any part of this Agreement in writing and considered delivered and the service thereof completed, when posted by certified or registered mail to the said party at his last given address, or delivered in person to said party or his authorized representative on the WORK.

2. ADDITIONAL INSTRUCTIONS AND DETAIL DRAWINGS:

2.1 The CONTRACTOR may be furnished additional instructions and detail drawings, by the ENGINEER, as necessary to carry out the WORK required by the CONTRACT DOCUMENTS.

2.2 The additional drawings and instructions thus supplied will become a part of the CONTRACT DOCUMENTS. The CONTRACTOR shall carry out the WORK in accordance with the additional detail drawings and instructions.

3. SCHEDULES, REPORTS, AND RECORDS:

3.1 The CONTRACTOR shall submit to the OWNER such schedule of quantities and costs, progress schedules, payrolls, reports, estimates, records, and other data where applicable as are required by the CONTRACT DOCUMENTS for the WORK to be performed.

3.2 Prior to the first partial payment estimate the CONTRACTOR shall submit construction progress schedules showing the order in which he proposes to carry on the WORK, including dates at which he will start the various parts of the WORK, estimated date of completion of each part, and, as applicable:

3.2.1 The dates at which special detail drawings will be required; and

3.2.2 Respective dates for submission of SHOP DRAWINGS, the beginning of manufacture, the testing and the installation of materials, supplies, and equipment.

3.3 The CONTRACTOR shall also submit a schedule of payment that he anticipates he will earn during the course of the WORK. The monthly schedule of estimated payments shall be submitted within 30 days after initiation of construction, shall apply equally to subcontractors, and shall be updated any time there is a variation of more than 10 percent.

3.4 Expressed or implied approval of the schedules required by Paragraphs 3.1 through 3.3 does not relieve the Contractor from the responsibility for errors and omissions in the schedule, nor from responsibility for complying with the requirements of this contract.

4. DRAWINGS AND SPECIFICATIONS

4.1 The intent of the DRAWINGS and SPECIFICATIONS is that the CONTRACTOR shall furnish all labor, materials, tools, equipment, and transportation necessary for the proper execution of the WORK in accordance with the CONTRACT DOCUMENTS and all incidental work necessary to complete the PROJECT in an acceptable manner, ready for use, occupancy or operation by the OWNER.

4.2 In case of conflict between the DRAWINGS and SPECIFICATIONS, the SPECIFICATIONS shall govern. Figure dimensions on DRAWINGS shall govern over scale dimensions, and detailed DRAWINGS shall govern over general DRAWINGS.

4.3 Any discrepancies found between the DRAWINGS and SPECIFICATIONS and site conditions or any inconsistencies or ambiguities in the DRAWINGS or SPECIFICATIONS shall be immediately reported to the ENGINEER, in writing, who shall promptly correct such inconsistencies or ambiguities in writing. WORK done by the CONTRACTOR after his discovery of such discrepancies, inconsistencies, or ambiguities shall be done at the CONTRACTOR's risk.

4.4 Any item provided on any DRAWING is required to be installed at the appropriate place by the CONTRACTOR. An omission on one or more DRAWINGS of a particular detail or item shall not be

interpreted as a deletion of that item. For reasons of clarity, not all items are shown on all DRAWINGS. (i.e., structural drawings may not show electrical or mechanical details, etc.). The CONTRACTOR shall assume overall responsibility for reviewing and being thoroughly familiar with all items shown on any and all DRAWINGS, and coordinating the efforts of various personnel and subcontractors (including dissemination of all required drawings to appropriate subcontractors, etc.) to insure proper placement of all items.

5. SHOP DRAWINGS

5.1 The CONTRACTOR shall provide SHOP DRAWINGS as may be necessary for the prosecution of the WORK as required by the CONTRACT DOCUMENTS. The ENGINEER shall promptly review all SHOP DRAWINGS. The ENGINEER's approval of any SHOP DRAWINGS shall not release the CONTRACTOR from responsibility for deviations from the CONTRACT DOCUMENTS. The approval of any SHOP DRAWING which substantially deviates from the requirement of the CONTRACT DOCUMENTS shall be evidenced by a CHANGE ORDER.

5.2 When submitted for the ENGINEER/ARCHITECT's review, SHOP DRAWINGS shall bear the CONTRACTOR's certification that he has reviewed, checked, and approved the SHOP DRAWINGS, and that they are in conformance with the requirements of the CONTRACT DOCUMENTS.

5.3 Portions of the WORK requiring a SHOP DRAWING or sample submission shall not begin until the SHOP DRAWING or submission has been approved by the ENGINEER. A copy of each approved SHOP DRAWING and each approved sample shall be kept in good order by the CONTRACTOR at the site and shall be available to the ENGINEER.

5.4 All required submittals of SHOP DRAWINGS and manufacturer's literature and manufacturer's certifications shall commence to be delivered to the ENGINEER upon receipt by the CONTRACTOR of the Notice to Proceed and all submittals shall have been delivered to the ENGINEER within thirty (30) calendar days from the date of the Notice to Proceed. Within ten (10) calendar days of receipt by the ENGINEER, ENGINEER shall review and return to the CONTRACTOR corrected or approved submittal. Three (3) copies of the submittal shall be retained by the ENGINEER.

5.5 All submittals which are not approved or corrected by the ENGINEER shall be resubmitted by the CONTRACTOR within sixty (60) days from receipt by the CONTRACTOR of the corrected or rejected submittal.

5.6 Within thirty (30) days from receipt by the CONTRACTOR of approved submittal, six (6) copies of the manufacturer's literature and six (6) copies of a complete and detailed operation and maintenance manual, as written by the manufacturer, and covering all equipment components, shall be delivered to the ENGINEER.

5.7 Non-compliance by the CONTRACTOR of submittal requirements and/or time periods stated in paragraphs 5.4, 5.5, and

5.6 may result in immediate suspension of payments to the CONTRACTOR until such requirements are complied with.

5.8 The ENGINEER, RESIDENT PROJECT REPRESENTATIVE, or the OWNER shall assume no responsibility for checking schedules or layout drawings for exact size, exact number, or quantity, positioning of items, or compatibility of adjacent and comparison items. Sole responsibility shall rest with the CONTRACTOR.

6. MATERIALS, SERVICES, AND FACILITIES:

6.1 It is understood that, except as otherwise specifically stated in the CONTRACT DOCUMENTS,

the CONTRACTOR shall provide and pay for all materials, labor, tools, equipment, water, light, power, transportation, supervision, temporary construction of any nature, and all other services and facilities of any nature whatsoever necessary to execute, complete, and deliver the WORK within the specified time.

6.2 Materials and equipment shall be so stored as to insure the preservation of their quality and fitness for the WORK. Stored materials and equipment to be incorporated in the WORK shall be located so as to facilitate prompt inspection.

6.3 Manufactured articles, materials, and equipment shall be applied, installed, connected, erected, used, cleaned, and conditioned as directed by the manufacturer.

6.4 Materials, supplies, and equipment shall be in accordance with samples submitted by the CONTRACTOR and approved by the ENGINEER.

6.5 Materials, supplies, or equipment to be incorporated into the WORK shall not be purchased by the CONTRACTOR or the SUBCONTRACTOR subject to a chattel mortgage or under a conditional sales contract or other agreement by which an interest is retained by the Seller.

6.6 The CONTRACTOR warrants to the OWNER and the ENGINEER that all materials and equipment furnished under this contract will be new unless otherwise specified, and that all WORK, including materials and equipment will be of good quality, free from faults and defects and in conformance with the CONTRACT DOCUMENTS. All WORK not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective.

7. INSPECTION AND TESTING:

7.1 All materials and equipment used in the construction of the PROJECT shall be subject to adequate inspection and testing in accordance with generally accepted standards, as required and defined in the CONTRACT DOCUMENTS.

7.2 The OWNER shall provide all inspection and testing services not required by the CONTRACT DOCUMENTS.

7.3 The CONTRACTOR shall provide at his expense the testing and inspection services required by the CONTRACT DOCUMENTS.

7.4 If the CONTRACT DOCUMENTS, laws, ordinances, rules, regulations, or orders of any public authority having jurisdiction require any WORK to specifically be inspected, tested, or approved by someone other than the CONTRACTOR, the CONTRACTOR will give the ENGINEER timely notice of readiness. The CONTRACTOR will then furnish the ENGINEER the required certificates of inspection, testing, or approval.

7.5 Inspections, tests, or approvals by the ENGINEER or others shall not relieve the CONTRACTOR from his obligations to perform the WORK in accordance with the requirements of the CONTRACT DOCUMENTS.

7.6 The ENGINEER and his representatives will, at all times, have access to the WORK. In addition, authorized representatives of the Owner shall be permitted to inspect all work, materials, payrolls, records of personnel, invoices of materials, and other relevant data and records. The CONTRACTOR will provide proper facilities for such access and observation of the WORK and also for any inspection or testing thereof.

7.7 If any WORK is covered contrary to the written instructions of the ENGINEER, it must, if requested by the ENGINEER, be uncovered for his observation and replaced at the CONTRACTOR's

expense.

7.8 If the ENGINEER considers it necessary or advisable that covered WORK be inspected or tested by others, the CONTRACTOR, at the ENGINEER's request, will uncover, expose, or otherwise make available for observation, inspection or testing as the ENGINEER may require, that portion of the WORK in question, furnishing all necessary labor, materials, tools, and equipment. If it is found that such WORK is defective, the CONTRACTOR will bear all the expenses of such uncovering, exposure, observation, inspection, and testing and of satisfactory reconstruction. If, however, such WORK is not found to be defective, the CONTRACTOR will be allowed an increase in the CONTRACT PRICE or an extension of the CONTRACT TIME, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, and reconstruction and an appropriate CHANGE ORDER shall be issued.

8. SUBSTITUTIONS:

8.1 Whenever a material, article, or piece of equipment is identified on the DRAWINGS or SPECIFICATIONS by reference to brand name or catalogue number, it shall be understood that this is referenced for the purpose of defining the performance or other salient requirements and that other products of equal capacities, quality, and function shall be considered. The CONTRACTOR may recommend the substitution of a material, article, or piece of equipment of equal substance and function for those referred to in the CONTRACT DOCUMENTS by reference to brand name or catalogue number, and if, in the opinion of the ENGINEER, such material, article, or piece of equipment is of equal substance and function to that specified, the ENGINEER may approve its substitution and use by the CONTRACTOR. Any cost differential shall be deductible from the CONTRACT PRICE and the CONTRACT DOCUMENTS shall be appropriately modified by CHANGE ORDER. The CONTRACTOR warrants that if substitutes are approved, no major changes in the function or general design of the PROJECT will result. Incidental changes or extra component parts required to accommodate the substitute will be made by the CONTRACTOR without a change in the CONTRACT PRICE or CONTRACT TIME.

9. PATENTS

9.1 The CONTRACTOR shall pay all applicable royalties and license fees. He shall defend all suits or claims for infringement of any patent rights and save the OWNER harmless from loss on account thereof, except that the OWNER shall be responsible for any such loss when a particular process, design, or the product of a particular manufacturer or manufacturers is specified, however, if the CONTRACTOR has reason to believe that the design, process, or product specified is an infringement of a patent, he shall be responsible for such loss unless he promptly gives such information to the ENGINEER.

10. SURVEYS, PERMITS, REGULATIONS

10.1 The OWNER shall furnish all boundary surveys, and a series of bench marks. The CONTRACTOR shall establish all base lines for locating the components and elements of the WORK. Upon establishing all base lines, but prior to proceeding with construction utilizing the baselines, the CONTRACTOR shall give notice of same to the RESIDENT PROJECT REPRESENTATIVE. From the information provided by the OWNER, unless otherwise specified in the CONTRACT DOCUMENTS, the CONTRACTOR shall develop and make all detail surveys needed for construction such as slope stakes, batter boards, stakes for pile locations, and other working points, lines, elevations, and cut sheets.

10.2 The CONTRACTOR shall carefully preserve bench marks, reference points, and stakes, and,

in case of willful or careless destruction, he shall be charged with the resulting expense and shall be responsible for any mistakes that may be caused by their unnecessary loss or disturbance.

10.3 Permits and licenses of a temporary nature necessary for the prosecution of the WORK shall be secured and paid for by the CONTRACTOR unless otherwise stated in the SUPPLEMENTAL CONDITIONS. Permits, licenses, and easements for permanent structures, or permanent changes in existing facilities shall be secured and paid for by the OWNER, unless otherwise specified. The CONTRACTOR shall give all notices and comply with all laws, ordinances, rules, and regulations bearing on the conduct of the work as drawn and specified. If the CONTRACTOR observes that the CONTRACT DOCUMENTS are at variance therewith, he shall promptly notify the ENGINEER in writing, and any necessary changes shall be adjusted as provided in Section 13, CHANGES IN THE WORK.

11. PROTECTION OF WORK, PROPERTY, AND PERSONS:

11.1 The CONTRACTOR will be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the WORK. He will take all necessary precautions for the safety of, and will provide the necessary protection to prevent damage, injury, or loss to all employees on the WORK and other persons who may be affected thereby, all the WORK and all materials or equipment to be incorporated therein, whether in storage on or off the site, and other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

11.2 The CONTRACTOR will comply with all applicable laws, ordinances, rules, regulations, and orders of any public body having jurisdiction. He will erect and maintain, as required by the conditions and progress of the WORK, all necessary safeguards for safety and protection. He will notify Owners of adjacent utilities when prosecution of the WORK may affect them. The CONTRACTOR will remedy all damage, injury, or loss to any property caused, directly, or indirectly, in whole or in part, by the CONTRACTOR, any SUBCONTRACTOR, or anyone directly or indirectly employed by any of them or anyone for whose acts any of them be liable, except damage or loss attributable to the fault of the CONTRACT DOCUMENTS or to the acts or omissions of the OWNER or the ENGINEER/ ARCHITECT or anyone employed by either of them or anyone for whose acts either of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of the CONTRACTOR.

11.3 In emergencies affecting the safety of persons or the WORK or property at the site or adjacent thereto, the CONTRACTOR, without special instruction or authorization from the ENGINEER or OWNER, shall act to prevent threatened damage, injury, or loss. He will give the ENGINEER prompt WRITTEN NOTICE of any significant changes in the WORK or deviations from the CONTRACT DOCUMENTS caused thereby, and a CHANGE ORDER shall thereupon be requested to cover the changes and deviations involved.

11.4 Visits to the construction site and observations made by the ENGINEER or RESIDENT PROJECT REPRESENTATIVE shall not relieve the CONTRACTOR of his obligation to conduct comprehensive inspections of the work sufficient to insure conformance with the intent of the CONTRACT DOCUMENTS and shall not relieve the construction CONTRACTOR of his full responsibility for all construction means, methods, techniques, sequences, and procedures necessary for coordinating and completing all portions of the work under the construction contract and for all safety precautions incidental thereto.

12. SUPERVISION BY CONTRACTOR:

12.1 The CONTRACTOR will supervise and direct the WORK. He will be solely responsible for the means, methods, techniques, sequences, and procedures of construction. The CONTRACTOR will employ and maintain on the WORK a qualified supervisor or superintendent who shall have been designated in writing by the CONTRACTOR as the CONTRACTOR's representative at the site. The supervisor shall have full authority to act on behalf of the CONTRACTOR and all communications given to the supervisor shall be as binding as if given to the CONTRACTOR. The supervisor shall be present on the site at all times as required to perform adequate supervision and coordination of the WORK.

13. CHANGES IN THE WORK:

13.1 The OWNER may, at any time as the need arises, order changes within the scope of the WORK without invalidating the Agreement. If such changes increase or decrease the amount due under the CONTRACT DOCUMENTS, or in the time required for performance of the WORK, an equitable adjustment shall be authorized by CHANGE ORDER.

13.2 The ENGINEER also may at any time, by issuing a FIELD ORDER, make changes in the details of the WORK. The CONTRACTOR shall proceed with the performance of any changes in the WORK so ordered by the ENGINEER unless the CONTRACTOR believes that such FIELD ORDER entitles him to a change in CONTRACT PRICE or TIME, or both, in which event he shall give the ENGINEER WRITTEN NOTICE thereof within seven (7) days after the receipt of the ordered change. Thereafter, the CONTRACTOR shall document the basis for the change in CONTRACT PRICE or TIME within thirty (30) days. Unless there exists a previously approved method of pricing the CHANGE ORDER (i.e., unit prices, etc.), said documentation shall include a complete and detailed breakdown of all direct and indirect costs including estimates of manhours and labor costs, materials, supplies, and equipment costs, as evidenced by written statements from suppliers and subcontractors, and other services necessary to complete the work. The CONTRACTOR shall not execute such changes pending the receipt of an executed CHANGE ORDER or further instruction from the OWNER.

13.3 Acceptance of a CHANGE ORDER by the CONTRACTOR shall preclude any claims by the CONTRACTOR at a later date for additional compensation for "unforeseen" costs related to the CHANGE ORDER. A CONTRACT PRICE change set forth in an approved CHANGE ORDER shall represent all present and future costs directly and/or indirectly related to the performance of the change. The following language shall be included in all CHANGE ORDERS.

13.3.1 "This change order constitutes full and mutual accord and satisfaction for all time and all costs related to this change. By acceptance of this CHANGE ORDER, the CONTRACTOR agrees that the CHANGE ORDER represents an equitable adjustment to the contract, and further agrees to waive all rights to file a claim arising out of or as a result of this change."

14. CHANGES IN CONTRACT PRICE:

14.1 The CONTRACT PRICE may be changed only by a CHANGE ORDER. The value of any WORK covered by a CHANGE ORDER or of any claim for increase or decrease in the CONTRACT PRICE shall be determined by one or more of the following methods in the order of precedence listed below:

(a) Unit prices previously approved by the Owner

(b) An agreed lump sum.

(c) The actual direct cost of labor, materials, supplies, equipment, and other services necessary to complete with WORK. In addition, there shall be added an amount to be agreed upon

but not to exceed fifteen percent (15%) of the actual direct cost of the WORK to cover the cost of all field office and home office overhead and profit.

15. TIME FOR COMPLETION AND LIQUIDATED DAMAGES:

15.1 See Section 00 52 00 – Agreement 2022; and City of Joplin Standard Specifications, Division 0000 General Requirements and Provisions, Section 0400.19 for associated requirements.

16. CORRECTION OF WORK:

16.1 The CONTRACTOR shall promptly remove from the premises all work rejected by the ENGINEER for failure to comply with the CONTRACT DOCUMENTS, whether incorporated in the construction or not, and the CONTRACTOR shall promptly replace and re-execute the WORK in accordance with the CONTRACT DOCUMENTS and without expense to the OWNER and shall bear the expense of making good all WORK of other CONTRACTORS destroyed or damaged by such removal or replacement.

16.2 All removal and replacement WORK shall be done at the CONTRACTOR's expense. If the CONTRACTOR does not take action to remove such rejected WORK within ten (10) consecutive calendar days after receipt of WRITTEN NOTICE, the OWNER may remove such WORK and store the materials at the expense of the CONTRACTOR.

16.3 The CONTRACTOR shall be held totally responsible for insuring that the completed project is free from all defects due to faulty materials, equipment, and workmanship for a period of one (1) year from the date of FINAL ACCEPTANCE of the entire project. If the CONTRACTOR fails, for any reason, to promptly repair or replace any faulty component of the project, the OWNER may cause the necessary work to be done and either deduct the total cost thereof from the CONTRACTOR's retainage, or draw directly upon the CONTRACTOR's Irrevocable Letter of Credit. If the cost incurred by the OWNER exceeds the amount retained, or the amount set forth in the CONTRACTOR's Irrevocable Letter of Credit, the CONTRACTOR shall pay the difference to the OWNER.

17. SUBSURFACE CONDITIONS:

17.1 The CONTRACTOR shall promptly, and before such conditions are disturbed, except in the event of an emergency, notify the OWNER by WRITTEN NOTICE of:

17.1.1 Subsurface or latent physical conditions at the site differing materially from those indicated in the CONTRACT DOCUMENTS: or

17.1.2 Unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in WORK of the character provided for in the CONTRACT DOCUMENTS.

17.2 The OWNER shall promptly investigate the conditions, and if he finds that such conditions do so materially differ and cause an increase or decrease in the cost of, or in the time required for, performance of the work, an equitable adjustment shall be made and the CONTRACT DOCUMENTS shall be modified by a CHANGE ORDER. Any claim of the CONTRACTOR for adjustment hereunder shall not be allowed unless he has given the required WRITTEN NOTICE; provided that the OWNER may, if he deter- mines the facts so justify, consider and adjust any such claims asserted before the date of final payment.

18. SUSPENSION OF WORK, TERMINATION AND DELAY:

18.1 The OWNER may suspend the WORK or any portion thereof for a period of not more than ninety (90) days or such further time as agreed upon by the CONTRACTOR, by WRITTEN NOTICE to the CONTRACTOR and the ENGINEER, which notice shall fix the date on which WORK shall be resumed. The CONTRACTOR will resume that WORK on the date so fixed. The CONTRACTOR will be allowed an extension of the CONTRACT TIME if directly attributable to any suspension.

18.2 If the CONTRACTOR is adjudged a bankrupt or insolvent, or if he makes a general assignment for the benefit of his creditors, or if a trustee or receiver is appointed for the CONTRACTOR or for any of his property, or if he files a petition to take advantage of any debtor's act, or to reorganize under the bankruptcy or applicable laws, or if he repeatedly fails to supply sufficient skilled workmen or suitable materials or equipment, or if he repeatedly fails to make prompt payments to SUBCONTRACTORS or for labor, materials, or equipment, or if he disregards laws, ordinances, rules, regulations, or orders of any public body having jurisdiction of the WORK, or if he disregards authority of the ENGINEER, or if he otherwise violates any provision of the CONTRACT DOCUMENTS, then the OWNER may, without prejudice to any other right or remedy and after giving the CONTRACTOR and his surety a minimum of five (5) days from delivery of a WRITTEN NOTICE, terminate the services of the CONTRACTOR and take possession of the PROJECT and of all materials, equipment, tools, construction equipment, and machinery thereon owned by the CONTRACTOR, and finish the WORK by whatever method he may deem expedient. In such case, the CONTRACTOR shall not be entitled to receive any further payment until the WORK IS FINISHED. If the unpaid balance of the CONTRACT PRICE exceeds the direct and indirect costs of completing the PROJECT, including compensation for additional professional services, such excess SHALL BE PAID TO THE CONTRACTOR. If such costs exceed such unpaid balance, the CONTRACTOR will pay the difference to the OWNER. Such costs incurred by the OWNER will be determined by the ENGINEER and incorporated in a CHANGE ORDER.

18.3 Where the CONTRACTOR's services have been so terminated by the OWNER, said termination shall not affect any right of the OWNER against the CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of monies by the OWNER due the CONTRACTOR will not release the CONTRACTOR from compliance with the CONTRACT DOCUMENTS.

18.4 After five (5) days from delivery of a WRITTEN NOTICE to the CONTRACTOR and the ENGINEER, the OWNER may, without cause and without prejudice to any other right or remedy, elect to abandon the PROJECT and terminate the contract. In such case, the CONTRACTOR shall be paid for all WORK executed and any expense sustained plus reasonable profit.

18.5 If, through no act or fault of the CONTRACTOR, the WORK is suspended for a period of more than ninety (90) days by the OWNER or under an order of court or other public authority, or the ENGINEER fails to act on any request for payment within thirty
(30) days after it is submitted, or the OWNER fails to pay the CONTRACTOR substantially the sum approved by the ENGINEER or awarded by arbitrators within thirty (30) days of its approval and presentation, then the CONTRACTOR may, after ten (10) days from delivery of a WRITTEN NOTICE to the OWNER and the ENGINEER, terminate the CONTRACT and recover from the OWNER payment for all WORK executed and all expenses sustained. In addition and in lieu of terminating the CONTRACT, if the ENGINEER has failed to act on a request for payment or if the OWNER has failed to make any payment as aforesaid, the CONTRACTOR may upon ten (10) days WRITTEN NOTICE to the OWNER and the ENGINEER stop the WORK until he has been paid all amounts then due, in which event and upon resumption of the WORK, CHANGE ORDERS shall be issued for

adjusting the CONTRACT PRICE or extending the CONTRACT TIME, or both to compensate for the costs and delays attributable to the stoppage of the WORK.

18.6 If the performance of all or any portion of the WORK is suspended, delayed, or interrupted as a result of a failure of the OWNER or ENGINEER to act within the time specified in the CONTRACT DOCUMENTS, or if no time is specified, within a reasonable time, an adjustment in the CONTRACT PRICE or an extension of the CONTRACT TIME, or both, shall be made by CHANGE ORDER to compensate the CONTRACTOR for the costs and delays necessarily caused by the failure of the OWNER or ENGINEER.

If the suspension, delay, or interruption is the result of unforeseeable causes beyond the control and without the fault or negligence of the OWNER or ENGINEER, including but not restricted to, acts of God, or of the public enemy, acts of another CONTRACTOR, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, abnormal and unforeseeable weather, and differing site conditions, the CONTRACTOR shall be entitled only to an extension of CONTRACT TIME and not CONTRACT PRICE.

19. PAYMENTS TO CONTRACTOR:

19.1 At least ten (10) days before each progress payment falls due (but not more than once a month), the CONTRACTOR will submit to the ENGINEER a partial payment estimate filled out and signed by the CONTRACTOR covering the WORK performed during the period covered by the partial payment estimate and supported by such data as the ENGINEER may reasonably require. If payment is requested on the basis of materials and equipment not incorporated in the WORK but delivered and suitably stored at or near the site, the partial payment estimate shall also be accompanied by such supporting data, satisfactory to the OWNER, as will establish the OWNER's title to the material and equipment and protect his interest therein, including applicable insurance. Each partial payment estimate shall include the following certification and declaration by the CONTRACTOR, set forth in Subparagraphs 19.1.1 and 19.1.2.

19.1.1 The undersigned CONTRACTOR certifies that to the best of his knowledge, information, and belief, the WORK covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by him for WORK for which previous Certificates for Payment were issued and payments received from the OWNER, and that current payment shown herein is now due.

19.1.2 I hereby declare that I have not, during the period covered by this Application, performed any work, furnished any material, sustained any loss, damage, or delay for any reason, including soil conditions encountered or created, or otherwise done anything for which I shall ask, demand, sue for, or claim compensation from the OWNER or its agents, and the OWNER's ENGINEER or its agents, in addition to the regular items set forth in the Contract as dated above executed between myself and the OWNER, and in the CHANGE ORDERS for work issued by the OWNER in writing as provided thereunder, except as I hereby make claim for additional compensation and/or extension of time, as set forth on the itemized statement attached hereto.

There is/is not an itemized statement attached. (STRIKE ONE)

19.2 The ENGINEER will, within ten (10) days after receipt of each partial payment estimate, either indicate in writing his approval of payment and present the partial payment estimate to the OWNER, or return the partial payment estimate to the CONTRACTOR indicating in writing his reasons for refusing to approve payment. In the latter case, the CONTRACTOR may make the necessary corrections and resubmit the partial payment estimate after which time the ENGINEER will have an

additional ten (10) days to review. The OWNER will, within thirty (30) days of presentation to him of an approved partial payment estimate, pay the CONTRACTOR a progress payment on the basis of the approved partial payment estimate.

19.2.1 The CONTRACTOR shall submit progress payment requests monthly.

19.2.2 The OWNER shall retain five percent (5%) of the amount of each payment for the duration of the project.

19.2.3 At the time of SUBSTANTIAL COMPLETION of the project, the retainage shall be reduced to one percent (1%).

19.3 The request for payment may also include an allowance for the cost of such major materials and equipment which are suitably stored either at or near the site.

19.4 Prior to SUBSTANTIAL COMPLETION, the OWNER, with the approval of the ENGINEER and with the concurrence of the CONTRACTOR, may use any completed or substantially completed portions of the WORK. Such use shall not constitute an acceptance of such portions of the WORK.

19.5 The OWNER shall have the right to enter the premises for the purpose of doing work not covered by the CONTRACT DOCUMENTS. This provision shall not be construed as relieving the CONTRACTOR of the sole responsibility for the care and protection of the WORK, or the restoration of any damaged WORK except such as may be caused by agents or employees of the OWNER.

19.6 Upon completion and acceptance of the WORK, the ENGINEER shall issue a certificate attached to the appropriate payment request that the WORK has been accepted by him under the conditions of the CONTRACT DOCUMENTS.

19.7 The CONTRACTOR will indemnify and save the OWNER or the OWNER's agents harmless from all claims growing out of the lawful demands of SUBCONTRACTORS, laborers, workmen, mechanics, materialmen, and furnishers of machinery and parts thereof, equipment, tools, and all supplies, incurred in the furtherance of the performance of the WORK. The CONTRACTOR shall, at the OWNER's request, and at any time during the course of the PROJECT, furnish satisfactory evidence that all obligations of the nature designated above, have been paid, discharged, or waived. If the CONTRACTOR fails to do so, the OWNER may, after having notified the CONTRACTOR, either pay unpaid bills or withhold from the CONTRACTOR's unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged whereupon payment to the CONTRACTOR shall be resumed in accordance with the terms of the CONTRACT DOCUMENTS, but in no event shall the provisions of this sentence be construed to impose any obligations upon the OWNER to either the CONTRACTOR, his Surety, or any third party. In paying any unpaid bills of the CONTRACTOR, any payment so made by the OWNER shall be considered as a payment made under the CONTRACT DOCUMENTS by the OWNER to the CONTRACTOR and the OWNER shall not be liable to the CONTRACTOR for any such payments made in good faith.

19.8 If the OWNER fails to make payment thirty (30) days after approval by the ENGINEER, in addition to other remedies available to the CONTRACTOR, there shall be added to each such payment interest at the maximum legal rate commencing on the first day after said payment is due and continuing until the payment is received by the CONTRACTOR. The legal rate of interest shall be as specified in VAMS 408.020.

20. ACCEPTANCE OF FINAL PAYMENT AS RELEASE:

20.1 The acceptance by the CONTRACTOR of final payment shall be and shall operate as a release

to the OWNER of all claims and all liability to the CONTRACTOR other than claims in stated amounts as may be specifically excepted by the CONTRACTOR for all things done or furnished in connection with this WORK and for every act and neglect of the OWNER and others relating to or arising out of this WORK. Any payment, however, final or otherwise, shall not release the CONTRACTOR or his sureties from any obligations under the CONTRACT DOCUMENTS or the Performance Bond and Payment Bonds.

21. INSURANCE:

21.1 The CONTRACTOR shall purchase and maintain such insurance as will protect him from claims which may arise out of or result from the CONTRACTOR's execution of the WORK, whether such execution be by himself or by any SUBCONTRACTOR or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable. The form and limits of such insurance shall be as set forth in Section 00 52 00- Agreement 2022 of these CONTRACT DOCUMENTS. **Note that a separate policy must be provided for Owner's and Contractor's Protective Liability Insurance, in addition to the policies for Workers" Compensation, Employer's Liability, Commercial General Liability, and Automobile Liability.**

22. CONTRACT SECURITY:

22.1 The CONTRACTOR shall, within ten (10) days after the receipt of the NOTICE OF AWARD, furnish the OWNER with a Performance Bond and a Labor and Materials Payment Bond in penal sums equal to the amount of the CONTRACT PRICE, conditioned upon the performance by the CONTRACTOR of all undertakings, covenants, terms, conditions, and agreements of the CONTRACT DOCUMENTS, and upon the prompt payment by the CONTRACTOR to all persons supplying labor and materials in the prosecution of the WORK provided by the CONTRACT DOCUMENTS. Such BONDS shall be executed by the CONTRACTOR and a corporate bonding company licensed to transact such business in the state in which the WORK is to be performed and named on the current list of "Surety Companies Acceptable on Federal Bonds" as published in the Treasury Department Circular Number 570. The expense of these BONDS shall be borne by the CONTRACTOR. If, at any time, a surety of any such BOND is declared a bankrupt or loses its right to do business in the state in which the WORK is to be performed or is removed from the list of Surety Companies accepted on Federal BONDS, the CONTRACTOR shall, within ten (10) days after notice from the OWNER to do so, substitute an acceptable BOND (or BONDS) in such form and sum and signed by such surety or sureties as may be satisfactory to the OWNER. The premiums on such BOND shall be paid by the CONTRACTOR. No further payments shall be deemed due nor shall be made until the new surety or sureties shall have furnished an acceptable BOND to the OWNER.

23. ASSIGNMENTS:

23.1 Neither the CONTRACTOR nor the OWNER shall sell, transfer, assign, or otherwise dispose of the Contract or any portion thereof, or of his right, title or interest therein, or his obligations thereunder, without written consent of the other party.

24. INDEMNIFICATION:

24.1 The CONTRACTOR will indemnify and hold harmless the OWNER and the ENGINEER and their agents and employees from and against all claims, damages, losses, and expenses including attorney's fees arising out of or resulting from the performance of the WORK, provided that any such claims, damages, loss or expense is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property including the loss of use resulting therefrom; and

is caused in whole or in part by any negligent or willful act or omission of the CONTRACTOR and SUBCONTRACTOR, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable.

24.2 In any and all claims against the OWNER or the ENGINEER, or any of their agents or employees by any employee of the CONTRACTOR, any SUBCONTRACTOR, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for the CONTRACTOR or any SUBCONTRACTOR under Worker's Compensation acts, disability benefit acts, or other employee benefits acts.

24.3 The obligation of the CONTRACTOR under this paragraph shall not extend to the liability of the ENGINEER, his agents or employees, arising out of the preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs, or specifications.

25. SEPARATE CONTRACTS:

25.1 The OWNER reserves the right to let other contracts in connection with this PROJECT. The CONTRACTOR shall afford other CONTRACTORS reasonable opportunity for the introduction and storage of their materials and the execution of their WORK, and shall properly connect and coordinate his WORK with theirs. If the proper execution or results of any part of the CONTRACTOR's WORK depends upon the WORK of any other CONTRACTOR, the CONTRACTOR shall inspect and promptly report to the ENGINEER any defects in such WORK that render it unsuitable for such proper execution and results.

25.2 The OWNER may perform additional WORK related to the PROJECT by himself, or he may let other contracts containing provisions similar to these. The CONTRACTOR will afford the other CONTRACTORS who are parties to such Contracts (or the OWNER, if he is performing the additional WORK himself), reasonable opportunity for the introduction and storage of materials and equipment and the execution of WORK, and shall properly connect and coordinate his WORK with theirs.

25.3 If the performance of additional work by other CONTRACTORS or the OWNER is not noted in the CONTRACT DOCUMENTS prior to the execution of the CONTRACT, written notice thereof shall be given to the CONTRACTOR prior to starting any such additional WORK. If the CONTRACTOR believes that the performance of such additional WORK by the OWNER or others entitles him to an extension of the CONTRACT TIME, he may make a claim therefor as provided in Sections 14 and 15.

26. SUBCONTRACTING:

26.1 The CONTRACTOR may utilize the services of specialty SUBCONTRACTORS on those parts of the WORK which, under normal contracting practices, are performed by specialty SUBCONTRACTORS.

26.2 The CONTRACTOR shall not award WORK to SUBCONTRACTOR(s) in excess of fifty percent (50%) of the CONTRACT PRICE, without prior written approval of the OWNER.

26.3 The CONTRACTOR shall be fully responsible to the OWNER for the acts and omissions of his SUBCONTRACTORS, and of persons either directly or indirectly employed by them, as he is for the acts and omissions of persons directly employed by him.

26.4 The CONTRACTOR shall cause appropriate provisions to be inserted in all subcontracts relative to the WORK to bind SUBCONTRACTORS to the CONTRACTOR by the terms of the CONTRACT DOCUMENTS insofar as applicable to the WORK of SUBCONTRACTORS and to give the

CONTRACTOR the same power as regards terminating any subcontract that the OWNER may exercise over the CONTRACTOR under any provisions of the CONTRACT DOCUMENTS.

26.5 Nothing contained in this CONTRACT shall create any contractual relation between any SUBCONTRACTOR and the OWNER.

27. ENGINEER'S AUTHORITY:

27.1 The ENGINEER shall act as the OWNER's representative during the construction period. He will make visits to the site and determine if the WORK is proceeding in accordance with the CONTRACT DOCUMENTS.

27.2 The ENGINEER will not assume responsibility for the construction means, control, techniques, sequences, procedures, or construction safety. Notwithstanding any reference to any rule, regulation or guideline, the required and/or implied duty of the ENGINEER to conduct construction review of the CONTRACTOR's performance does not, and is not intended to, result in the assumption of any responsibility by the ENGINEER for review of the adequacy of the CONTRACTOR's safety measures in, on, or near the construction site.

28. LAND AND RIGHTS-OF-WAY:

28.1 Prior to issuance of NOTICE TO PROCEED, the OWNER shall obtain all land and rights-of-way necessary for carrying out and for the completion of the WORK to be performed pursuant to the CONTRACT DOCUMENTS, unless otherwise mutually agreed.

28.2 The OWNER shall provide to the CONTRACTOR information which delineates and describes the land owned and rights-of- way acquired.

28.3 The CONTRACTOR shall provide at his own expense and without liability to the OWNER, any additional land and access thereto that the CONTRACTOR may desire for temporary construction facilities, or for storage of materials.

29. GUARANTY:

29.1 The CONTRACTOR shall guarantee all materials and equipment furnished and work performed for a period of one (1) year from the date of final acceptance of the entire project by the OWNER and ENGINEER. The CONTRACTOR warrants and guarantees for a period of one (1) year from the date of FINAL ACCEPTANCE of the system that the completed system is free from all defects due to faulty materials or workmanship and the CONTRACTOR shall promptly make such corrections as may be necessary by reason of such defects, including the repairs of any damage to other parts of the system resulting from such defects. This obligation shall survive termination of the Contract. The OWNER will give notice of observed defects with reasonable promptness. In the event that the CONTRACTOR should fail to promptly make such repairs, adjustments, or other WORK that may be made necessary by such defects, the OWNER, after notification to the CONTRACTOR, may do so and charge the CONTRACTOR the cost thereby incurred, including, but not limited to, costs of labor, materials, supplies, and equipment incurred by the OWNER.

30. TAXES:

30.1 The CONTRACTOR will pay all sales, consumer, use, and other similar taxes required by the law of the place where the work is performed.

END OF SECTION 00 72 00

Section 00 73 00 - Supplementary General Conditions

1.1 ARPA PLANS & SPECIFICATIONS DROP-IN REQUIREMENTS

See Attachment (20 pages)

1.2 STANDARD SPECIFICATIONS

Specifications in this Project Manual amend or supplement the City of Joplin Standard Specifications effective February 15, 2021 (City Standard Specifications) and the Missouri Standard Specifications for Highway Construction, Effective October 1, 2014 (MoDOT Standard Specifications).

In the event of conflict between the City Standard Specifications and the MoDOT Standard Specifications (together, the “Standard Specifications”), the City Standard Specifications prevail.

Unless in conflict with the General Conditions, Supplemental General Conditions, or Job Special Provisions, all Standard Specifications that are not so amended or supplemented remain in full force and effect.

1.3 "OR EQUAL", "OR APPROVED ALTERNATE" CLAUSE

Whenever material or article required is specified or shown on the plans by using the name of the proprietary product or of a particular manufacturer or vendor, any material or article which will perform adequately the duties imposed by the general design will be considered an equal alternate and satisfactory, providing the material or article so proposed is of equal substance and function in the Engineer's opinion. However, substitute items shall not be purchased or installed without the Engineer's written approval. Descriptive data on any item offered as an equal or as an alternate, must be submitted to the Engineer no later than seven (7) days before the opening of bids, and the Engineer will issue addenda identifying manufacturers of approved alternate equipment.

1.4 CONTRACT DRAWINGS AND SPECIFICATIONS

The CONTRACTOR shall receive six (6) sets of the contract drawings and specifications with the "Notice of Award". The CONTRACTOR shall maintain at the site for the OWNER one copy of all Drawings, Specifications, Addenda, approved Shop Drawings, Change Orders, and other modifications, in good order, and marked to record all changes made during construction. These shall be available to the OWNER.

1.5 RECORD DRAWINGS

The CONTRACTOR shall deliver to the OWNER a complete set of Contract Drawings neatly recorded with all changes made during construction. These Drawings shall be labeled "Record Drawings" with the date of the submittal and the Contractor's name and signature clearly indicated. These "Record Drawings" shall be submitted following final acceptance of the Project and prior to the final payment.

1.6 CLOSE OUT DOCUMENTATION

Prior to Substantial Completion by the CONTRACTOR of the Project, and prior to the receipt of payment of any amount in excess of ninety-five percent (95%) of the total final contract dollar amount, the CONTRACTOR shall obtain and deliver to the OWNER, through the Engineer:

Notarized Contractor's Certificate of Compliance in SECTION 00 65 13, signed by the CONTRACTOR, or his legal repre- sentative, certifying that all persons providing labor have been paid in accordance with wage rates applicable to the Project, and listing names of all suppliers, materialmen, subcontractors, and others providing goods and/or services for the Project.

Affidavit of Payment of Debts in SECTION 00 65 19.13 signed by the CONTRACTOR, listing all manufacturers, materialmen, subcontractors, and others furnishing services and/or materials for the Project and stating they have been paid in full.

Notarized Affidavit of Release of Lien in SECTION 00 65 19.16, from all manufacturers, materialmen, subcontractors, and others furnishing services and/or materials for the Project.

1.7 EXISTING SITE CONDITIONS DOCUMENTATION

Prior to beginning construction, the CONTRACTOR shall be responsible for documenting the condition of existing improvements, by taking detailed photographs and/or videos. The documentation will be used to settle any disputes with the CONTRACTOR for damage to existing improvements. If documentation does not exist to settle such disputes, the Resident Project Representative's judgment shall be relied upon.

1.8 REQUIRED CLAUSES IN PUBLIC WORKS CONTRACTS

1. Prevailing Wages. All labor utilized in the construction of the aforementioned improvements shall be paid a wage of no less than the "prevailing hourly rate of wages" for work of a similar character in this locality, as established and amended at any time by the Department of Labor and Industrial Relations of the State of Missouri.

At any time the contractor is found to not have paid prevailing wages, the contractor shall forfeit as a penalty to the city one hundred dollars for each underpaid worker employed, for each calendar day, or portion thereof such worker is paid less than the said stipulated rates for any work done under this contract.

2. Safety Training. The contractor and all subcontractors to the contract must require all on-site employees to complete the ten-hour safety training program required under Section 292.675, RSMo. if they have not previously completed the program and have documentation of having done so.

The contractor will forfeit a penalty to the contracting public body of $2500 plus an additional $100 for each employee employed by the contractor or subcontractor, for each calendar day, or portion thereof, such employee is employed without the required training by Section 292.675, RSMo.

3. Excessive Unemployment in Missouri. Pursuant to Section 290.560, RSMo., whenever

there is a period of excessive unemployment in Missouri, all public works projects or improvements for any governmental unit shall employ only Missouri laborers and laborers from nonrestrictive states on such projects or improvements, unless such laborers are unavailable or incapable of performing the particular type of work involved and this fact is certified by the contractor and approved by the contracting officer for the governmental unit, then at this time other laborers may be used.

4. **Nonresident/Foreign Contractors**. The Contractor shall procure and maintain during the life of this contract:

   a. If the Contractor is a foreign corporation, a certificate of authority to transact business in the State of Missouri from the Secretary of State, unless exempt pursuant to the provisions of Section 351.570 RSMo.

   b. A certificate from the Missouri Director of Revenue evidencing compliance with the transient employer financial assurance law, unless exempt pursuant to the provisions of Section 285.230 RSMo.

5. **Nondiscrimination**. The Contractor agrees in the performance of this contract not to discriminate on the grounds or because of race, creed, color, national origin or ancestry, sex, religion, handicap, age, or political opinion or affiliation, against any employee of Contractor or applicant for employment and shall include a similar provision in all subcontracts let or awarded hereunder.

NOTE: The foregoing clauses - or something similar - are always necessary, but most public works contracts should also include clauses providing detailed insurance requirements, a clause detailing the contractor's responsibility for subcontractors, a general independent contractor clause, a clause addressing liability and indemnity, a clause addressing payment for labor and materials and a clause addressing payment.

1.9 PROTEST PROVISIONS

Grantees and subgrantees alone will be responsible, in accordance with good administrative practice and sound business judgment, for the settlement of all contractual and administrative issues arising out of procurements. These issues include, but are not limited to source evaluation, protests, disputes, and claims. These standards do not relieve the grantee or subgrantee of any contractual responsibilities under its contracts. Federal agencies will not substitute their judgment for that of the grantee or subgrantee unless the matter is primarily a Federal concern. Violations of law will be referred to the local, State, or Federal authority having proper jurisdiction.

Grantees and subgrantees will have protest procedures to handle and resolve disputes relating to their procurements and shall in all instances disclose information regarding the protest to the awarding agency. A protester must exhaust all administrative remedies with the grantee and subgrantee before pursuing a protest with the Federal agency. Reviews of protests by the Federal agency will be limited to:

Violations of Federal law or regulations and the standards of this section (violations of State or local law will be under the jurisdiction of State or local authorities) and

Violations of the grantee's or subgrantee's protest procedures for failure to review a complaint or protest. Protests received by the Federal agency other than those specified above will be referred to the grantee or subgrantee.

Protest Procedures - City of Joplin

The procedures to be utilized by the City of Joplin, Missouri, in reviewing protests concerning solicitations or contract awards are as follows:

Section 1. The City Council of the City of Joplin does hereby establish the following procedures for prompt consideration of initial protests filed by contractors or subcontractors concerning the solicitations or contract awards for construction of the City of Joplin's Dover Outdoor Recreation Area Bicycle Park being constructed with state (ARPA) assistance and/or federal grant funds, as follows:

Section 2. A protest is a written complaint concerning the City of Joplin's solicitation or award of a sub-agreement or contract which must be filed in writing with the City Clerk of the City of Joplin by a party with a direct financial interest adversely affected by the City of Joplin procurement action for the construction of the Dover Outdoor Recreation Area Bicycle Park.

Section 3. A party with a financial interest which believes it is adversely affected by a procurement action by the City of Joplin must file a written protest stating the basis for said protest with the City Clerk of the City of Joplin as early in the procurement process as possible. A protest must be received by the Clerk within seven (7) days after the basis for the protest is known or reasonably should have been known. City Attorney, upon receipt of said protest, shall hold a hearing as soon as reasonably possible or proper, and legal notification to the party with the financial interest which is allegedly adversely affected by the action of the City of Joplin and that said protestant shall be accorded a complete hearing and shall have the right to adduce evidence, both verbal and documentary to the City Attorney, and upon conclusion of the hearing and the evidence adduced as submitted the City Council shall announce and issue the City's written decision and order making disposition of the issues raised in said protest. A written copy of the decision of the City Council shall be served upon the protestant within seven (7) days after the hearing.

Section 4. Protestant shall have seven (7) days thereafter to file a protest appeal with the appropriate United States or state agency or official making any awards of financial assistance to the City of Joplin in the construction of said public utility projects.

Section 5. The provisions of this ordinance shall be incorporated in any solicitations, contract awards, or sub-agreements entered into by the City of Joplin.

Section 6. The provisions of this ordinance are severable and if any provision or part hereof shall be held invalid or unconstitutional or inapplicable to any person or circumstance, such invalidity, unconstitutionality, or inapplicability shall not affect or impair the remaining provisions of this ordinance.

Equal Employment Opportunity and Nondiscrimination in Employment – 41 CFR 60-4; E.O. 11246: 41 CFR 60-4 published April 7, 1978 and amended October 3, 1980, requires that the ARPA funding applicant and selected bidders comply with Executive Order 11246 for bids, contracts, and subcontracts for all federally assisted construction contracts exceeding $10,000. The specifications explain the requirements for bidders and contractors under E.O. 11246.

- Bidders please see document titled "Standard Federal Equal Employment Opportunity Construction Contract Specifications (Executive Order 11246)"

Contracting with Small and Minority Businesses, Women's Business Enterprises, and Labor Surplus Area Firms – 2 CFR 200.321; E.O. 11625 and 12138: Prior to awarding contracts, the ARPA funding applicant and any contractor awarding subcontracts must take the following affirmative steps in accordance with 2 CFR 200.321:

a. Placing qualified small and minority businesses and women's business enterprises on solicitation lists;
b. Assuring that small and minority businesses, and women's business enterprises are solicited whenever they are potential sources;
c. Dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority businesses, and women's business enterprises;
d. Establishing delivery schedules, where the requirement permits, which encourage participation by small and minority businesses, and women's business enterprises;
e. Using the services and assistance, as appropriate, of such organizations as the Small Business Administration and the Minority Business Development Agency of the Department of Commerce;

- Bidders please also see Missouri Executive Order 15-06

Employment of Unauthorized Aliens Prohibited – §285.530 RSMo: Pursuant to §285.530.1, RSMo, the contractor assures that it, as well as its subcontractors, does not knowingly employ, hire for employment, or continue to employ an unauthorized alien to perform work within the State of Missouri, and shall affirm, by sworn affidavit and provision of documentation, its enrollment and participation in a federal work authorization program with respect to the employees working in connection with the contracted services. Further, the contractor assures that it, as well as its subcontractor shall sign an affidavit affirming that it does not knowingly employ any person who is an unauthorized alien in connection with the contracted services.

In accordance with §285.525 to 285.550, RSMo a general contractor or subcontractor of any tier shall not be liable when such contractor or subcontractor contracts with its direct subcontractor who violates subsection 1 of §285.530, RSMo if the contract binding the contractor and subcontractor affirmatively states that the direct subcontractor is not knowingly in violation of subsection 1 of §285.530, RSMo and shall not henceforth be in such violation and the contractor or subcontractor receives a sworn affidavit under the penalty of perjury attesting to the fact that the direct subcontractor's employees are lawfully present in the United States.

- The selected contractor(s) must complete the "Business Entity Certification, Enrollment Documentation, and Affidavit of Work Authorization" form.
- In addition, the selected contractor(s) must enroll in the federal E-verify system, provide supporting documentation of enrollment, and provide verification documentation for enrollment in the Federal E-Verify system.

Contract Work Hours and Safety Standards Act – 40 U.S.C. 327-330: The contractor(s) and subcontractor(s) shall comply with Sections 103 and 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 327–330) as supplemented by Department of Labor regulations (29 CFR part 5).

OSHA Training – §292.675, RSMo: Any person signing a contract to work on the construction of public works for any public body shall provide a ten-hour Occupational Safety and Health Administration (OSHA) construction safety program for their on-site employees which includes a course in construction safety and health approved by OSHA or a similar program approved by the Missouri Department of Labor and Industrial Relations which is at least as stringent as an approved OSHA program. All employees are required to complete the program within sixty days of beginning work on such construction project.

Debarment and Suspension – 2 CFR 180; E.O. 12549: The Code of Federal Regulations at Title 2, Part 180, prohibits participation in federally funded contracts by persons excluded or disqualified from doing business with

the federal government. Bidders are responsible for advising the Owner if they are excluded or disqualified, and to check whether subcontractors they intend to use are excluded or disqualified. All tiers of subcontractors have the same responsibility to notify the one for which they are providing services if they are excluded or disqualified, and to check the status of any subcontractors they intend to use. Status can be checked on the System for Award Management (SAM) located on the Internet at https://www.sam.gov/SAM/. All subcontracts at any tier should include this language.

- The selected bidders must complete the "Certification Regarding Debarment and Suspension" form.

Small Business Act – P.L. 100-590: Prior to awarding contracts, the ARPA funding applicant and any contractor awarding subcontracts must take the following affirmative steps in accordance with Section 129 of Public Law 100-590, Small Business Administration Reauthorization and Amendment Act of 1988:

a. Placing Small Business in Rural Areas (SBRA) on solicitation lists;
b. Ensuring that SBRAs are solicited whenever they are potential sources;
c. Dividing total requirements, when economically feasible, into small tasks or quantities to permit maximum participation by SBRAs;
d. Establishing delivery schedules, where the requirements of work will permit which would encourage participation by SBRAs; and
e. Utilizing the services of the Small Business Administration and the Minority Business Development Agency of the U.S. Department of Commerce, as appropriate.

Award of Contract – 2 CFR 200.320(b)(1)(ii)(D): The applicant will award the contract to the lowest responsive, responsible bidder. The contract must be for a firm fixed-price.

The contract award will be awarded only to responsible contractors possessing the ability to perform successfully, which will be determined by considering such matters as contractor integrity, compliance with public policy, record of past performance, and financial and technical resources.

Central Contractor Registration – P.L. 109-282: In accordance with the Federal Funding Accountability Act of 2006, the contractor assures that it, as well as its subcontractor(s), shall register in the System for Award Management (SAM).

SAM is the Official U.S. Government system that consolidated the capabilities of Central Contractor Registration (CCR)/FedReg, Online Representations and Certifications Application (ORCA), and Excluded Parties List System (EPLS). There is NO fee to register for this site. If you had an active record in CCR, you have an active record in SAM. You do not need to do anything in SAM at this time, unless a change in your business circumstances requires updates to your Entity record(s) in order for you to be paid or receive an award, or you need to renew your Entity(s) prior to its expiration. To update or renew your Entity records(s) in SAM, you will need to create a SAM User Account located on the Internet at https://www.sam.gov and link it to your migrated Entity records. You will need a user account to search for registered entities in SAM.

If the prime contractor is not currently registered in SAM, they are required to do so, as their status will be checked in SAM using the Unique Entity Identifier (UEI) provided by SAM.

Privity of Contract: The Missouri Department of Natural Resources, its divisions, nor its employees are or will be a party to the contract(s) at any tier.

Protests – 2 CFR 200.318(k): Neither the U.S. Department of Treasury nor the Missouri Department of Natural Resources will be involved in protest(s) and their resolution.

Domestic Products Procurement Law – §§34.350 - 34.359 RSMo: All manufactured goods or commodities used or supplied in the performance of any contract or subcontract awarded on this project shall be manufactured, assembled or produced in the United States, unless obtaining American-made products would increase the cost of the contract by more than ten percent (10%). In accordance with §34.350 through 34.359 RSMo, a waiver may be requested from the owner.

- The selected bidders must complete the "Domestic Products Procurement Act – §§34.350 - 34.359 RSMo Certification" form.

Anti-Lobbying Act – P.L. 101-121: Sub-recipients who request or receive from the grant recipient a sub-grant, contract, or sub-contract exceeding $100,000, at any tier under a federal grant shall comply with the Anti-Lobbying Act, Section 319 of Public Law 101-121, and file an Anti-Lobbying Certification form, and the Disclosure of Lobbying Activities form, if required, to the next tier above.

- Selected bidders must complete one of the following forms:
  - If the selected bidder lobbied on the behalf of this project, the contractor will complete the "Disclosure of Lobbying Activities" form.
  - If the selected bidder did not lobby on the behalf of this project, the contractor will complete the "Certification Regarding Lobbying" form.

Record Retention – 2 CFR 200.334; §109.255 RSMo: The contractor(s) and sub-contractor(s) shall retain all project related records for three years after final payment(s) and all other pending matters are closed. An extended period of record retention may be required per the Local Record Retention Schedules created by the Local Records Board as authorized by §109.255 RSMo.

Access to Construction Site and Contract Records: The contractor shall provide access to the project site and project records by, the Missouri State Auditor, the Missouri Department of Natural Resources, the USEPA, the Comptroller General of the United States, or any of their duly authorized representatives to any books, documents, papers, and records of the contractor which are directly pertinent to that specific contract for the purpose of making audit, examination, excerpts, and transcriptions.

Payment Provisions – §8.260 RSMo; §8.960 RSMo: The owner shall make payment to the contractor in accordance with §8.260 and §8.960 RSMo. Retainage can be no more than 5%.

False Claims Act – 31 USC §3729: The contractor(s) and sub-contractor(s)s, if required by future OMB guidance, shall promptly refer to the State of Missouri or other appropriate Inspector General any credible evidence that a principal, employee, agent, contractor, sub-grantee, subcontractor or other person has submitted a false claim under the False Claims Act or has committed a criminal or civil violation of laws pertaining to fraud, conflict of interest, bribery, gratuity or similar misconduct involving those funds.

Clean Air Act - 42 U.S.C. 7506(C): The contractor(s) and sub-contractor(s) shall comply with the Clean Air Act.

Clean Water Act - 33 U.S.C. 1368: The contractor(s) and sub-contractor(s) shall comply with the Clean Water Act.

Energy Efficiency Requirements – Energy Policy and Conservation Act (P.L.94-163, 89 Stat. 871): The contractor(s) and sub-contractor(s) shall comply with the mandatory standards and policies relating to energy efficiency which are contained in the State energy conservation plan issued in compliance with the Energy Policy and Conservation Act (P.L. 94-163, 89 Stat. 871).

Recycled Materials – U.S.C. 6962 (RCRA Section 6002): In accordance with Section 6002 of the Resource Conservation and Recovery Act (RCRA), preference shall be given to the procurement of specific products containing recycled materials identified in guidelines developed by the USEPA. Current guidelines are contained in 40 CFR Part 247-254.

Historical and Archaeological – P.L. 93-291: If during the course of construction evidence of deposits of historical or archaeological interest is found, the contractor shall cease operations affecting the find and shall notify the owner who shall notify the Missouri Department of Natural Resources and the Director, Division of State Parks, P.O. Box 176, Jefferson City, Missouri 65102-0176, Telephone (573) 751-2479. The contractor shall halt any further disturbances of the deposits until notified by the owner that they may proceed. The owner will issue a notice to proceed only after the state official has surveyed the find and made a determination to the Missouri Department of Natural Resources and the owner. Compensation to the contractor, if any, for lost time or changes in construction to avoid the find, shall be determined in accordance with changed conditions or change order provisions of the specifications.

Prohibition on certain telecommunications and video surveillance services or equipment Certification – 2 CFR 200.216: In accordance with 2 CFR 200.216, recipients and sub-recipients are prohibited from obligating

or expending loan or grant funds to procure or obtain, extend or renew a contract to procure or obtain, or enter into a contract (or extend or renew a contract) to procure or obtain equipment, services, or systems that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. As described in Public Law 115-232, section 889, covered telecommunications equipment is telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities).

For the purpose of public safety, security of government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).

Anti-Discrimination Against Israel Act – §34.600 RSMo: In compliance with §34.600 RSMo, the contracting company certifies that it is not currently engaged in and shall not, for the duration of the contract, engage in a boycott of goods or services from the State of Israel; companies doing business in or with Israel or authorized by, licensed by, or organized under the laws of the State of Israel; or persons or entities doing business in the State of Israel, in accordance with §34.600, RSMo. Any contract that fails to comply with the provisions of this section shall be void against public policy.

- This provision does not apply to contracts with a total potential value of less than one hundred thousand dollars or to contractors with fewer than ten employees.

STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY
CONSTRUCTION CONTRACT SPECIFICATIONS
(EXECUTIVE ORDER 11246)

1. As used in these specifications:
   a. "Covered area" means the geographical area described in the solicitation from which this contract resulted;
   b. "Director" means Director, Office of Federal Contract Compliance Programs United States Department of Labor, or any person to whom the Director delegates authority;
   c. "Employer identification number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941.
   d. "Minority" includes:
      (i) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);
      (ii) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);
      (iii) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and
      (iv) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).
2. Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of $10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.
3. If the contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.
4. The Contractor shall implement the specific affirmative action standards provided in paragraphs 7 a through p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. Covered Construction Contractors performing construction work in geographical areas where they do not have a Federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the FEDERAL REGISTER in notice form, and such notices may be obtained from any Office of Federal Contract Compliance Programs office or from Federal procurement contracting officers. The Contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.
5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.
6. In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.
7. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:

a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.

c. Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefore, along with whatever additional actions the Contractor may have taken.

d. Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.

e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and training programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under 7b above.

f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting it's EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment decisions including specific review of these items with onsite supervisory personnel such as Superintendents, General Foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

h. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.

i. Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than once month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment sources, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of a Contractor's work force.

k. Validate all tests and other selection requirements where there is an obligation to do so under CFR Part 60-3.

l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

m. Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory affect by continually monitoring all personnel and employment related activities to ensure that

the EEO policy and the Contractor's obligations under these Specifications are being carried out.

n. Ensure that all facilities and company activities re nonsegregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.

p. Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

8. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7a through p). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7a through p of these Specifications providing that the Contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.

9. A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is underutilized).

10. The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.

11. The Contractor shall not enter into any Subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.

12. The Contractor shall carry out such sanctions and penalties for violation of these Specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these Specifications and Executive Order 11246, as amended.

13. The Contractor, in fulfilling its obligation under these Specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these Specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these Specifications, the Director shall proceed in accordance with 41-CFR 60-4.8.

14. The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, Contractors shall not be required to maintain separate records.

15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY (EXECUTIVE ORDER 11246)

1. The Offeror's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Specifications" set forth herein.

2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

Timetables	Goals for minority participation for each trade	Goals for female participation in each trade
All years	2.4%	6.9%

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area. If the contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the contractor also is subject to the goals for both its federally involved and nonfederally involved construction.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any construction subcontract in excess of $10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address and telephone number of the subcontractor; employer identification number of the subcontractor; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the subcontract is to be performed.

4. As used in this Notice, and in the contract resulting from this solicitation, the "covered area" is (insert description of the geographical areas where the contract is to be performed giving the state, county and city, if any).

Participation Goals for Minority Contractors per the
October 2019 Department of Labor OFCCP - Technical Assistance Guide

Missouri Counties

Adair 4.0	Howard..... 4.0	Ray 12.7
Andrew..... 3.2	Howell..... 2.3	Reynolds 11.4
Atchison 10.0	Iron..... 11.4	Ripley..... 11.4
Audrain 4.0	Jackson..... 12.7	St. Charles..... 14.7
Barry 2.3	Jasper..... 2.3	St. Clair 14.7
Barton..... 2.3	Jefferson..... 14.7	St. Francois 11.4
Bates..... 10.0	Johnson 10.0	Ste. Genevieve 11.4
Benton 10.0	Knox..... 4.0	St. Louis 14.7
Bollinger 11.4	Laclede..... 2.3	St. Louis City 14.7
Boone 4.0	Lafayette 10.0	Saline..... 10.0
Buchanan..... 3.2	Lawrence..... 2.3	Schuyler 4.0
Butler..... 11.4	Lewis..... 3.1	Scotland..... 4.0
Caldwell 10.0	Lincoln 11.4	Scott 11.4
Callaway 4.0	Linn 4.0	Shannon..... 2.3
Camden 4.0	Livingston 10.0	Shelby 4.0
Cape Girardeau 11.4	McDonald 2.3	Stoddard 11.4
Carroll 10.0	Macon 4.0	Stone 2.3
Carter..... 11.4	Madison..... 11.4	Sullivan 4.0
Cass 12.7	Maries 11.4	Taney..... 2.3
Cedar 2.3	Marion..... 2.4	Texas 2.3
Chariton..... 4.0	Mercer 10.0	Vernon..... 2.3
Christian..... 2.0	Miller..... 4.0	Warren..... 11.4
Clark..... 3.4	Mississippi 11.4	Washington 11.4
Clay 12.7	Moniteau 4.0	Wayne 11.4
Clinton..... 10.0	Monroe..... 4.0	Webster 2.3
Cole 4.0	Montgomery..... 11.4	Worth 10.0
Cooper..... 4.0	Morgan..... 4.0	Wright 2.3
Crawford 11.4	New Madrid 26.5	
Dade 2.3	Newton..... 2.3	
Dallas 2.3	Nodaway 10.0	
Daviess..... 10.0	Oregon..... 2.3	
De Kalb 10.0	Osage..... 4.0	
Dent..... 11.4	Ozark..... 2.3	
Douglas 2.3	Pemiscot..... 26.5	
Dunklin 26.5	Perry..... 11.4	
Franklin 14.7	Pettis..... 10.0	
Gasconade 11.4	Phelps..... 11.4	
Gentry 10.0	Pike 3.1	
Greene 2.0	Platte 12.7	
Grundy 10.0	Polk 2.3	
Harrison..... 10.0	Pulaski..... 2.3	
Henry..... 10.0	Putnam 4.0	
Hickory 2.3	Ralls 3.1	
Holt 10.0	Randolph 4.0	

Certification Regarding Debarment and Suspension

Applicant Name: _____

Project Name: _____

Project No.: _____ SAM.gov UEI No.: _____

The prospective participant certifies to the best of its knowledge and belief that it and its principals:

a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any governmental (federal, state, or local) entity;

b) Have not within a three-year period preceding this certification been convicted of or had a civil judgment rendered against them for:
    1) Commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (federal, state, or local) transaction or contract under a public transaction;
    2) Violation of federal or state antitrust statutes relating to the submission of offers; or
    3) Commission of embezzlement, theft, forgery, bribery, falsification ordestruction of records, making false statements, or receiving stolen property;

c) Are not presently indicted for, or otherwise criminally or civilly charged by a governmental entity (federal, state, or local) with, commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and

d) Have not, within a three-year period preceding this certification, had one or more public transactions (federal, state, or local) terminated for cause or default.

I understand that a false statement on this certification may be grounds for rejection of this proposal or termination of the award.

☐ I am able to certify to the above statements.

☐ I am unable to certify to the above statements and attached my explanation.

_____ _____
Typed Name of Authorized Representative Title of Authorized Representative

_____ _____
Signature of Authorized Representative Date

Certification Regarding Debarment and Suspension
Instructions

The Missouri Department of Natural Resources receives assistance from the federal government, and the funds provided to a community constitute a sub-agreement. Accordingly, each prospective recipient of a grant, loan, or cooperative agreement and any contractor or subcontractor must agree to fully comply with Executive Order 12549, 2 C.F.R. Part 180, and 2 C.F.R. Part 1532 regarding Debarment and Suspension.

"Principals," for the purposes of this certification, means officers; directors; owners; partners; and persons having primary management or supervisory responsibilities within an entity (e.g., general manager; plant manager; head of a subsidiary, division, or business segment, and similar positions).

The prospective grant, loan, or cooperative agreement recipient should return the signed certification, and explanation if needed, with its application to:

Missouri Department of Natural Resources
Financial Assistance Center
PO Box 176
Jefferson City, MO 65102-0176

Or email to fac@dnr.mo.gov.

The recipient of funding should also obtain a certification from their consulting engineer and prime contractor. The funding recipient shall also check the status on the System for Award Management (SAM) located on the Internet at https://www.sam.gov/portal/public/SAM/.

Each prospective subcontractor should submit a completed certification or explanation to the prime contractor for the project.

CERTIFICATION OF NONSEGREGATED FACILITIES

(Applicable to federally assisted construction contracts and related sub-contracts exceeding $10,000 which are not exempt from the Equal Opportunity clause.)

The federally assisted construction contractor certifies that he does not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The federally assisted construction contractor certifies further that he will not maintain or provide for his employees any segregated facilities at any of his establishments, and that he will not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The federally assisted construction contractor agrees that a breach of this certification is a violation of the Equal Opportunity clause in this contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, creed, color, or national origin, because of habit, local custom, or otherwise. The federally assisted construction contractor agrees that (except where he has obtained identical certifications from proposed subcontractors for specific time periods) he will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity clause, and that he will retain such certifications in his files.

Signature _____

Date_____

Name and Title of Signer (Print or Type) _____

Firm Name _____

NOTE: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.

BUSINESS ENTITY CERTIFICATION, ENROLLMENT DOCUMENTATION, AND AFFIDAVIT OF WORK AUTHORIZATION

BUSINESS ENTITY CERTIFICATION:
The vendor must certify their current business status by completing either Box A or Box B or Box C on this Exhibit.

BOX A:	To be completed by a non-business entity as defined below.
BOX B:	To be completed by a business entity who has not yet completed and submitted documentation pertaining to the federal work authorization program as described at https://www.e-verify.gov/.
BOX C:	To be completed by a business entity who has current work authorization documentation on file with a Missouri Department including Office of Administration, Division of Purchasing.

Business entity, as defined in section 285.525, RSMo, pertaining to section 285.530, RSMo, is any person or group of persons performing or engaging in any activity, enterprise, profession, or occupation for gain, benefit, advantage, or livelihood. The term "**business entity**" shall include but not be limited to self-employed individuals, partnerships, corporations, contractors, and subcontractors. The term "**business entity**" shall include any business entity that possesses a business permit, license, or tax certificate issued by the state, any business entity that is exempt by law from obtaining such a business permit, and any business entity that is operating unlawfully without such a business permit. The term "**business entity**" shall not include a self-employed individual with no employees or entities utilizing the services of direct sellers as defined in subdivision (17) of subsection 12 of section 288.034, RSMo.

Note: Regarding governmental entities, business entity includes Missouri schools, Missouri universities, out of state agencies, out of state schools, out of state universities, and political subdivisions. A business entity does not include Missouri state agencies and federal government entities.

BOX A – CURRENTLY NOT A BUSINESS ENTITY

I certify that _____ (Company/Individual Name) **DOES NOT CURRENTLY MEET** the definition of a business entity, as defined in section 285.525, RSMo pertaining to section 285.530, RSMo as stated above, because: (check the applicable business status that applies below)

☐ - I am a self-employed individual with no employees; **OR**

☐ - The company that I represent employs the services of direct sellers as defined in subdivision (17) of subsection 12 of section 288.034, RSMo.

I certify that I am not an alien unlawfully present in the United States and if _____ (Company/Individual Name) is awarded a contract for the services requested herein under _____ (IFB Number) and if the business status changes during the life of the contract to become a business entity as defined in section 285.525, RSMo pertaining to section 285.530, RSMo then, prior to the performance of any services as a business entity, _____ (Company/Individual Name) agrees to complete Box B, comply with the requirements stated in Box B and provide the Department with all documentation required in Box B of this exhibit.

Authorized Representative's Name (Please Print)	*Authorized Representative's Signature*
Company Name (if applicable)	Date

(Complete the following if you DO NOT have the E-Verify documentation and a current Affidavit of Work Authorization already on file with the State of Missouri. If completing Box B, do not complete Box C.)

BOX B – CURRENT BUSINESS ENTITY STATUS

I certify that _____ (Business Entity Name) **MEETS** the definition of a business entity as defined in section 285.525, RSMo pertaining to section 285.530.

Authorized Business Entity Representative's Name (Please Print)	*Authorized Business Entity Representative's Signature*
Business Entity Name	Date
E-Mail Address	

As a business entity, the vendor must perform/provide each of the following. The vendor should check each to verify completion/submission of all of the following:

☐ - Enroll and participate in the E-Verify federal work authorization program (Website: https://www.e-verify.gov/; Phone: 888-464-4218; Email: e-verify@dhs.gov) with respect to the employees hired after enrollment in the program who are proposed to work in connection with the services required herein;

AND

☐ - Provide documentation affirming said company's/individual's enrollment and participation in the E-Verify federal work authorization program. Documentation shall include EITHER the E-Verify Employment Eligibility Verification page listing the vendor's name and company ID OR a page from the E-Verify Memorandum of Understanding (MOU) listing the vendor's name and the MOU signature page completed and signed, at minimum, by the vendor and the Department of Homeland Security – Verification Division. If the signature page of the MOU lists the vendor's name and company ID, then no additional pages of the MOU must be submitted;

AND

☐ - Submit a completed, notarized Affidavit of Work Authorization provided on the next page of this Exhibit.

AFFIDAVIT OF WORK AUTHORIZATION:

The vendor who meets the section 285.525, RSMo, definition of a business entity must complete and return the following Affidavit of Work Authorization.

Comes now _____ (Name of Business Entity Authorized Representative) as _____ (Position/Title) first being duly sworn on my oath, affirm _____ (Business Entity Name) is enrolled and will continue to participate in the E-Verify federal work authorization program with respect to employees hired after enrollment in the program who are proposed to work in connection with the services related to contract(s) with the State of Missouri for the duration of the contract(s), if awarded in accordance with subsection 2 of section 285.530, RSMo. I also affirm that _____ (Business Entity Name) does not and will not knowingly employ a person who is an unauthorized alien in connection with the contracted services provided under the contract(s) for the duration of the contract(s), if awarded.

In Affirmation thereof, the facts stated above are true and correct. (The undersigned understands that false statements made in this filing are subject to the penalties provided under section 575.040, RSMo.)

Authorized Representative's Signature	Printed Name
Title	Date
E-Mail Address	E-Verify Company ID Number

Subscribed and sworn to before me this _____ (DAY) of _____ (MONTH, YEAR). I am commissioned as a notary public within the County of _____ (NAME OF COUNTY), State of _____ (NAME OF STATE), and my commission expires on _____ (DATE).

Signature of Notary	*Date*

(Complete the following if you have the E-Verify documentation and a current Affidavit of Work Authorization already on file with the State of Missouri. If completing Box C, do not complete Box B.)

BOX C – AFFIDAVIT ON FILE - CURRENT BUSINESS ENTITY STATUS

I certify that _____ (Business Entity Name) **MEETS** the definition of a business entity as defined in section 285.525, RSMo pertaining to section 285.530, RSMo and have enrolled and currently participates in the E-Verify federal work authorization program with respect to the employees hired after enrollment in the program who are proposed to work in connection with the services related to contract(s) with the State of Missouri. We have previously provided documentation to a Missouri Department that affirms enrollment and participation in the E-Verify federal work authorization program. The documentation that was previously provided included the following.

- ✓ The E-Verify Employment Eligibility Verification page OR a page from the E-Verify Memorandum of Understanding (MOU) listing the vendor's name and the MOU signature page completed and signed by the vendor and the Department of Homeland Security – Verification Division
- ✓ A current, notarized Affidavit of Work Authorization (must be completed, signed, and notarized within the past twelve months).

Name of **Missouri Department** to Which Previous E-Verify Documentation Submitted: _____

Date of Previous E-Verify Documentation Submission: _____

Previous **Bid/Contract Number** for Which Previous E-Verify Documentation Submitted: _____ (if known)

Authorized Business Entity Representative's Name (Please Print)	*Authorized Business Entity Representative's Signature*
Business Entity Name	Date
E-Mail Address	E-Verify MOU Company ID Number

FOR STATE OF MISSOURI USE ONLY

Documentation Verification Completed By:

Buyer	Date

Domestic Products Procurement Act – RSMo 34.350 – 34.359 Certification

Each contract for the purchase or lease of manufactured goods or commodities by any public agency, and each contract made by a public agency for construction, alteration, repair, or maintenance of any public works shall contain a provision that any manufactured goods or commodities used or supplied in the performance of that contract or any subcontract thereto shall be manufactured or produced in the United States. (34.353.1 RSMo)

Project Name: _____

Project Number: _____

Contract Name: _____

Please check one of the following and sign where indicated.

☐ All of the manufactured goods used in the project are produced in the United States.

☐ A waiver is being requested from the _____ to the domestic
(owner)
products provision due to the following exception:

- ☐ The specified products are not manufactured or produced in the United States in sufficient quantities or manufactured or produced in the United States within the necessary time frames in sufficient quantities.
- ☐ The cost for the specified products would increase the contract by more than 10 percent*; or
- ☐ Only one line of a product is manufactured or produced in the United States.

Documentation of at least one of the cases above must be provided. List below the materials that cannot comply with the Domestic Product Procurement Act provisions.

_____

_____

_____

_____

☐ Additional sheets (attach if necessary)

_____ _____

Name of Contracting Firm Signature Date

_____

_____

_____
ARPA Project Number

CERTIFICATION REGARDING LOBBYING

CERTIFICATION FOR CONTRACTS, GRANTS, **LOANS AND COOPERATIVE AGREEMENTS**

The undersigned certifies, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, “Disclosure Form to Report Lobbying,” in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including sub-contracts, sub-grants, and contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31 U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

_____
Typed Name & Title of Authorized Representative

_____
Signature and Date of Authorized Representative

Approved by OMB
0348-0046

Disclosure of Lobbying Activities

Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352
(See reverse for public burden disclosure)

1. Type of Federal Action: a. contract ____ b. grant c. cooperative agreement d. loan e. loan guarantee f. loan insurance	**2. Status of Federal Action:** a. bid/offer/application _____ b. initial award c. post-award	**3. Report Type:** a. initial filing _____ b. material change **For material change only:** Year _____ quarter _____ Date of last report_____
4. Name and Address of Reporting Entity: ____ Prime _____ Subawardee Tier_____, if Known: **Congressional District,** *if known*:	**5. If Reporting Entity in No. 4 is Subawardee,** Enter Name and Address of Prime: **Congressional District,** *if known*:	
6. Federal Department/Agency:	**7. Federal Program Name/Description:** CFDA Number, *if applicable*: _____	
8. Federal Action Number, *if known:*	**9. Award Amount**, *if known:* **$**	
10. a. Name and Address of Lobbying Registrant *(if individual, last name, first name, MI):*	**b. Individuals Performing Services** *(including address if different from No. 10a)* *(last name, first name, MI):*	
11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when this transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.	**Signature: _____** **Print Name: _____** **Title: _____** **Telephone No.: _____ Date: _____**	
Federal Use Only	**Authorized for Local Reproduction** **Standard Form - LLL (Rev. 7-97)**	

INSTRUCTIONS FOR COMPLETION OF SF-LLL, DISCLOSURE OF LOBBYING ACTIVITIES

This disclosure form shall be completed by the reporting entity, whether subawardee or prime Federal recipient, at the initiation or receipt of a covered Federal action, or a material change to a previous filing, pursuant to title 31 U.S.C. section 1352. The filing of a form is required for each payment or agreement to make payment to any lobbying entity for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with a covered Federal action. Complete all items that apply for both the initial filing and material change report. Refer to the implementing guidance published by the Office of Management and Budget for additional information.

1. Identify the type of covered Federal action for which lobbying activity is and/or has been secured to influence the outcome of a covered Federal action.

2. Identify the status of the covered Federal action.

3. Identify the appropriate classification of this report. If this is a followup report caused by a material change to the information previously reported, enter the year and quarter in which the change occurred. Enter the date of the last previously submitted report by this reporting entity for this covered Federal action.

4. Enter the full name, address, city, State and zip code of the reporting entity. Include Congressional District, if known. Check the appropriate classification of the reporting entity that designates if it is, or expects to be, a prime or subaward recipient. Identify the tier of the subawardee, e.g., the first subawardee of the prime is the 1st tier. Subawards include but are not limited to subcontracts, subgrants and contract awards under grants.

5. If the organization filing the report in item 4 checks "Subawardee," then enter the full name, address, city, State and zip code of the prime Federal recipient. Include Congressional District, if known.

6. Enter the name of the federal agency making the award or loan commitment. Include at least one organizational level below agency name, if known. For example, Department of Transportation, United States Coast Guard.

7. Enter the Federal program name or description for the covered Federal action (item 1). If known, enter the full Catalog of Federal Domestic Assistance (CFDA) number for grants, cooperative agreements, loans, and loan commitments.

8. Enter the most appropriate Federal identifying number available for the Federal action identified in item 1 (e.g., Request for Proposal (RFP) number; Invitations for Bid (IFB) number; grant announcement number; the contract, grant, or loan award number; the application/proposal control number assigned by the Federal agency). Included prefixes, e.g., "RFP-DE-90-001."

9. For a covered Federal action where there has been an award or loan commitment by the Federal agency, enter the Federal amount of the award/loan commitment for the prime entity identified in item 4 or 5.

10. (a) Enter the full name, address, city, State and zip code of the lobbying registrant under the Lobbying Disclosure Act of 1995 engaged by the reporting entity identified in item 4 to influence the covered Federal action.

    (b) Enter the full names of the individual(s) performing services, and include full address if different from 10(a). Enter Last Name, First Name, and Middle Initial (MI).

11. The certifying official shall sign and date the form, print his/her name, title, and telephone number.

According to the Paperwork Reduction Act, as amended, no persons are required to respond to a collection of information unless it displays a valid OMB control Number. The valid OMB control number for this information collection is OMB No. 0348-0046. Public reporting burden for this collection of information is estimated to average 10 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0046), Washington, DC 20503

Section 00 73 43 - Wage Rate Requirements

PREVAILING WAGE LAW, CHAPTER 290
Section 290.210 through 290.340 as Amended RSMo 1987, 1986, & Cumm. Supp. 1993

290.210 Definitions-As used in Section 290.210 to 290.340, unless the context indicates otherwise:

(1) "Construction" includes construction, reconstruction, improvement, enlargement, alteration, painting, and decorating, or major repairs

(2) "Department" means the Department of Labor and Industrial Relations.

(3) "Locality" means the county where the physical work upon public works is performed, except that if there is not available in the county a sufficient number of competent skilled workmen to construct the public works efficiently and properly, "locality" may include two or more counties adjacent to the one in which the work or construction is to be performed and from which such workers may be obtained in sufficient numbers to perform the work, and that, with respect to contracts with the state highway commission, "locality" may be construed to include two or more adjacent counties from which workmen may be accessible for work on such construction.

(4) "Maintenance work" means the repair, but not the replacement of existing facilities when the size, type, or extent of the existing facilities is not thereby changed or increased.

(5) "Prevailing hourly rate of wages" means the wages paid generally in the locality in which the public works is being performed, to workmen engaged in work of a similar character including the basic hourly rate of pay and the amount of the rate of contributions irrevocably made by a contractor or subcontractor to a trustee or to a third person pursuant to a fund, plan, or program, and the amount of the rate of costs to the contractor or subcontractor which may be reasonably anticipated in providing benefits to workmen and mechanics pursuant to an enforceable commitment to carry out a financially responsible plan or program which was communicated in writing to the workmen affected, for medical or hospital care, pensions on retirement or death, compensation for injuries or illness resulting from occupational activity, or insurance to provide any of the foregoing, for unemployment benefits, life insurance disability and sickness insurance, accident insurance, for vacation and holiday pay, for defraying costs of apprenticeship or other similar programs, or for other bona fide fringe benefits, but only where the contractor or subcontractor is not required by other federal or state law to provide any of the benefits; provided that the obligation of a contractor or subcontractor to make payment in accordance with the prevailing wage determination of the department, insofar as Sections 290.210 to 290.340 are concerned, may be discharged by the making of payments in cash, by the making of irrevocable contributions to trustees or third persons as provided herein, by the assumption of an enforceable commitment to bear the costs of a plan or program as provided herein, or any combination thereof, where the aggregate of such payments, contributions, and costs is not less than the rate of pay plus the other amounts as provided herein.

(6) "Public Body" means the State of Missouri or any officer, official, authority, board or commission of the state or other political subdivision thereof, or any institution supported in whole or in part by public funds.

(7) "Public Works" means all fixed works constructed for public use or benefit or paid for wholly or in part out of public funds. It also includes any work done directly by any public utility company when performed by it pursuant to the order of the public service commission or other public authority whether or not it be done under public supervision or direction or paid for wholly or in part out of public funds, when let to contract by said utility. It does not include any work done for or by any drainage or levee district.

(8) "Workmen" means laborers, workmen, and mechanics.

290.220 Policy declared - It is hereby declared to be the policy of the State of Missouri that a wage of no less than the prevailing hourly rate of wages for work of a similar character in the locality in which the work is performed, shall be paid to all workmen employed by or on behalf of any public body engaged in public works exclusive of maintenance work.

290.230 Prevailing wage rates required on construction of public works.

(1) Not less than the prevailing hourly rate of wages for work of a similar character in the locality in which the work is performed, and not less than the prevailing hourly rate of wages for legal holiday and overtime work, shall be paid to all workmen employed by or on behalf of any public body engaged in the construction of public works, exclusive of maintenance work. Only such workmen as are directly employed by contractors or subcontractors in actual construction work on the site of the building or construction job shall be deemed to be employed upon public works.

(2) When the hauling of materials or equipment includes some phase of construction other than the mere transportation to the site of the construction, workmen engaged in this dual capacity shall be deemed employed directly on public works.

290.240 Department of Labor and Industrial Relations to enforce -make regulations

(1) The department shall inquire diligently as to any violation of Sections 290.210 to 290.340, shall institute actions for penalties herein prescribed, and shall enforce generally the provisions of Sections 290.210 to 290.340.

(2) The department may establish rules and regulations for the purpose of carrying out the provisions of Sections 290.210 to 290.340.

290.250 Prevailing wage, incorporation into contracts -- failure to pay, Penalty -- complaint of violation, public body or prime contractor to withhold payment. Every public body authorized to contract for or construct public works, before advertising for bids or undertaking such construction shall request the department to determine the prevailing rates of wages for workmen for the class or type of work called for by the public works, in the locality where the work is to be performed. The department shall determine the prevailing hourly rate of wages in the locality in which the work is to be performed for each type of workman required to execute the contemplated contract and such determination or schedule of the prevailing hourly rate of wages shall be attached to and made a part of the specifications for the work. The public body shall then specify in the resolution or ordinance and in the call for bids for the contract, what is the prevailing hourly rate of wages in the locality for each type of workman needed to execute the contract and also the general prevailing rate for legal holiday and overtime work. It shall be mandatory upon the contractor to whom the contract is awarded and upon any subcontractor under him, to pay not less than the specified rates to all workmen employed by them in the execution of the contract. The public body awarding the contract shall cause to be inserted in the contract a stipulation to the effect that not less than the prevailing hourly rate of wages shall be paid to all workmen performing work under the contract. It shall also require in all contractor's bonds that the contractor include such provisions as will guarantee the faithful performance of the prevailing hourly wage clause as provided by the contract. The contractor shall forfeit as a penalty to the state, county, city, and county, city, town, district, or other political subdivision on whose behalf the contract is made or awarded ten dollars for each workman employed, for each calendar day, or portion thereof, such workman is paid less than the said stipulated rates for any work done under said contract, by him or by any subcontractor under him, and the said public body awarding the contract shall cause to be inserted in the contract a stipulation to this effect. It shall be the duty of such public body awarding the contract, and its agents and officers, to take cognizance of all complaints of all violations of the provisions of Sections 290.210 to 290.340 committed in the course of the execution of the contract, and when making payments to the contractor becoming due under said contract, to withhold and retain therefrom all sums and amounts due and owing as a result of any violation of Sections 290.210 to 290.340. It shall be lawful for any contractor to withhold from any subcontractor under him sufficient sums to cover any penalties withheld from him by the awarding body on account of said subcontractor's failure to comply with

the provisions of Sections 290.210 to 290.340 and if payment has already been made to him, the contractor may recover from the amount of the penalty in a suit at law.

290.260 Determination of hourly rate for highway commission, when made, where filed, objections, hearing, determination

(1) The department, as it deems necessary, shall from time to time investigate and determine the prevailing hourly rate of wages in the localities. A determination applicable to every locality to be contained in a general wage order shall be made annually on or before July 1st of each year for the Missouri State Highway Commission and shall remain in effect until supersede by a new general wage order. In determining prevailing rates, the department shall ascertain and consider the applicable wage rates established by collective bargaining agreements, if any, and the rates that are paid generally within the locality.

(2) A certified copy of the determination so made shall be filed immediately with the Secretary of State and with the department in Jefferson City. Copies shall be supplied by the department to all persons requesting them within ten days after the filing.

(3) At any time within thirty days after the certified copies of the determinations have been filed with the Secretary of State and the Department, any person who is affected thereby may object in writing to the determination or the part thereof that he deems objectionable by filing a written notice with the department, stating the specific grounds of the objection.

(4) Within thirty days of the receipt of the objection, the department shall set a date for a hearing on the objection. The date for the hearing shall be within sixty days of the receipt of the objection. Written notice of the time and place of the hearing shall be given to the objectors at least ten days prior to the date set for the hearing.

(5) The department, at its discretion, may hear each written objection separately or consolidate for hearing any two or more written objections. At the hearing, the department shall first introduce in evidence the investigation it instituted and the other facts which were considered at the time of the original determination which formed the basis for its determination. The department or the objector or any interested party thereafter may introduce any evidence that is material to the issues.

(6) Within twenty days of the conclusion of the hearing, the department must rule on the written objection and make the final determination that it believes the evidence warrants. Immediately, the department shall file a certified copy of its final determination with the Secretary of State and with the Department and shall serve a copy of the final determination on all parties to the proceedings by personal service or by registered mail.

(7) This final decision of the department of the prevailing wages in the locality is subject to review in accordance with the provisions of Chapter 536, RSMo. Any person affected, whether or not the person participated in the proceedings resulting in the final determination, may have the decision of the department reviewed. The filing of the final determination with the Secretary of State shall be considered a service of the final determination on persons not participating in the administrative proceedings resulting in the final determination.

(8) At any time before trial any person affected by the final determination of the department may intervene in the proceedings to review under chapter 536, RSMo, and be made a party to the proceedings.

(9) All proceedings in any court affecting a determination of the department under the provisions of Sections 290.210 to 290.340 shall have priority in hearing and determination over all other civil proceedings pending in the court, except election contests.

290.262 Determination of hourly rate by location and occupation title, when made, where filed objections, hearings-final determination-notice to department by public body, when–

(1) Except as otherwise provided in Section 290.260, the department shall annually investigate and determine the prevailing hourly rate of wages in each locality for each separate occupational title. A final determination applicable to every locality to be contained in an annual wage order shall be made annually on or before July first of each year, and shall remain in effect until superseded by a new annual wage order or as otherwise provided in this section. In determining prevailing rates, the department shall ascertain and consider the applicable wage rates established by collective bargaining agreements, if any, and the rates that are paid generally within the locality, and shall, by March tenth of each, make an initial determination for each occupational title within the locality.

(2) A certified copy of the initial determinations so made shall be filed immediately with the Secretary of State and with the Department in Jefferson City. Copies shall be supplied by the Department to all persons requesting them within tendays after filing.

(3) At any time within thirty days after the certified copies of the determinations have been filed with the Secretary of State and the Department, any person who is affected thereby may object in writing to a determination or part thereof that he deems objectionable, by filing a written notice with the Department, stating the specific grounds of the objection. If no objection is filed, the determination is final after thirty days.

(4) After the receipt of the objection, the Department shall set a date for a hearing of the objection. The date for the hearing shall be within sixty days of the receipt of the objection. Written notice of the time and place of the hearing shall be given to the objectors at least ten days prior to the date set for the hearing.

(5) The Department, at its discretion, may hear each written objection separately, or consolidate for hearing any two or more written objections. At the hearing, the Department shall first introduce in evidence the investigation it instituted and the other facts that were considered at the time of the original determination that formed the basis for its determination. The Department or the objector or any interested party thereafter may introduce any evidence that is material to the issues.

(6) Within twenty days of the conclusion of the hearing, the Department shall rule on the written objection and make the final determination that it believes the evidence warrants. Immediately the Department shall file a certified copy of its final determination with the Secretary of State and with the Department, and shall serve a copy of the final determination on all parties to the proceedings by personal service or by registered mail.

(7) This final decision of the Department of the prevailing wages in the locality for each occupational title is subject to review in accordance with the provisions of Chapter 536, RSMo. Any person affected, whether or not the person participated in the proceedings resulting in the final determination, may have the decision of the Department reviewed. The filing of the final determination with the Secretary of State shall be considered a service of the final determination on persons not participating in the administrative proceedings resulting in the final determination.

(8) At any time before trial, any person affected by the final determination of the Department may intervene in the proceedings to review under Chapter 536, RSMo, and be made a party to the proceedings.

(9) Any annual wage order made for a particular occupational title in a locality may be altered once each year, as provided in this subsection. The prevailing wage for each such occupational title may be adjusted on the anniversary date of any collective bargaining agreement that covers all persons in that particular occupational title in the locality in accordance with any annual incremental wage increases set in

the collective bargaining agreement. If the prevailing wage for an occupational title is adjusted pursuant to this subsection, the employee's representative or employer, in regard to such collective bargaining agreement, shall notify the Department of this adjustment, including the effective date of the adjustment. The adjusted prevailing wage shall be in effect until the next final annual wage order is issued pursuant to this section. The wage rates for any particular job, contracted and commenced within sixty days of the contract date, which were set as a result of the annual or revised wage order, shall remain in effect for the duration of that particular job.

(10) In addition to all other reporting requirements of sections 290.210 to 290.340, each public body that is awarding a contract for a public works project shall, prior to beginning of any work on such public works project, notify the Department, on a form prescribed by the Department, of the scope of the work to be done, the various types of craftsmen who will be needed on the project, and the date work will commence on the project.

290.263 Hourly wage must equal or exceed federal minimum wage-The hourly wages to be paid as prescribed in Section 290.250 to workmen upon public works shall not be less than the minimum wage specified under Section 6(a)(1) of the Fair Labor Standards Act of 1938, as amended.

290.265 Wage rates posted, where - A clearly legible statement of all prevailing hourly wage rates to be paid to all workmen employed in order to execute the contract and employed on the construction of the public works shall be kept posted in a prominent and easily accessible place at the site thereof by each contractor and subcontractor engaged in the public works projects under the provisions of this law and such notice shall remain posted during the full time that any such workman shall be employed on the public works.

290.270 Declaration as to prevailing wages final-maximum wages and hours not limited-The finding of the department ascertaining and declaring the prevailing hourly rate of wages shall be final for the locality, unless reviewed under the provisions of Sections 290.210 to 290.340. Nothing in Sections 290.210 to 290.340, however, shall be construed to prohibit the payment to any workman employed on any public work of more than the prevailing rate of wages. Nothing in Sections 290.210 to 290.340 shall be construed to limit the hours of work which may be performed by any workman in any particular period of time.

290.280 Administration of oaths - subpoenas - enforcement of subpoenas - The authorized representative of the department may administer oaths, take or cause to be taken the depositions of witnesses, and require by subpoena the attendance and testimony of witnesses and the production of all books, records, and other evidence relative to any matter under investigation or hearing. The subpoena shall be signed and issued by the department's authorized representative. In case of failure of any person to comply with any subpoena lawfully issued under this section, or any refusal of any witness to produce evidence or to testify to any matter regarding which he may be lawfully interrogated, the authorized representative of the department may proceed to enforce obedience to the subpoenas in the manner provided by Section 536.077, RSMo, for administrative agencies. The authorized representative of the department shall have the power to certify to official acts.

290.290 Contractor's payroll records, contents-affidavit of compliance required–signs on motor vehicles and equipment, requirements–temporary stationary sign, when–exception–

(1) The contractor and each subcontractor engaged in any construction of public works shall keep full and accurate records clearly indicating the names, occupations, and crafts of every workman employed by them in connection with the public work together with an accurate record of the number of hours worked by each workman and the actual wages paid therefor. The payroll records required to be so kept shall be open to inspection by any authorized representative of the contracting public body or of the department at any reasonable time and as often as may be necessary and such records shall not be destroyed or removed from the state for the period of one year following the completion of the public work in connection with which the records are made.

(2) Each contractor and subcontractor shall file with the contracting public body upon completion of the public work and prior to final payment therefor an affidavit stating that he had fully complied with the provisions and requirements of this chapter, and no public body shall be authorized to make final payment until such affidavit is filed therewith in proper form and order.

(3) Each contractor and subcontractor engaged in any construction of public works shall have its name, acceptable abbreviation or recognizable logo, and the name of the city and state of the mailing address of the principal office of the company, on each motor vehicle and motorized self-propelled piece of equipment that is used in connection with such public works project during the time the contractor or subcontractor is engaged on such project. The sign shall be legible from a distance of twenty feet, but the size of the lettering need not be larger than two inches. In cases where equipment is leased, or where affixing a legible sign to the equipment is impractical, the contractor may place a temporary stationary sign with the information required pursuant to this subsection, at the main entrance of the construction project site in place of affixing the required information on the equipment, so long as such sign is not in violation of any state or federal statute, rule, or regulation. Motor vehicles that are required to have similar information affixed thereto pursuant to requirements of a regulatory agency of the state or federal government are exempt from the provisions of this subsection.

(4) The provisions of subsection 3 of this section shall not apply to construction of public works for which the contract awarded is in the amount of two hundred fifty thousand dollars or less.

290.300 Actions for prevailing wages by workmen authorized - Any workman employed by the contractor or by any subcontractor under the contractor who shall be paid for his services in a sum less than the stipulated rates for work done under the contract, shall have a right of action for double whatever difference there may be between the amount so paid and the rates provided by the contract together with a reasonable attorney's fee to be determined by the court, and an action brought to recover same shall be deemed to be a suit for wages, and any and all judgments entered therein shall have the same force and effect as other judgments for wages.

290.305 Rebates by workmen prohibited, exceptions. No person, firm, or corporation shall violate the wage provisions of any contract contemplated in Sections 290.210 to 290.340 or suffer or require any employee to work for less than the rate of wages so fixed, or violate any of the provisions contained in Sections 290.210 to 290.340. Where workmen are employed and their rate of wages has been determined as provided in Sections 290.210 to 290.340, no person, either for himself or any other person, shall request, demand, or receive, either before or after such workman is engaged, that such workman pay back, return, donate, contribute, or give any part or all of said workman's wages, salary, or thing of value, to any person, upon the statement, representation, or understanding that failure to comply with such request or demand will prevent such workman from procuring or retaining employment, and no person shall, directly or indirectly, pay, request, or authorize any other person to violate this section. This section does not apply to any agent or representative of a duly constituted labor organization acting in the collection of dues or assessments of such organization.

290.315 Deductions from wages agreement to be written, approval of public body required - All contractors required in Sections 290.210 to 290.340 to pay not less than the prevailing rate of wages shall make full payment of such wages in legal tender, without any deduction for food, sleeping accommodations, transportation, use of small tools, or any other thing of any kind or description. This section does not apply where the employer and employee enter into an agreement in writing at the beginning of said term of employment covering deductions for food, sleeping accommodations, or other similar items, provided such agreement is submitted by the employer to the public body awarding the contract and the same is approved by such public body as fair and reasonable.

290.320 Advertising for bids before prevailing wage is determined prohibited - No public body, officer, official, member, agent, or representative authorized to contract for public works shall fail, before advertising for bids or contracting for such construction, to have the department determine the prevailing rates of wages

of workmen for each class of work called for by the public works in the locality where the work is to be performed as provided in Sections 290.210 to 290.340.

290.325 Awarding contract on payment without prevailing wage determinations prohibited-No public body, officer, official, member, agent, or representative thereof authorized to contract for public works shall award a contract for the construction of such improvement or disburse any funds on account of the construction of such public improvement, unless prevailing rates of wages of workmen for the class of work called for by such public works in the locality where the work is to be performed and such determination has been made a part of the specifications and contract for such public works.

290.330 Convicted violators of Sections 290.210 to 290.340 listed, effect of - The department after investigation, upon complaint or upon its own initiative, shall file with the Secretary of State a list of the contractors and subcontractors whom it finds have been prosecuted and convicted for violations of Sections 290.210 to 290.340 and such contractor or subcontractor, or simulations thereof, shall be prohibited from contracting directly or indirectly with any public body for the construction of any public works or from performing any work on the same as a contractor or subcontractor for a period of one year from the date of the first conviction for such violation and for a period of three years from the date of such subsequent violation and conviction thereof. No public body shall award a contract for a public works to any contractor or subcontractor, or simulation thereof, during the time that its name appears on said list. The filing of the notice of conviction with the Secretary of State shall be notice to all public bodies and their officers, officials, members, agents, and representatives.

290.335 Notice of violation, failure to comply, attorney general shall sue, injunctive relief authorized - If it is found that a public body, contractor, or subcontractor has not complied with any of the terms of Sections 290.210 to 290.340, the department shall give notice of the precise violations in writing to such public body, contractor, or subcontractor. Sufficient time may be allowed for compliance therewith as the department deems necessary. After the expiration of the time prescribed in said notice, the department may, in writing, inform the Attorney General of the fact that such notice has been given, and that the public body, contractor, or subcontractor or the authorized representative or agent thereof to whom it was directed has not complied with such notice. Upon receipt thereof, the Attorney General shall, at the earliest possible time, bring suit in the name of the state in the circuit court of the county in which such public body is located or where any such contractor or subcontractor is engaged in any further work or payments thereunder if the contract has been awarded, until the requirements of such notice are fully complied with. The court may issue a temporary restraining order with due notice to the defendant in such action. The plaintiff shall, in any such injunctive action, post an adequate bond to be set by the circuit judge. Upon final hearing thereof, if the court is satisfied that the requirements of the notice by the department to the defendant were not unreasonable or arbitrary, it shall issue an order enjoining the awarding of such contract for a public works, or any further work or payments thereunder if the contract has been awarded, until the notice is fully complied with. Such injunction shall continue operative until the court is satisfied that the requirements of such notice have been complied with and the court shall have an exercise with respect to the enforcement of such injunctions all the power in it in other similar cases. Both the plaintiff and the defendant in such action have the same rights of appeal as are provided by law in other injunction proceedings.

290.340 Penalty for violation - Any officer, official, member, agent, or representative of any public body, contractor, or subcontractor who willfully violates and omits to comply with any of the provisions and requirements of Sections 290.210 to 290.340 shall be punished for each violation thereof by a fine not exceeding five hundred dollars, or by imprisonment not exceeding six months, or both such fine and imprisonment. Each day such violation or omission continues shall constitute a separate offense as contemplated by this section.

RULES OF DEPARTMENT OF LABOR AND INDUSTRIAL RELATIONS
CHAPTER 3-PREVAILING WAGE LAW RULES

8 CSR-30-3.010 Prevailing Wage Rates for Public Works Projects (Purpose: This rule sets forth prevailing wage requirements relative to work performed by workmen on public funded projects.)

(1) All public bodies of Missouri contemplating construction work must obtain from the department a determination of the prevailing hourly rate of wages in the locality (wage determination) that is applicable to that construction. The rates so determined shall be incorporated in the contract specifications and made a part of those specifications, except that construction contracts of the State Highway and Transportation Commission need not list specific wage rates to apply, but may refer to the wage rates contained in the appropriate General Wage Orders issued by the department, as applicable.

(2) Request for wage determinations shall be initiated at least thirty (30) calendar days before advertisement of the specifications for the contract for which the determination is sought. An exception from this provision will be made by the department only upon a proper showing of extenuating circumstances. The department has prepared and printed Form No. PW1 for use in making a request. The form may be secured by writing Division of Labor Standards, P.O. Box 449, Jefferson City, Missouri 65102.

(3) A separate request must be filed for each separate project by the public body, except the State Highway and Transportation Commission, which will be furnished prevailing wage determinations under General Wage Orders. One public body cannot use the wage determinations made by this department for another public body even though both public bodies are located in the same county. Special wage determinations issued by the department only apply to the public body and its project described in the special wage determination.

(4) Each wage determination issued by the department shall contain the current wage rates prevailing in the locality at the time the determination is issued. To ensure that the current prevailing hourly rate of wages as established in the wage determination is paid on the public works project, the public works project must be started in good faith or a contract awarded for the project within one hundred eighty (180) days from the date the wage determination is issued. If the proposed public works project is not started in good faith or a contract is not awarded for completion of the project within one hundred eighty (180) days from the date the wage determination is issued, before proceeding with the project the public body shall request from the department an amended wage determination, containing the then current prevailing hourly rate of wages. The amended wage determination shall be subject to objection pursuant to the provisions of section 290.260, RSMo. An amended wage determination becomes final either by order of the Labor and Industrial Relations Commission or automatically if not objected to pursuant to section 290.260, RSMo. This final determination shall contain the prevailing wage rates to be paid on the project. This provision shall not apply to the General Wage Order issued by the department for the State Highway and Transportation Commission.

(5) It should be understood by all interested parties that the certified prevailing wage rates determined by the department are minimum wage rates. The contractor may not pay less than the prevailing wage rates determined by the department for the project or contract awarded to him/her as set forth in the proposal on which s/he submitted his/her bid. Employees are free to bargain for a higher rate of pay and employers are free to pay a higher rate of pay.

(6) Where classification of workers not included in the original contract is desired, the public body shall request the department to issue a determination of the prevailing hourly rate of wages in the appropriate localities. In these cases, it shall be the responsibility of the public body to make an arrangement with the contract which would result in compliance with the wage determinations, as though they were a part of the original contract.

(7) The public body shall make examinations of the payrolls and other records of each contractor or subcontractor as may be necessary to assure compliance with the provisions of the law. In connection with those examinations, particular attention should be given to the correctness of classifications and any disproportionate employment of any workers. The examinations shall be of a frequency that may be necessary to assure conformity with the provisions of the law. An examination shall be made after the project has been substantially completed, but prior to the acceptance of the affidavit as required by section 290.290, RSMo. If any violation of sections 290.210 to 290.340, RSMo is discovered by the inspecting public body, it's their duty under section 290.250, RSMo to withhold and retain from payments to the contractor all sums and amounts due and owing as a result of any violation. Any violation shall be immediately reported to the Division of Labor Standards at P. O. Box 449, Jefferson City, Missouri 65102 or by telephone.

(8) Each month, the successful bid contractors shall submit certified copies of their current payrolls to the contracting public body. The public body, upon receipt of the payrolls on a project, shall keep the payrolls on file for a period of one (1) year from the date of submission of the final payrolls by the contractor. The payroll records shall set out accurately and completely the following: name and address of each worker, the class or type of worker, rate of pay, daily and weekly number of hours worked for each class or type of work performed, deduction made, and actual wages paid for each class or type of work performed by each worker. The payroll records shall be made available at all times for inspection by authorized representatives of the Department of Labor and Industrial Relations.

Woodman Engineering Company v. Butler, 442 SW2d 83 (Mo. App. 1969). The function of reviewing court in prevailing wage cases is to decide if the determination of the commission was authorized by law and was supported by competent and substantial evidence upon the whole record. A decision clearly contrary to the evidence should be set aside. However, all pertinent evidence and factors must be considered in determining the applicable prevailing wage.

City of Joplin v. Industrial Commission of Missouri, 329 SW2d 687 (Mo en banc 1959). Administrative agencies do not have authority to determine constitutionality of legislation. Determination of prevailing wage earnings by commission must be based upon all current relevant factors.

8 CSR 30-3.020 DEFINITIONS (PURPOSE: This rule sets forth the definition of certain terms for purposes of issuance and use of wage determinations under the Prevailing Wage Law, sections 290.210-290.340, RSMo and the rules in this chapter.

(1) The term construction of public works generally includes construction activity as distinguished from manufacturing, furnishing of materials, or servicing and maintenance work. The term includes, without limitation, the construction of buildings, structures, and improvements of all types, such as bridges, dams, plants, highways, parkways, streets, subways, tunnels, sewers, mains, power lines, pumping stations, heavy generators, railways, airports, terminals, docks, piers, wharves, ways, lighthouses, buoys, jetties, breakwaters, levees, canals, dredging, shoring, rehabilitation and reactivation of plants, scaffolding, drilling, blasting, excavating clearing, and landscaping. The manufacture or furnishing of materials, articles, supplies, or equipment is not construction of public works within the meaning of the Prevailing Wage Law unless conducted in connection with and at the site of construction. The term construction of public works also means all work done in the construction or development of a public works project, including, without limitation, altering, remodeling, demolishing existing structures, installation on the site of the construction of items fabricated off-site, painting, and decorating, the transporting of materials and supplies to or from the site of the construction by the employees of the construction contractor or construction subcontractor, and the manufacturing or furnishing of materials, articles, supplies, or equipment on the site of the construction by persons employed by the contractor or subcontractor.

(2) The term major repair, for purposes of identifying construction subject to the Prevailing Wage Law, means the repair of an existing facility, such as a roof or other existing system or work that

performs a unique and necessary function, where the amount of repair involves twenty percent (20%) or more of the roof or other existing facility. If the size, type, or extent of the existing facilities is changed or increased, the work performed shall constitute construction subject to the Prevailing Wage Law. A project shall be considered to be maintenance work, as opposed to major repair subject to the Prevailing Wage Law, if the repair involves less than twenty percent (20%) of the existing facility and the size, type, or extent of the existing facility isnot changed or increased.

(3) The term site of the building or construction job means the physical place(s) where the public works are to be constructed, and also means other adjacent or nearby property used by the contractor or subcontractor in that construction which can reasonably be said to be included in the site. Except as otherwise provided in this section, fabrication plants, mobile factories, batch plants, borrow pits, job headquarters, tool yards, and the like are part of the site of the building or construction job provided they are dedicated in a substantial degree to the performance of the public works project, and are so located in proximity to the actual construction location that it would be reasonable to include them. The dedication of seventy-five percent (75%) or more of the output of a fabrication plant, batch plant, and the like to the public works project raises a rebuttable presumption that such a facility is part of the site of the building or construction job. The presumption may be rebutted by evidence showing that the facility was established for other legitimate commercial purposes that make the facility useful well after the public works project has been completed. Not included in the site of the building or construction job are permanent home offices, branch plant establishments, fabrication plants and tool yards of a contractor or subcontractor whose location and continuance in operation are determined wholly without regard to a particular public works project. In addition, fabrication plants, batch plants, borrow pits, job headquarters, tool yards, and the like, of a commercial supplier or materialman which are established by a supplier of materials for the project before opening of bids and not on the project site are not included in the site of the building or construction job. The permanent, previously established facilities are not a part of the site of the building or construction job, even where the operations for a period of time may be dedicated exclusively, or nearly so, to the performance of a public works project.

8 CSR 30-3.030 Apprentices and Trainees (PURPOSE: This rule sets forth the requirements for the payment of apprentice wages for workers employed on public works subject to the Prevailing Wage Law.)

(1) Journeyman's rate of pay shall be paid to all workers employed on public works construction except apprentices and trainees registered and participating in apprentice or trainee programs registered with the United States Department of Labor, Bureau of Apprenticeship and Training; and apprentices and trainees registered and participating in apprenticeship and skill training programs certified by the Secretary of the United States Department of Transportation as promoting equal opportunity in connection with federal-aid highway construction programs.

(2) Apprentices shall be permitted to work at less than the predetermined rate for the class or type of work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the United States Department of Labor, Employment and Training Administration, Bureau of Apprenticeship and Training. The allowable ratio of apprenticeship to journeymen on the site of the construction for any class or type of workers shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on the payroll at an apprenticeship wage rate, who is not registered or otherwise employed as stated in this rule, shall be paid not less than the applicable wage rate on the wage determination for the class or type of work actually performed. In addition those apprentices performing work on the site of the construction who are in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the class or type of work actually performed. Every apprentice shall be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate for the class or type of worker specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the

apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices shall be paid the full amount of fringe benefits listed on the wage determination for the applicable class or type of work performed. In the event the Bureau of Apprenticeship and Training withdraws approval of an apprenticeship program, the contractor shall no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the class or type of work performed until an acceptable program is approved.

(3) Trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program that has received prior approval, evidenced by formal certification by the United States Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination for the applicable class or type of work performed. Any employee listed on the payroll at a trainee rate who is not registered and participating in a Training Plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(4) Workers employed on federal-aid highway construction projects may be paid at an apprentice or trainee rate of pay if enrolled in an apprenticeship or skill training program which has been certified by the Secretary of the United States Department of Transportation pursuant to 23 USC 113. In the event the Secretary of Transportation withdraws approval of a program, the contractor will no longer be permitted to pay workers less than the applicable predetermined rate for the work performed until an acceptable program is approved.

8 CSR 30-3.040 Classifications of Construction Work (PURPOSE: The Department of Labor and Industrial Relations has the responsibility under section 290.260, RSMo to determine the prevailing hourly rate of wages to be paid to workers engaged in work of a similar character. This rule establishes classifications of construction work for the department to use in determining the prevailing hourly rate of wages for work of a similar character.)

(1) All public works construction, for which the prevailing hourly rate of wages of workers are to be determined, shall be classified as either:
  (A) Building construction; or
  (B) Highway and heavy construction.

(2) Building construction shall mean the following:

  (A) Building structures, including modification, additions or repairs, or both, to be used for shelter, protection, comfort, convenience, entertainment, or recreation, or for protection of people or equipment;
  (B) Buildings at an airport project, such as terminal buildings, freight buildings, and any other construction necessary for the operation of the airport facilities;
  (C) Stadiums, athletic fields, dressing rooms, bleachers, and all other buildings needed in connection with an athletic or entertainment facility;

(D) Entire buildings that are built aboveground in connection with highway, subway, or tunnel projects, such as tool stations or housing for mechanical equipment;
(E) Excavation for the building itself, including backfilling inside and outside the building;
(F) Storm and sanitary sewers inside the building and to the curb line;
(G) Work in connection with telephone, electrical, water, oil, gas, or fuel lines, or other utility or communication lines inside a building and to the curb line;
(H) Sidewalks other than those that are poured in connection with a street or road project;
(I) Driveways that are built to serve a building;
(J) Parking lots connected to a building and all structures built as parking facilities;
(K) Retaining walls built in conjunction with a building project;
(L) Demolition of a building(s) as part of the site preparation for new building construction;
(M) Landscaping of building sites or the planting of all shrubbery that is incidental to building construction as defined in section (2); and
(N) Work on water and wastewater treatment plants within the fence line.

(3) Highway and heavy construction shall mean the following:

(A) Work in conjunction with roads, streets, parkways, alleys, and highways, including, but not limited to grading, paving, curbing, signs, fences, guard rails, bridges, lighting, retaining walls, and landscaping;
(B) Work on viaducts, overpasses, underpasses, drainage projects, aqueducts, irrigation projects, flood control projects, reclamation projects, reservoir filtration and supply projects, water power, duct lines, distribution lines, pipe lines, locks, dikes, levees, revetments projects, excluding work specifically defined as building construction;
(C) Work in connection with underground construction on tunnels and shafts;
(D) Railroad work in its entirety, including elevated railroads;
(E) Main and side sewers;
(F) Work in connection with airports, such as runways, roads and streets, but excluding that which is listed as building construction;
(G) Work in connection with telephone, electrical, water, oil, gas, or fuel lines, or any other utility or communication lines from the curb line;
(H) Sidewalks when poured incidental to a street or road project;
(I) Parking lots not incidental to a building construction project; and
(J) Demolition of all buildings as part of site preparation for any highway and heavy construction as is otherwise defined in section (3).

(4) On public works contracts that involve both classifications of construction as defined in sections (2) and (3) of this rule, the Department of Labor and Industrial Relations shall issue a determination including both of these classifications.

8 CSR 30-3.050 Posting of Prevailing Wage Rates (PURPOSE: This rule sets forth the requirements for the posting of prevailing wage rates on public works projects subject to the Prevailing Wage Law.)

(1) Contractors and subcontractors engaged in public works projects shall post the prevailing hourly rate of wages in a dry, accessible place within the field office at the site of the building or construction job. On public works projects for which no field office is needed or established, such as road construction, sewer lines, pipelines and the like, a contractor/subcontractor may post the prevailing hourly rates of wages at the contractor/subcontractor's local office or batch plant, so long as the contractor/subcontractor provides a copy of the prevailing hourly wage rates to any worker upon request. Prevailing hourly wage rates must be posted and maintained in a clearly legible condition for the duration of the public works project as provided by law.

END OF SECTION 00 73 43

Section 00 73 46 - Wage Determination Schedule

1.01. GENERAL: This contract shall be based upon payment by the Contractor and his subcontractors of wage rates not less than the prevailing hourly wage rate for each craft of classification of workman engaged on the work. Prevailing wage rates shall be as determined by the Industrial Commission of Missouri.

The Contractor and his subcontractors shall comply with all requirements of the prevailing wage law of Missouri, RSMo, Section 290.210 to 290.340.

The prevailing wage laws do not prohibit payment of more than the prevailing rate of wages, nor do they limit the hours of work which may be performed by any workman in any particular period of time.

1.02. RECORDS: The Contractor and each subcontractor shall keep an accurate record showing the names, occupations, and crafts of all workmen reemployed, together with the number of hours worked by each workman and the actual wages paid to each workman. At all reasonable hours, such records shall be open to inspection by authorized representatives of the Industrial Commission of Missouri and the owner. The payroll records shall not be destroyed or removed from the state for at least one year after completion of the work.

1.03. NOTICES: Throughout the life of this contract, copies of the wage determinations and the rules promulgated by the Industrial Commission of Missouri shall be displayed in at least four conspicuous places on the project under a heading of NOTICE with the heading in letters at least one inch high.

1.04. PENALTY: Pursuant to Section 290.250 RSMo, the Contractor shall forfeit to the Owner as a penalty, one hundred dollars for each workman employed, for each calendar day, or portion thereof, such workman is paid less than the stipulated rates for any work done under the contract, by him or by any subcontractor under him.

1.05. PAYROLL CERTIFICATION: Each Application for Payment by Contractor shall be accompanied by Payroll Certificates covering the labor incorporated in the Work on the project during the specific Application for Payment period.

1.06. AFFIDAVIT OF COMPLIANCE: After completion of the Work and before final payment can be made under this contract, the Contractor and each subcontractor must file with the Owner an affidavit stating that he has fully complied with the provisions and requirements of the prevailing wage law of Missouri, Section 290.210 to 290.340 RSMo.

1.07. WAGE DETERMINATIONS: During the life of this contract, the prevailing hourly rate of wages is subject to change by the Industrial Commission of Missouri or by court decision, as provided by law. Any such change shall not be the basis of any claim by the Contractor against the Owner nor will deduction be made by the Owner against sums due the Contractor by reason of any such change.

The wage rate determination for this project is as included on the following pages:

Missouri Annual Wage Order 31 – Jasper County, Missouri (4 pages)

Missouri
Division of Labor Standards
WAGE AND HOUR SECTION

MICHAEL L. PARSON, Governor

Annual Wage Order No. 31

Section 049
JASPER COUNTY

In accordance with Section 290.262 RSMo 2000, within thirty (30) days after a certified copy of this Annual Wage Order has been filed with the Secretary of State as indicated below, any person who may be affected by this Annual Wage Order may object by filing an objection in triplicate with the Labor and Industrial Relations Commission, P.O. Box 599, Jefferson City, MO 65102-0599. Such objections must set forth in writing the specific grounds of objection. Each objection shall certify that a copy has been furnished to the Division of Labor Standards, P.O. Box 449, Jefferson City, MO 65102-0449 pursuant to 8 CSR 20-5.010(1). A certified copy of the Annual Wage Order has been filed with the Secretary of State of Missouri.

Original Signed by
Todd Smith, Director
Division of Labor Standards

Filed With Secretary of State: **March 8, 2024**

Last Date Objections May Be Filed: **April 8, 2024**

Prepared by Missouri Department of Labor and Industrial Relations

OCCUPATIONAL TITLE	**Prevailing Hourly Rate
Asbestos Worker	$29.82
Boilermaker	$27.80*
Bricklayer-Stone Mason	$48.61
Carpenter	$59.01
Lather	
Linoleum Layer	
Millwright	
Pile Driver	
Cement Mason	$40.19
Plasterer	
Communication Technician	$27.80*
Electrician (Inside Wireman)	$48.51
Electrician Outside Lineman	$27.80*
Lineman Operator	
Lineman - Tree Trimmer	
Groundman	
Groundman - Tree Trimmer	
Elevator Constructor	$27.80*
Glazier	$42.46
Ironworker	$27.80*
Laborer	$40.73
General Laborer	
First Semi-Skilled	
Second Semi-Skilled	
Mason	$27.80*
Marble Mason	
Marble Finisher	
Terrazzo Worker	
Terrazzo Finisher	
Tile Setter	
Tile Finisher	
Operating Engineer	$27.80*
Group I	
Group II	
Group III	
Group III-A	
Group IV	
Group V	
Painter	$27.80*
Plumber	$52.30
Pipe Fitter	
Roofer	$27.80*
Sheet Metal Worker	$49.79
Sprinkler Fitter	$27.80*
Truck Driver	$27.80*
Truck Control Service Driver	
Group I	
Group II	
Group III	
Group IV	

*The Division of Labor Standards received fewer than 1,000 reportable hours for this occupational title. The public works contracting minimum wage is established for this occupational title using data provided by Missouri Economic Research and Information Center.
**The Prevailing Hourly Rate includes any applicable fringe benefit amounts for each occupational title as defined in RSMo Section 290.210.

OCCUPATIONAL TITLE	**Prevailing Hourly Rate
Carpenter	$27.80*
Millwright	
Pile Driver	
Electrician (Outside Lineman)	$27.80*
Lineman Operator	
Lineman - Tree Trimmer	
Groundman	
Groundman - Tree Trimmer	
Laborer	$43.93
General Laborer	
Skilled Laborer	
Operating Engineer	$51.90
Group I	
Group II	
Group III	
Group IV	
Truck Driver	$27.80*
Truck Control Service Driver	
Group I	
Group II	
Group III	
Group IV	

Use Heavy Construction Rates on Highway and Heavy construction in accordance with the classifications of construction work established in 8 CSR 30-3.040(3).

Use Building Construction Rates on Building construction in accordance with the classifications of construction work established in 8 CSR 30-3.040(2).

If a worker is performing work on a heavy construction project within an occupational title that is not listed on the Heavy Construction Rate Sheet, use the rate for that occupational title as shown on the Building Construction Rate Sheet.

*The Division of Labor Standards received fewer than 1,000 reportable hours for this occupational title. Public works contracting minimum wage is established for this occupational title using data provided by Missouri Economic Research and Information Center.

**The Prevailing Hourly Rate includes any applicable fringe benefit amounts for each occupational title.

OVERTIME
and
HOLIDAYS

OVERTIME

For all work performed on a Sunday or a holiday, not less than twice (2x) the prevailing hourly rate of wages for work of a similar character in the locality in which the work is performed or the public works contracting minimum wage, whichever is applicable, shall be paid to all workers employed by or on behalf of any public body engaged in the construction of public works, exclusive of maintenance work.

For all overtime work performed, not less than one and one-half (1½) the prevailing hourly rate of wages for work of a similar character in the locality in which the work is performed or the public works contracting minimum wage, whichever is applicable, shall be paid to all workers employed by or on behalf of any public body engaged in the construction of public works, exclusive of maintenance work or contractual obligation. For purposes of this subdivision, **"overtime work"** shall include work that exceeds ten hours in one day and work in excess of forty hours in one calendar week; and

A thirty-minute lunch period on each calendar day shall be allowed for each worker on a public works project, provided that such time shall not be considered as time worked.

HOLIDAYS

January first;
The last Monday in May;
July fourth;
The first Monday in September;
November eleventh;
The fourth Thursday in November; and
December twenty-fifth;

If any holiday falls on a Sunday, the following Monday shall be considered a holiday.

Section 01 11 00 - Summary of Work

1. GENERAL

   1.1. The work consists of furnishing all labor, materials, equipment, testing, tools, and supervision to complete the improvements to the Dover Outdoor Recreation Area as described in the specifications and as directed by the Owner.

2. LOCATION

   2.1. Joplin, Missouri, in Jasper County, at the location shown on the drawings.

3. ACCESS

   3.1. Access to the site is available via public roads and streets and easements.

4. PERMITS

   4.1. Unless provided in the project manual, secure all necessary permits from respective authorities.

5. SUMMARY OF WORK

   5.1. Work includes improvements across the 95-acre Dover Outdoor Recreation Area including, but not limited to, parking lots, lighting, a bridge, 10 miles of bike trails, pavilions, a children's bike park, and other bike-centric amenities, and the miscellaneous work required for completion of the project. All work indicated on the drawings and specifications is to be performed unless deleted by Owner’s change order.

   5.2. Bids will be received for Deduct Alternate No. 1 Bid that consists of all work shown on plan sheets C-207, L-108, L-138, and L-158 except the 2” asphalt overlay of Adventure Lane, 2” water service, and monument sign.

   5.3. Bids will be received for Deduct Alternate No. 2 Bid that consists of removing the two entry monuments shown in details A and B on sheet L-503 and all associated sitework and landscape from the project.

   5.4. Bids will be received for Add Alternate No. 1 Bid that consists of establishment and stewardship as outlined in specification section 32 94 00.

   5.5. Bids will be received for Add Alternate No. 3 Bid that consists of providing an asphalt surface as shown on plan sheet SP-01.

   5.6. Bids will be received for Add Alternate No. 2 Bid that consists of all work identified in detail 4 on sheet DT-07.

   5.7. Inclusive in the work is close coordination with all appropriate jurisdictional agencies and responsibility for construction standards, traffic control, and safety requirements of these agencies.

6. RELATED DOCUMENTS

6.1. Drawings are included as part of this specification. Installation shall be per the construction drawings, supplemented as necessary by any applicable construction details.

6.2. Locate all existing underground installations, including service connections, in advance of excavating or trenching, by contacting the owners thereof, prospecting, and the use of 811, and other appropriate locating services.

6.3. All damage to existing private and/or municipal utilities or improvements, including, but not limited to signs, mailboxes, buildings, trees, and property, shall be repaired, including the cost of all required materials, labor, and equipment. All repairs shall be made as authorized by the owner of the utility and/or party involved and in compliance with all jurisdictional requirements. Repair and/or replacement cost shall be considered incidental to the performance and perfection of the contract.

7. SCHEDULING OF WORK

7.1. Schedule all work, including location of utilities, to coordinate with appropriate jurisdictional agencies.

8. FIELD ENGINEERING

8.1. Furnish vertical and horizontal control staking as necessary for the execution of the work, as shown on the drawings. Modifications to avoid unknown or mislocated facilities are to be expected.

8.2. Avoid disturbing existing markers and property corners, and if disturbed, corners must be re-established by a Registered Land Surveyor.

9. REGULATORY REQUIREMENTS

9.1. Obtain all necessary permits and comply with all codes of construction or permit requirements as deemed necessary by the following:

9.1.1. City of Joplin, Missouri

9.1.2. Missouri Department of Natural Resources

9.2. Pay for any bond, fees, other charges, design, work or materials associated with obtaining the necessary permits, including any required City of Joplin permits.

9.3. **Contractor shall request City inspections as required by the City via emailing buildinginspector@joplinmo.org**

10. CONSTRUCTION STANDARDS

10.1. Generally applicable standards have been included in the specifications. Any other construction details otherwise required will be provided by the Engineer. Engineer may make substitutions of equivalent materials or assemblies for those shown in the standards.

11. REFERENCES AND ABBREVIATIONS

11.1. The latest edition of the following specifications cover certain specified materials and methods to be utilized.

11.1.1. Abbreviations as used in the specifications shall mean the following:

11.1.2. AWWA: American Water Works Association.

11.1.3. AGA: American Gas Association

11.1.4. ASTM: American Society for Testing Materials

11.1.5. AASHTO: American Association of State Highway & Transportation Officials

11.1.6. ANSI: American National Standards Institute

11.1.7. API: American Petroleum Institute

11.1.8. ASA: American Standards Association

11.1.9. DOT: Federal Department of Transportation

11.1.10. AWS: American Welding Society

11.1.11. AREA: American Railway Engineering Association

11.1.12. ACI: American Concrete Institute

11.1.13. BOCA: Building Officials and Code Administrators

12. QUALITY CONTROL

12.1. Establish a quality control system to ensure conformance of all items of work, including that of subcontractors, to applicable specifications and drawings with respect to the materials, workmanship, construction, finish, functional performance, and identification. The controls shall be adequate to cover all layout and construction operations, shall be keyed to the proposed construction sequence, and are subject to approval by the Engineer.

12.2. Seven (7) days prior to commencement of Work, Contractor must submit a Quality Control Plan prepared and sealed by an engineer having no less than ten years of experience in construction materials testing. Contractor must not begin work prior to City approval of the Quality Control Plan.

12.2.1. The Quality Control Plan must meet the minimum requirements of the Contract Documents.

12.2.2. The Quality Control Plan must include provisions for testing all concrete, earth fill, reinforcing steel, and other various components of the Work as necessary to meet the requirements of the Contract Documents and all applicable laws and regulations and ensure intended and proper function of the work element.

12.3. At all times, the Site and Work must be available to City personnel, or their representatives for inspection and observation.

13. WORK IN PUBLIC THOROUGHFARES

13.1. Prior to performing work in public streets, all appropriate permits shall be obtained. Any traffic control plans required by regulatory agencies as part of their permit shall be prepared and carried out, at the contractor's expense, in accordance with the M.U.T.C.D., latest version. Barricades, signs, and signals shall be maintained. The signs shall indicate actual conditions that exist on the road ahead. Road excavation shall be completed and backfilled before work is stopped each day. If work cannot be completed in one day, the excavation shall be backfilled with crushed limestone and re-excavated the next working day.

14. ENVIRONMENTAL

14.1. In the event of spillage or discharge of oil to the environment, the Contractor shall comply with the provisions of Title 40 Code of Federal Regulations: Part 110 – Discharge of Oil: Part 112 – Oil Pollution Prevention; Part 300 – National Oil and Hazardous Substances Pollution Contingency Plans; and all applicable State, County, and municipal regulations.

14.2. The Contractor and the Owner, in their respective obligations under the terms of the Contract, shall conform to the provisions of the Clean Air Act (41 U.S.C. 7506©).

15. SAFETY

15.1. Precautions shall be exercised at all times by the Contractor for the protection of persons, employees, and property. The safety provisions of applicable laws, local building and construction codes (OSHA and manufacturer's safety requirements) shall be observed. The Contractor shall be solely and completely responsible for conditions of the job site, including safety of all persons and property during performance of the work.

END OF SECTION 01 11 00

Section 01 20 00 - Price and Payment Procedures

1. GENERAL
   1.1. The performance and perfection of the scope of work stated in these specifications and as directed by the Owner shall be either measured or shall be considered a requisite provision incidental to either measured work or to the perfection of the contract.
   1.2. The items of performance listed in the Bid Schedule are the only items to be measured and for which a specific unit or lump sum price will be remitted. All remaining labor, material, supervision, equipment, and appurtenances requisite for performance shall be incidental to the measured items.
   1.3. The cost to the Owner of incidental items shall be a part of the price for measured items, payment for which will be remitted to the Contractor upon acceptance of work by the Owner and certified as complete by the Engineer.

END OF SECTION 01 20 00

Section 01 31 13 - Project Coordination

1. GENERAL
   1.1. Project Coordination: The Contractor shall be responsible for coordinating the efforts of the various trades involved in the Project to ensure completion of construction in the time allowed by these specifications and in the manner specified herein. Delays in delivery and placement of equipment shall not, of themselves, be sufficient grounds for a time extension to the project.
      1.1.1. The General Contractor shall be ultimately responsible for the coordination and performance of all Subcontractors and material and equipment suppliers on the project. The General Contractor shall be responsible for providing a complete and functioning system, within the timeframe specified, and in conformance with the project specifications and contract documents.

END OF SECTION 01 31 13

Section 01 35 00 - Special Procedures

1. GENERAL

1.1. Protection of Existing Roadways: Contractor shall suitably protect existing State, County, and/or City roadway pavements from damage potentially caused by the use of heavy equipment. Where trenching runs parallel to existing pavement, plywood or other suitable materials shall be utilized to protect existing roadway surfaces from damage due to backhoe tracks and/or wheel loads, etc. Any associated repairs required for “parallel” roadway surfaces shall be solely at the Contractor’s expense.

1.2. The general contractor and all subcontractors shall be required to attend weekly progress meetings. Representatives attending the meetings may be field superintendents or other company representatives that have direct knowledge of project status and work being performed.

END OF SECTION 01 35 00

Section 01 41 00 - Regulatory Requirements

1. GENERAL

1.1. Regulations: All applicable Federal and State laws, the rules and regulations thereto, and all authorities having jurisdiction over construction of the project shall apply to the Contract throughout, and they will be deemed to be included in the Contract the same as though herein written out in full.

1.2. The Contractor shall conform to the Federal OSHA and State of Missouri construction safety requirements.

1.3. All additional costs, if any, incurred by reason of any necessity of complying with such laws, ordinances, rules, and regulations, as the same may from time to time be amended, shall be borne by the Contractor. The Owner or Engineer shall have no duty to inform the Contractor of such laws, ordinances, rules, and regulations or amendments thereto.

1.4. Taxes: The Contractor shall pay for any and all taxes, occupational, privilege, license, excise, gross income, gross receipts, use, payroll, documentary, or other taxes applicable to this contract that are effective or are scheduled to become effective thirty (30) days after the date of bid opening.

1.5. Unemployment Compensation: The Contractor shall comply with the State Unemployment Insurance or Compensation Act, and wherever permissible, shall elect to become subject to the Act.

1.6. License/Registration: For work where Contractor License Laws are in effect, the Contractor must be licensed or registered, and submit a statement or other evidence in the form prescribed by law, giving number, date, and/or expiration date of his license.

1.7. Permits: The Contractor shall procure and pay for all permits, inspections, licenses, fees, and approvals necessary for the execution of his contract.

END OF SECTION 01 41 00

Section 01 55 26 - Traffic Control

1. GENERAL

1.1. This work shall consist of furnishing and installing traffic control devices in accordance with the contract and as directed by the Engineer or as required by the applicable regulatory authority.

2. MATERIALS

2.1. All construction sign and reflective materials shall conform to the Missouri Standard Specifications for Highway Construction - latest edition, as amended and supplemented by any special provisions.

3. CONSTRUCTION REQUIREMENTS

3.1. The Contractor must always conduct Work in a manner and in such a sequence that will minimize the interference with vehicular and pedestrian traffic. The work area shall be confined to the smallest area possible to allow maximum use of streets and sidewalks. Throughout the construction period, all piles, equipment, open excavations or other obstructions or hazards to motorists or pedestrians shall be enclosed by fences of protected by barricades and proper lighting.

3.2. The Contractor shall furnish, install, maintain, clean, and relocate all signs, changeable message boards, drums, cones, barricades, object markers, flashing devices, lights, and other traffic control devices as directed by the Engineer. All signs and traffic control devices shall meet the requirements of the Manual on Uniform Traffic Control Devices (MUTCD) and shall be kept legible, in alignment, and in good repair. All signs shall be covered, set aside, turned, removed, or relocated as work progresses, or is completed and their necessity ceases to exist. All traffic control devices shall be removed after completion of construction and shall remain the property of the contractor unless specified otherwise.

3.3. Flagmen will be required when equipment is crossing a road that is open to vehicular traffic. Hand signaling devices, flagmen attire, flagging procedures, and flagmen stations shall be in accordance with the MUTCD. On the resurfacing areas which require handling two-way vehicular traffic over a single lane, each flagman involved in controlling traffic through and along the work area shall be equipped with a portable transceiver radio and a stop-slow hand signaling device.

3.4. Under special circumstances and upon receipt of prior approval by the City and the Engineer, one-way traffic or lane closures may be considered at the sole discretion of the Owner. The length of time that the contractor may maintain lane closures or one-way traffic operations shall be kept to a minimum and shall be subject to the City’s and Engineer's approval. The Contractor shall furnish the personnel and equipment to achieve temporary stoppage of all traffic lanes if construction operations require such. No direct payment will be made for removing or reusing particular signs. Traffic control devices used by the contractor shall be supplied, installed, maintained, and removed by the contractor at their expense.

3.5. Contractor shall submit a traffic control plan meeting the requirements of the MUTCD to the City, County and/or the Missouri Department of Transportation (MoDOT) for approval for all lane closures depending on which authority has jurisdictional authority of the respective roadway.

3.6. Contractor shall be responsible for obtaining from MoDOT, County and the City any and all traffic control requirements applicable to the construction of this project, prior to beginning construction. Contractor shall be responsible for complying with all traffic control measures required for construction within MoDOT, County and City right-of-way, including providing changeable message boards a minimum of 48 hours prior to work in arterial streets as required by the City.

3.7. The requirements of this specification shall not relieve the contractor of their responsibility for protecting both the public and the work.

3.8. Cost associated with preparing a traffic control plan meeting the requirement of the MUTCD shall be the responsibility of the contractor, if such a plan is required by the applicable regulatory authority.

4. MEASUREMENT AND PAYMENT

4.1. Traffic control shall not be measured and paid for separately, but shall be included in the lump sum or unit bid price as set forth in the Bid Schedule for the work of which it is a part.

END OFSECTION 01 55 26

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Section 01 56 39
Temporary Tree and Plant Protection

PART 1 - GENERAL

1.1 SUMMARY

A. The Work of this Section Includes: General protection and pruning of existing trees and plants that are affected by execution of the Work, whether temporary or permanent construction.

B. Related Requirements:

1. Section 015000 "Temporary Facilities and Controls" for temporary controls, utilities, support facilities, temporary site fencing, and, if applicable, temporary erosion and sedimentation controls if not specified in Section 311000 "Site Clearing".
2. Section 311000 "Site Clearing" for removing existing trees and shrubs and for temporary erosion- and sedimentation-control measures if not specified in Section 015000 "Temporary Facilities and Controls".
3. Section 329600 "Transplanting" for relocating existing trees and plants.

1.2 DEFINITIONS

A. Caliper (DBH): Diameter breast height; diameter of a trunk as measured by a diameter tape or the average of the smallest and largest diameters at a height 54 inches above the ground line for trees with caliper of 8 inches or greater as measured at a height of 12 inches above the ground.

B. Plant-Protection Zone: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction and indicated on Drawings.

C. Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction and indicated on Drawings .

D. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

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1.3 ACTION SUBMITTALS

1.4 INFORMATIONAL SUBMITTALS

1.5 QUALITY ASSURANCE

A. Arborist Qualifications: Certified Arborist as certified by ISA .

1.6 FIELD CONDITIONS

A. The following practices are prohibited within protection zones:

1. Storage of construction materials, debris, or excavated material.
2. Moving or parking vehicles or equipment.
3. Foot traffic.
4. Erection of sheds or structures.
5. Impoundment of water.
6. Excavation or other digging unless otherwise indicated.
7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.

B. Do not direct vehicle or equipment exhaust toward protection zones.

C. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones and organic mulch.

D. Take precautions to protect plants from airborne contaminants, such as paint or fireproofing overspray.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Protection-Zone Fencing: Fencing fixed in position and meeting the following requirements:

1. Plastic Protection-Zone Fencing: Plastic construction fencing constructed of high-density extruded and stretched polyethylene fabric with 2-inch maximum opening in pattern and weighing a minimum of 0.4 lb/ft.; remaining flexible from minus 60 to plus 200 deg F; inert to most chemicals and acids; minimum tensile yield strength of 2000 psi and ultimate tensile strength of 2680 psi; secured with plastic bands or galvanized-steel or stainless steel wire ties; and supported by tubular or T-shape galvanized-steel posts spaced not more than 96 inches apart.
   a. Height: 6 feet .
   b. Color: High-visibility orange, nonfading.

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B. Protection-Zone Signage: Shop-fabricated, rigid plastic or metal sheet with attachment holes prepunched and reinforced; legibly printed with nonfading lettering and as follows:

1. Size and Text: As indicated on Drawings .

PART 3 - EXECUTION

3.1 EXAMINATION

A. Erosion and Sedimentation Control: Examine the site to verify that temporary erosion- and sedimentation-control measures are in place. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.

B. Prepare written report, endorsed by arborist, listing conditions detrimental to tree and plant protection.

3.2 PREPARATION

A. Locate and clearly identify trees, shrubs, and other vegetation to remain . FlagorTie a 1-inch blue vinyl tape around each tree trunk at 54 inches above the ground.

B. Protect tree root systems from damage caused by runoff or spillage of noxious materials while mixing, placing, or storing construction materials. Protect root systems from ponding, eroding, or excessive wetting caused by dewatering operations.

3.3 TREE PROTECTION

3.4 PROTECTION ZONES

A. Protection-Zone Fencing: Install protection-zone fencing along edges of protection zones before materials or equipment are brought on the site and construction operations begin in a manner that will prevent people from easily entering protected areas except by entrance gates. Construct fencing so as not to obstruct safe passage or visibility at vehicle intersections where fencing is located adjacent to pedestrian walkways or in close proximity to street intersections, drives, or other vehicular circulation.

1. Posts: Set or drive posts into ground one-third the total height of the fence without concrete footings. Where a post is located on existing paving or concrete to remain, provide appropriate means of post support acceptable to Architect.
2. Plastic Fencing: Stretch fabric taut and secure to posts without bows or sags.

B. Protection-Zone Signage: Install protection-zone signage in visibly prominent locations in a manner approved by Architect. Install one sign spaced approximately every 50 ft. on protection-zone fencing .

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C. Maintain protection zones free of weeds and trash.

D. Maintain hydration of plants to assure plant survival.

E. Maintain protection-zone fencing and signage in good condition as acceptable to Architect and remove when construction operations are complete and equipment has been removed from the site.

1. Do not remove protection-zone fencing, even temporarily, to allow deliveries or equipment access through the protection zone.
2. Temporary access is permitted subject to preapproval in writing by arborist if a root buffer effective against soil compaction is constructed as directed by arborist. Maintain root buffer so long as access is permitted.

3.5 EXCAVATION

A. General: Excavate at edge of protection zones and for trenches indicated within protection zones in accordance with requirements in Section 312000 "Earth Moving" unless otherwise indicated.

B. Trenching within Protection Zones: Where utility trenches are required within protection zones, excavate under or around tree roots by hand or with air spade, or tunnel under the roots by drilling, auger boring, or pipe jacking. Do not cut main lateral tree roots or taproots; cut only smaller roots that interfere with installation of utilities. Cut roots as required for root pruning. If excavating by hand, use narrow-tine spading forks to comb soil and expose roots.

3.6 ROOT PRUNING

A. Prune tree roots that are affected by temporary and permanent construction. Prune roots as follows:

1. Cut roots manually by digging a trench and cutting exposed roots with sharp pruning instruments; do not break, tear, chop, or slant the cuts. Do not use a backhoe or other equipment that rips, tears, or pulls roots.
2. Cut Ends: Do not paint cut root ends.
3. Temporarily support and protect roots from damage until they are permanently covered with soil.
4. Cover exposed roots with burlap and water regularly.
5. Backfill as soon as possible in accordance with requirements in Section 312000 "Earth Moving."

3.7 CROWN PRUNING

A. Prune branches that are affected by temporary and permanent construction. Prune branches as directed by arborist.

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1. Prune to remove only injured, broken, dying, or dead branches unless otherwise indicated. Do not prune for shape unless otherwise indicated.
2. Do not remove or reduce living branches to compensate for root loss caused by damaging or cutting root system.
3. Pruning Standards: Prune trees in accordance with ANSI A300 (Part 1).

B. Unless otherwise directed by arborist and acceptable to Architect, do not cut tree leaders.

C. Cut branches with sharp pruning instruments; do not break or chop.

D. Do not paint or apply sealants to wounds.

E. Provide subsequent maintenance pruning during Contract period as recommended by arborist.

F. Chip removed branches and dispose of off-site .

3.8 REGRADING

A. Lowering Grade: Where new finish grade is indicated below existing grade around trees, slope grade beyond the protection zone. Maintain existing grades within the protection zone.

B. Lowering Grade within Protection Zone: Where new finish grade is indicated below existing grade around trees, slope grade away from trees as recommended by arborist unless otherwise indicated.

1. Root Pruning: Prune tree roots exposed by lowering the grade. Do not cut main lateral roots or taproots; cut only smaller roots. Cut roots as required for root pruning.

C. Raising Grade: Where new finish grade is indicated above existing grade around trees, slope grade beyond the protection zone. Maintain existing grades within the protection zone.

D. Minor Fill within Protection Zone: Where existing grade is 2 inches or less below elevation of finish grade, fill with backfill soil. Place backfill soil in a single uncompacted layer and hand grade to required finish elevations.

3.9 FIELD QUALITY CONTROL

A. Inspections: Engage a qualified arborist to direct plant-protection measures in the vicinity of trees, shrubs, and other vegetation indicated to remain and to prepare inspection reports.

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3.10 REPAIR AND REPLACEMENT

A. General: Repair or replace trees, shrubs, and other vegetation indicated to remain or to be relocated that are damaged by construction operations, in a manner approved by Architect.

1. Submit details of proposed pruning and repairs.
2. Perform repairs of damaged trunks, branches, and roots within 24 hours in accordance with arborist's written instructions.
3. Replace trees and other plants that cannot be repaired and restored to full-growth status, as determined by Architect.

B. Trees: Remove and replace trees indicated to remain that are more than 25 percent dead or in an unhealthy condition or are damaged during construction operations that Architect determines are incapable of restoring to normal growth pattern.

1. Small Trees: Provide new trees of same size and species as those being replaced for each tree that measures 6 inches or smaller in caliper size.
2. Large Trees: Provide two new tree(s) of 6-inch caliper size for each tree being replaced that measures more than 6 inches in caliper size.
   a. Species: As selected by Architect .
3. Plant and maintain new trees as specified in Section 329300 "Plants."

END OF SECTION 01 56 39

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Section 01 74 00 - Cleaning and Waste Management

1. GENERAL

   1.1. The work of this section consists of the daily removal of construction debris from the job site(s) and associated public streets, roads, easements, and rights-of-way used during construction. In addition, the final detailed cleaning of the site prior to final acceptance of the project is included.

2. MATERIALS - NONE

3. EXECUTION

   3.1. General: The Contractor shall keep the construction site sufficiently clean so as to allow a safe and expeditious construction operation to be implemented. Periodically, and upon completion of the work and before acceptance and final payment is made, the Contractor shall clean and remove from the road rights-of-way, easements, public and private property, adjacent property, all surplus, discarded materials, perishable matter, rubbish and temporary structures. Contractor shall restore in an acceptable manner all property, both public and private, which may have been damaged on account of the prosecution of the work and shall leave the roadway, easements, public and private property neat and presentable.

   3.2. Open Burning: During construction of the project, efforts shall be taken to prohibit the open burning of refuse.

   3.3. Dust Control: Excavation and operations may require control measures to prevent the creation of excessive dust.

   3.4. Water Pollution Control: The Contractor shall exercise caution to guard against the degradation of the waters of the state due to construction-related pollutants (silt, debris, and petroleum products).

4. MEASUREMENT AND PAYMENT

   4.1. Work of this section shall not be measured or paid for separately but shall be considered incidental to that work of which it is a part.

END OFSECTION 01 74 00

Section 04 43 13.13 - Anchored Stone Masonry Veneer

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 RERERENCES

A. American Society for Testing and Materials (ASTM).

B. Indiana Limestone Institute (ILI).

1.3 SUMMARY

A. Section Includes:

1. Stone masonry anchored to concrete backup.
2. Stone masonry anchored to wood or metal framing and wood or fiberboard sheathing.
3. Stone masonry anchored to CMU unit masonry.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.5 ACTION SUBMITTALS

A. Product Data: For each variety of stone, stone accessory, and manufactured product.

B. Samples for Initial Selection: For colored mortar and other items involving color selection.

C. Samples for Verification:
1. For each stone type indicated. The contractor shall submit two samples 8" x 8" for approval by the Architect. The samples shall, in general range, be typical of the texture, color and finish applied.
2. For each color of mortar required. Label Samples to indicate types and amounts of pigments used.

D. Shop Drawings - Prepare and submit cutting and setting drawings for approval. Such drawings shall show in detail the sizes, sections and dimensions of stone, the arrangement of joints and bonding, anchoring and other necessary details.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. List of Materials Used in Constructing Mockups: List generic product names together with manufacturers, manufacturers' product names, supply sources, and other information as required to identify materials used. Include mix proportions for mortar and source of aggregates.

1. Neither receipt of list nor approval of mockups constitutes approval of deviations from the Contract Documents contained in mockups unless Architect approves such deviations in writing.

C. Material Test Reports:

1. Stone Test Reports: For each stone variety proposed for use on Project, by a qualified testing agency, indicating compliance with required physical properties, other than abrasion resistance, according to referenced ASTM standards. Base reports on testing done within previous five years.
2. Sealant Compatibility and Adhesion Test Report: From sealant manufacturer indicating that sealants will not stain or damage stone. Include interpretation of test results and recommendations for primers and substrate preparation needed for adhesion.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: A qualified installer who employs experienced stonemasons and stone fitters.

B. Mockups: Build mockups to demonstrate aesthetic effects and to set quality standards for materials and execution.

1. Build mockups for each type of stone masonry and typical exterior wall in sizes approximately 48 inches long by 36 inches high by full thickness, including face and backup wythes and accessories. Mockup can be done on portion of exterior wall and signs in lieu of stand alone mockup.

a. Include stone coping at top of mockup.
b. Include a sealant-filled joint at least 16 inches (400 mm) long in mockup.
c. Include through-wall flashing installed for a 24-inch (600-mm) length in corner of mockup approximately 16 inches (400 mm) down from top of mockup, with a 12-inch (300-mm) length of flashing left exposed to view (omit stone masonry above half of flashing).

d. Include studs, sheathing, veneer anchors, flashing, and weep holes in exterior masonry-veneer wall mockup.

2. Protect accepted mockups from the elements with weather-resistant membrane.
3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 PRECONSTRUCTION TESTING

A. Preconstruction Sealant Compatibility and Adhesion Testing: Submit to joint-sealant manufacturers, for compatibility and adhesion testing according to sealant manufacturer's standard testing methods and Section 079200 "Joint Sealants," Samples of materials that will contact or affect joint sealants.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

B. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

C. Deliver preblended, dry mortar mix in moisture-resistant containers designed for use with dispensing silos. Store preblended, dry mortar mix in delivery containers on elevated platforms, under cover, in a dry location, or in covered weatherproof dispensing silos.

D. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.10 FIELD CONDITIONS

A. Protection of Stone Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed stone masonry when construction is not in progress.

1. Extend cover a minimum of 24 inches (600 mm) down both sides and hold cover securely in place.

B. Stain Prevention: Immediately remove mortar and soil to prevent them from staining stone masonry face.

1. Protect base of walls from rain-splashed mud and mortar splatter using coverings spread on the ground and over the wall surface.

2. Protect sills, ledges, and projections from mortar droppings.
3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
4. Turn scaffold boards near the wall on edge at end of each day to prevent rain from splashing mortar and dirt on completed stone masonry.

C. 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 stone masonry damaged by frost or freezing conditions. Comply with cold-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

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, but not less than seven days after completing cleaning.

D. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

1.11 COORDINATION

A. Advise installers of adjacent Work about specific requirements for placement of reinforcement, veneer anchors, flashing, and similar items to be built into stone masonry.

B. Coordinate locations of dovetail slots installed in concrete that are to receive stone anchors.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations for Stone: Obtain stone, regardless of finish, from single quarry, whether specified in this Section or in another Section of the Specifications**,** with resources to provide materials of consistent quality in appearance and physical properties.

B. Source Limitations for Mortar Materials: Obtain mortar ingredients of uniform quality for each cementitious component from single manufacturer and each aggregate from single source or producer.

C. Varieties and Sources: Subject to compliance with requirements, provide stone of varieties and from sources complying with Section 044200 "Exterior Stone Cladding."

2.2 LIMESTONE

A. Material Standard: Comply with ASTM C 568.

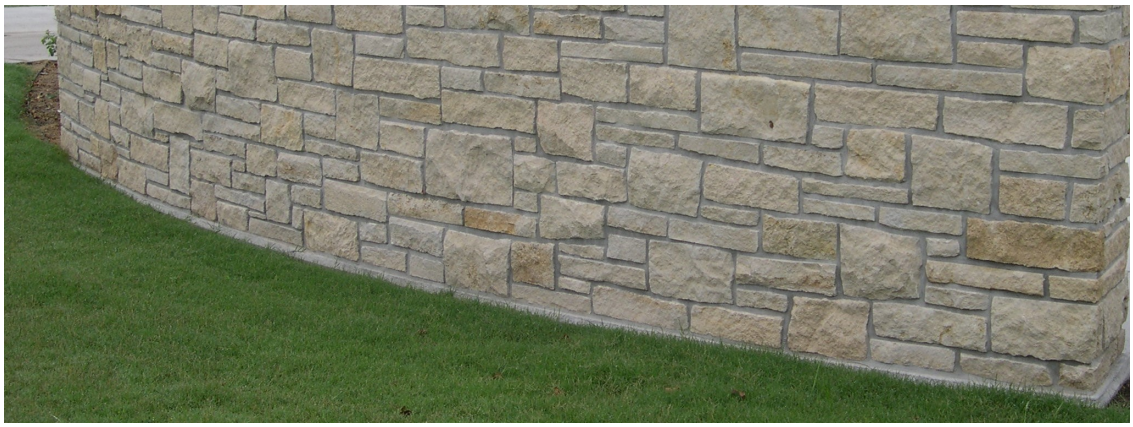
1. Properties of Stone:
   a. Class II - Medium Density.
   b. Absorption, 4 percent by weight maximum.
   c. Density, 150 lb/cu. ft. (2400 kg/cu. m) minimum.
   d. Compressive strength, 9000 psi (55 MPa) minimum.
   e. Modulus of rupture 1200 psi (5.5 MPa) minimum.

B. Description: Oolitic Limestone.

C. Varieties and Sources: Subject to compliance with requirements, provide the following:
1. Supplier: US Stone; 3515 West 75th Street, Suite 105 Prairie Village, Ks 66208 Phone: 913-529-4154. Kyle Weldon. kweldon@usstoneindustries.com; or approved equal.
2. Cut from one block or contiguous, matched blocks in which natural markings occur
3. Finish applied in the manufacturer's facilities, to match the architect's sample.
4. Equals may be considered, subject to Architect's approval and compliance with requirements.

2.3 STONE VENEER TYPE

A. Stone Type: Silverdale or Cottonwood (photo below)



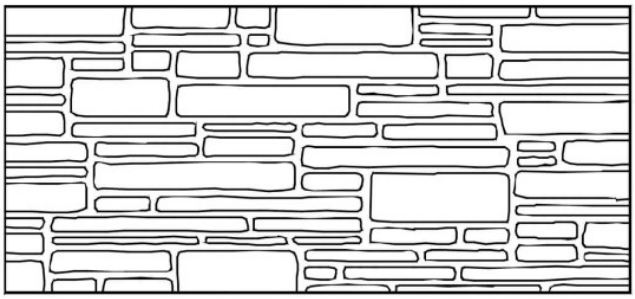
B. Size Dimensions:
1. Anchored Stone at Restroom Building and Stone Column Wraps – Full Depth
   a. Patterning: Saint Clere or Rubble, Split Face, Split 3 Sides, Sawn 1 Edges.
   b. Height: 4 – 12 inches
   c. Bed Depth: 4 inches
   d. Length:
      1) Restroom building: 8 – 30 inches

2) Column wraps: 4 – 12 inches

e. Pattern: See example for Percentages of sizes.

STONE SPECIFICATIONS

Pattern Sample



Additional Information

Standard 4" to 12" Mix

(10-15% 4" to 5", 40-45% 6" to 8", 40-45% 9" to 12")

Smaller height ranges, such as 2" to 8", are available

~~Thin Veneer will be 3/4" to 1 1/4" thickness~~

Full Bed will have nominal 4" and 5" bed depth

Available Stone Types: Cottonwood, Silverdale, Onaga, Prairie Shell, Chestnut Shell, Flint Hills Gray, Gray Variegated, Plaza Gray

2. Restroom Building Sills for Stone Veneer
   a. Sill Type: Standard Slip Sill
   b. Height: 3 inches
   c. Bed Depth: 5-5/8 inches
   d. Lengths: 47-5/8 inches

3. Column Wrap Top Cap for Stone Veneer
   a. Finish: Sawn all sides
   b. Height: 3 inches
   c. Lengths: 26”
   d. Widths: 12-3/4”
   e. Column Top Caps shall be of two-piece design as indicated in Drawings.

2.4 MORTAR MATERIALS

A. Portland Cement: ASTM C 150/C 150M, 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.

B. Hydrated Lime: ASTM C 207, Type S.

C. Portland Cement-Lime Mix: Packaged blend of Portland Cement and hydrated lime containing no other ingredients.

D. Mortar Cement: ASTM C 1329/C 1329M.

E. Masonry Cement: ASTM C 91/C 91M.

F. 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.

    a. Match Architect's sample.

G. 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.

H. Water: Potable.

2.5 VENEER ANCHORS

A. Materials:

1. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A 1064/A 1064M; with ASTM A 153/A 153M, Class B-2.
2. Hot-Dip Galvanized-Steel Sheet: ASTM A 1008/A 1008M, cold-rolled, carbon-steel sheet, hot-dip galvanized after fabrication to comply with ASTM A 153/A 153M, Class B-2.

B. Size: Sufficient to extend at least halfway, but not less than 1-1/2 inches (38 mm), through stone masonry and with at least a 5/8-inch (16-mm) cover on exterior face.

C. Wire Veneer Anchors: Wire ties formed from W1.7 or 0.148-inch- (3.8-mm-) diameter, hot-dip galvanized steel wire.

1. Ties are bent in the form of loops with legs not less than 15 inches (381 mm) in length and with last 2 inches (50 mm) bent at 90 degrees.
2. Ties are bent in the form of rectangular loops with ends bent downward for inserting into eyes projecting from masonry joint reinforcement specified in Section 042000 "Unit Masonry."
3. Ties are bent in the form of triangular loops designed to be attached to masonry joint reinforcement specified in Section 042000 "Unit Masonry" with vertical wires passing through ties and through eyes projecting from masonry joint reinforcement.

2.6 EMBEDDED FLASHING MATERIALS

A. Metal Flashing: Provide metal flashing**,** where flashing is exposed or partly exposed and where indicated, complying with SMACNA's "Architectural Sheet Metal Manual" and as follows:

1. Stainless Steel: ASTM A 240/A 240M, Type 304, 0.016 inch (0.4 mm) thick.

2. Fabricate continuous flashings in sections 96 inches (2400 mm) long minimum, but not exceeding 12 feet (3.6 m). Provide splice plates at joints of formed, smooth metal flashing.
3. Fabricate through-wall metal flashing embedded in masonry from stainless steel, with ribs at 3-inch (75-mm) intervals along length of flashing to provide an integral mortar bond.

4. Fabricate through-wall flashing with snaplock receiver on exterior face where indicated to receive counterflashing.
5. Fabricate through-wall flashing with drip edge unless otherwise indicated. Fabricate by extending flashing 1/2 inch (13 mm) out from wall, with outer edge bent down 30 degrees and hemmed.
6. Fabricate through-wall flashing with sealant stop unless otherwise indicated. Fabricate by bending metal back on itself 3/4 inch (19 mm) at exterior wall face and down into joint 3/8 inch (10 mm) to form a stop for retaining sealant backer rod.
7. Fabricate metal drip edges for ribbed metal flashing from plain metal flashing of same metal as ribbed flashing and extending at least 3 inches (75 mm) into wall with hemmed inner edge to receive ribbed flashing and form a hooked seam. Form hem on upper surface of metal so that completed seam will shed water.
8. Metal Drip Edges: Fabricate from stainless steel. Extend at least 3 inches (75 mm) into wall and 1/2 inch (13 mm) out from wall, with outer edge bent down 30 degrees and hemmed.
9. Metal Sealant Stops: Fabricate from stainless steel. Extend at least 3 inches (75 mm) into wall and out to exterior wall face. At exterior wall face, bend metal back on itself for 3/4 inch (19 mm) and down into joint 3/8 inch (10 mm) to form a stop for retaining sealant backer rod.
10. Metal Expansion-Joint Strips: Fabricate from stainless steel to shapes indicated.

B. Application: Unless otherwise indicated, use the following:

1. Where flashing is indicated to receive counterflashing, use metal flashing.
2. Where flashing is indicated to be turned down at or beyond wall face, use metal flashing.
3. Where flashing is partly exposed and is indicated to terminate at wall face, use metal flashing with a drip edge.
4. Where flashing is fully concealed, use metal flashing or flexible flashing.

C. Solder and Sealants for Sheet Metal Flashings:

1. Solder for Stainless Steel: ASTM B 32, Grade Sn60, with acid flux of type recommended by stainless-steel sheet manufacturer.

2. Elastomeric Sealant: ASTM C 920, chemically curing urethane sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.

D. Adhesives, Primers, and Seam Tapes for Flexible Flashings: Flashing manufacturer's standard products or products recommended by flashing manufacturer for bonding flashing sheets to each other and to substrates.

2.7 MISCELLANEOUS MASONRY ACCESSORIES

A. Pins: Stainless steel or expo-coated 3/8 inch smooth dowels.

B. Epoxy: Two part non-shrink epoxy suitable for stone masonry and metal.

C. Compressible Filler: Premolded filler strips complying with ASTM D 1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from urethane or PVC.

D. Cementitious Dampproofing for Limestone: Cementitious formulation recommended by ILI and nonstaining to stone, compatible with joint sealants, and noncorrosive to veneer anchors and attachments.

E. Asphalt Dampproofing: Cut-back asphalt complying with ASTM D 4479/D 4479M, Type I.

F. Weep/Vent Products: Use one of the following unless otherwise indicated:

1. Wicking Material: Absorbent rope, made from UV-resistant synthetic fiber, 1/4 to 3/8 inch (6 to 10 mm) in diameter, in length required to produce 2-inch (50-mm) exposure on exterior and 18 inches (450 mm) in cavity behind stone masonry. Use only for weeps.
2. Rectangular Plastic Tubing: Clear butyrate, 3/8 by 1-1/2 inches (10 by 38 mm) by thickness of stone masonry.

G. Cavity Drainage Material: Free-draining mesh, made from polymer strands that will not degrade within the wall cavity.

1. Provide one of the following configurations:

a. Strips, full depth of cavity and 10 inches (250 mm) wide, with dovetail-shaped notches 7 inches (175 mm) deep that prevent mesh from being clogged with mortar droppings.
b. Strips, not less than 3/4 inch (19 mm thick and 10 inches (250 mm) wide, with dimpled surface designed to catch mortar droppings and prevent weep holes from being clogged with mortar.
c. Sheets or strips full depth of cavity and installed to full height of cavity.
d. Sheets or strips not less than 3/4 inch (19 mm) thick and installed to full height of cavity with additional strips 4 inches (100 mm) high at weep holes

and thick enough to fill entire depth of cavity and prevent weep holes from being clogged with mortar.

2.8 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.

2.9 FABRICATION

A. General: Fabricate stone units in sizes and shapes required to comply with requirements indicated.
   1. For limestone, comply with recommendations in ILI's "Indiana Limestone Handbook."

B. Select stone to produce pieces of thickness, size, and shape indicated, including details on Drawings and pattern specified in the ILI.

C. Dress joints (bed and vertical) straight and at right angle to face unless otherwise indicated. Shape beds to fit supports.

D. Cut and drill sinkages and holes in stone for anchors and supports.

E. Carefully inspect stone at quarry or fabrication plant for compliance with requirements for appearance, material, and fabrication. Replace defective units before shipment.

   1. Clean sawed backs of stone to remove rust stains and iron particles.

F. Thickness of Stone: Provide thickness indicated, but not less than the following:

   1. Thickness: 4 inches (100 mm) plus or minus 1/2 inch (13 mm). Thickness does not include projection of pitched faces.

G. Finish exposed stone faces and edges to comply with requirements indicated for finish and to match approved sample and mockups.

   1. Finish: Split face.

      a. Finish exposed ends of copings same as front and back faces.

2.10 MORTAR 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.
2. Use Portland cement-lime mortar unless otherwise indicated.
3. Use one part Portland Cement, one part hydrated line and six parts sand by volume.
4. Mixed with potable water in as stiff a consistency as can worked into joints.
5. 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.
6. Mixing Pointing Mortar: Thoroughly mix cementitious and aggregate materials together before adding water. Then mix again, adding only enough water to produce a damp, unworkable mix that will retain its form when pressed into a ball. Maintain mortar in this dampened condition for one to two hours. Add remaining water in small portions until mortar reaches required consistency. Use mortar within 30 minutes of final mixing; do not retemper or use partially hardened material.

B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in the 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 Stone Masonry: Comply with ASTM C 270, Proportion Specification.

1. Mortar for Setting Stone: Type N.
2. Mortar for Pointing Stone: Type N.

D. Pigmented Mortar: Use colored cement product or select and proportion pigments with other ingredients to produce color required. Do not add pigments to colored cement products.

1. Pigments shall not exceed 10 percent of portland cement by weight.
2. Pigments shall not exceed 5 percent of masonry cement or mortar cement by weight.
3. Mix to match Architect's sample.

E. Colored-Aggregate Mortar: Produce required mortar color by using colored aggregates and natural color or white cement as necessary.

1. Mix to match Architect's sample.

2.11 STORAGE AND HANDING

A. Deliver materials to project site in an undamaged condition.

B. Do not use pinch or wrecking bars.

C. Store and handle stone to prevent damage due to moisture, contaminants, breakage, chipping or other causes.

D. Store stone away from contact with the ground on wood skids or pallets that do not contain resin, chemical treatment or tanning.

E. Protect stone from weather with waterproof, non-staining covers or enclosures.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine surfaces indicated to receive stone masonry, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of stone masonry.

B. Examine substrate to verify that dovetail slots, inserts, reinforcement, veneer anchors, flashing, and other items installed in substrates and required for or extending into stone masonry are correctly installed.

C. Examine wall framing, sheathing, and weather-resistant sheathing paper to verify that stud locations are suitable for spacing of veneer anchors and that installation will result in a weatherproof covering.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 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 dampproofing.

C. Clean dirty or stained stone surfaces by removing soil, stains, and foreign materials before setting. Clean stone by thoroughly scrubbing with fiber brushes and then drenching with clear water. Use only mild cleaning compounds that contain no caustic or harsh materials or abrasives.

D. Examine surfaces for receive stone, for compliance with requirements for installation tolerances.

3.3 SETTING STONE MASONRY

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. Cut lines straight and true, with edges eased slightly to prevent snipping.
2. Use hammer and chisel to split stone that is fabricated with split surfaces. Make edges straight and true, matching similar surfaces that were shop or quarry fabricated.
3. 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 in **uncoursed** rubble pattern with joint widths within tolerances indicated. Insert small stones into spaces between larger stones as needed to produce joints as uniform in width as practical.

D. Arrange stones with color and size variations uniformly dispersed for an evenly blended appearance.

E. Install supports, fasteners, and other attachments indicated or necessary to secure stone masonry in place.

F. Stone shall be soaked thoroughly before setting.

G. Set stone accurately in locations indicated with edges and faces aligned according to established relationships and indicated tolerances.

H. Install steel lintels where indicated. Provide minimum bearing of 8 inches (200 mm) at each jamb unless otherwise indicated.

I. Maintain uniform joint widths except for variations due to different stone sizes and where minor variations are required to maintain bond alignment if any. Lay walls with joints not less than **3/8 inch (10 mm)** at narrowest points or more than **3/4 inch (16 mm**at widest points.

J. Provide sealant joints of widths and at locations indicated.

1. Keep sealant joints free of mortar and other rigid materials.
2. Sealant joints are specified in Section 079200 "Joint Sealants."

K. Install metal expansion strips in sealant joints at locations indicated. Build flanges of expansion strips into masonry by embedding in mortar between stone masonry and backup wythe. Lap each joint 4 inches (100 mm) in direction of water flow. Seal joints below grade and at junctures with horizontal expansion joints if any.

L. Install embedded flashing and weep holes at shelf angles, lintels, ledges, other obstructions to downward flow of water in wall, and where indicated.

1. At stud-framed walls, extend flashing through stone masonry, up sheathing face at least **12 inches (300 mm** and behind weather barrier.
2. At multiwythe masonry walls, including cavity walls, extend flashing through stone masonry, turned up a minimum of **8 inches (200 mm),** and extend into or through inner wythe to comply with requirements in Section 042000 "Unit Masonry."
3. At concrete backing, extend flashing through stone masonry, turned up a minimum of **6 inches (150 mm)**, and insert in reglet. Reglets are specified in Section 076200 "Sheet Metal Flashing and Trim."
4. At lintels and shelf angles, extend flashing full length of angles but not less than 6 inches (150 mm) into masonry at each end.
5. At sills, extend flashing not less than 4 inches (100 mm) at ends.
6. At ends of head and sill flashing, turn up not less than 2 inches (50 mm) to form end dams.
7. Interlock end joints of ribbed sheet metal flashing by overlapping ribs not less than 1-1/2 inches (38 mm) or as recommended by flashing manufacturer, and seal lap with elastomeric sealant complying with requirements in Section 079200 "Joint Sealants" for application indicated.
8. Install metal drip edges and sealant stops with ribbed sheet metal flashing by interlocking hemmed edges to form hooked seam. Seal seam with elastomeric sealant complying with requirements in Section 079200 "Joint Sealants" for application indicated.
9. Extend sheet metal flashing 1/2 inch (13 mm) beyond masonry face at exterior, and turn flashing down to form a drip.
10. Install metal drip edges beneath flexible flashing at exterior wall face. Stop flexible flashing 1/2 inch (13 mm) back from exterior wall face and adhere flexible flashing to top of metal drip edge.
11. Install metal flashing termination beneath flexible flashing at exterior wall face. Stop flexible flashing 1/2 inch (13 mm) back from exterior wall face and adhere flexible flashing to top of metal flashing termination.
12. Cut flexible flashing flush with wall face after completing masonry wall construction.

M. Place weep holes and vents in joints where moisture may accumulate, including at base of cavity walls, above shelf angles, and at flashing.

1. Use **wicking material or open head joints** to form weep holes.
2. Use wicking material to form weep holes above flashing in stone sills. Turn wicking down at lip of sill to be as inconspicuous as possible.
3. Space weep holes **24 inches (600 mm)** o.c.
4. Space weep holes formed from plastic tubing or wicking material 16 inches (400 mm) o.c.
5. Trim wicking material used in weep holes flush with exterior wall face after mortar has set.
6. Place pea gravel in cavities as soon as practical to a height of not less than 2 inches (50 mm) above top of flashing, to maintain drainage.

7. Place cavity drainage material in cavities to comply with configuration requirements for cavity drainage material in "Miscellaneous Masonry Accessories" Article.

N. Install vents in head joints at top of each continuous cavity at spacing indicated. Use **rectangular plastic tubing or open head joints** to form vents.

1. Close cavities off vertically and horizontally with blocking in manner indicated. Install through-wall flashing and weep holes above horizontal blocking.

O. Coat limestone with cementitious dampproofing as follows:

1. Stone at Grade: Beds, joints, and back surfaces to at least 12 inches (300 mm) above finish-grade elevations.
2. Stone Extending below Grade: Beds, joints, back surfaces, and face surfaces below grade.
3. Allow cementitious dampproofing formulations to cure before setting dampproofed stone. Do not damage or remove dampproofing in the course of handling and setting stone.

3.4 CONSTRUCTION TOLERANCES

A. Variation from Plumb: For vertical lines and surfaces, do not exceed 1/4 inch in 10 feet (6 mm in 3 m) or more. For external corners, expansion joints, control joints, and other conspicuous lines, do not exceed 1/4 inch in 20 feet (6 mm in 6 m) more.

B. Variation from Level: For bed joints and lines of exposed lintels, sills, parapets, horizontal grooves, and other conspicuous lines, do not exceed 1/4 inch in 20 feet (6 mm in 6 m) or more.

C. Variation of Linear Building Line: For position shown in plan, do not exceed 1/2 inch in 20 feet (13 mm in 6 m) or more.

D. Measure variation from level, plumb, and position shown in plan as a variation of the average plane of each stone face from level, plumb, or dimensioned plane.

E. Variation in Mortar-Joint Thickness: Do not vary from joint size range indicated.

F. Variation in Plane between Adjacent Stones: Do not exceed one-half of tolerance specified for thickness of stone.

3.5 INSTALLATION OF ANCHORED STONE MASONRY

A. Anchor stone masonry to unit masonry with wire anchors unless otherwise indicated. Connect anchors to masonry joint reinforcement by inserting pintles into eyes of masonry joint reinforcement projecting from unit masonry.

B. Anchor stone masonry to metal posts with wire anchors unless otherwise indicated. Tie anchors to posts.

C. Embed veneer anchors in mortar joints of stone masonry at least halfway, but not less than 1-1/2 inches (38 mm), through stone masonry and with at least a 5/8-inch (16-mm) cover on exterior face.

1. Install continuous wire reinforcement in horizontal joints and attach to seismic veneer anchors as stone is set.

D. Space anchors to provide not less than one anchor per 2 sq. ft. (0.2 sq. m) of wall area. Install additional anchors within 12 inches (300 mm) of openings, sealant joints, and perimeter at intervals not exceeding 12 inches (300 mm).

E. Space anchors not more than 16 inches (400 mm) o.c. vertically and 24 inches (600 mm) o.c. horizontally. Install additional anchors within 12 inches (300 mm) of openings, sealant joints, and perimeter at intervals not exceeding 12 inches (300 mm).

F. Space anchors not more than 18 inches (450 mm) o.c. vertically and 32 inches (800 mm) o.c. horizontally, with not less than one anchor per 2.67 sq. ft. (0.25 sq. m) of wall area. Install additional anchors within 12 inches (300 mm) of openings, sealant joints, and perimeter at intervals not exceeding 12 inches (300 mm).

G. Anchor stone trim with stone trim anchors where indicated. Install anchors by fastening to substrate and inserting tabs and dowels into kerfs and holes in stone units. Provide compressible filler in ends of dowel holes and bottoms of kerfs to prevent end bearing of dowels and anchor tabs on stone. Fill remainder of anchor holes and kerfs with mortar.

H. Set stone in full bed of mortar with full head joints unless otherwise indicated. Build anchors into mortar joints as stone is set.

I. Fill collar joint space between back of stone masonry and weather-resistant sheathing paper with mortar as stone is set.

J. Provide **1-inch (25-mm)** cavity between stone masonry and backup construction unless otherwise indicated. Keep cavity free of mortar droppings and debris.

1. Slope beds toward cavity to minimize mortar protrusions into cavity.
2. Do not attempt to trowel or remove mortar fins protruding into cavity.

K. Rake out joints for pointing with mortar to depth of not less than **1/2 inch (13 mm)** before setting mortar has hardened. Rake joints to uniform depths with square bottoms and clean sides.

3.6 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 (10 mm) 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 (10 mm) 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:

1. Joint Profile: Concave, smooth, flat face slightly below edges of stone. Smooth, flat face recessed 1/4 inch (6 mm) below edges of stone (raked joint). Flush, with a 3/8-inch (10-mm) half-round raised bead in middle of joint, as indicated.

3.7 ADJUSTING AND CLEANING

A. Remove and replace stone masonry of the following description:

1. Broken, chipped, stained, or otherwise damaged stone. Stone may be repaired if methods and results are approved by Architect.
2. Defective joints.
3. Stone masonry not matching approved samples and mockups.
4. Stone masonry not complying with other requirements indicated.

B. Replace in a manner that results in stone masonry matching approved samples and mockups, complying with other requirements, and showing no evidence of replacement.

C. In-Progress Cleaning: Clean stone masonry as work progresses. Remove mortar fins and smears before tooling joints.

D. 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 nonmasonry surfaces from contact with cleaner by covering them with liquid strippable masking agent, polyethylene film, or waterproof masking tape.
4. Wet wall surfaces with water before applying cleaner; remove cleaner promptly by rinsing thoroughly with clear water.
5. Clean stone masonry by bucket and brush hand-cleaning method described in BIA Technical Note No. 20, Revised II, using job-mixed detergent solution.
6. Clean stone masonry with proprietary acidic cleaner applied according to manufacturer's written instructions.
7. Clean limestone masonry to comply with recommendations in ILI's "Indiana Limestone Handbook."

3.8 EXCESS MATERIALS AND WASTE

A. Excess Stone: Stack excess stone where directed by Owner for Owner's use.

B. Disposal as Fill Material: Dispose of clean masonry waste, including mortar and excess or soil-contaminated sand, by crushing and mixing with fill material as fill is placed.

1. Crush masonry waste to less than 4 inches (100 mm) in greatest dimension.
2. Mix masonry waste with at least 2 parts of specified fill material for each part of masonry waste. Fill material is specified in Section 312000 "Earth Moving."
3. Do not dispose of masonry waste as fill within 18 inches (450 mm) of finished grade.

C. Excess Masonry Waste: Remove excess clean masonry waste that cannot be used as fill, as described above, and other waste, and legally dispose of off Owner's property.

END OF SECTION 04 43 13.13

Section 09 91 13 - Exterior Painting

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 surface preparation and the application of paint systems on the following exterior substrates:
   1. Steel (at Custom Entry Signs and Restroom Rollup doors).

B. Related Requirements:

   1. Section 099300 "Staining and Transparent Finishing" for surface preparation and the application of wood stains and transparent finishes on exterior wood substrates.

1.3 DEFINITIONS

A. MPI Gloss Level 1: Not more than five units at 60 degrees and 10 units at 85 degrees, according to ASTM D 523.

B. MPI Gloss Level 3: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.

C. MPI Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D 523.

D. MPI Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D 523.

E. MPI Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D 523.

F. MPI Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D 523.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product. Include preparation requirements and application instructions.

1. Include printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.
2. Indicate VOC content.

B. Samples for Initial Selection: For each type of topcoat product.

C. Samples for Verification: For each type of paint system and each color and gloss of topcoat.

1. Submit Samples on rigid backing, 8 inches (200 mm) square.
2. Apply coats on Samples in steps to show each coat required for system.
3. Label each coat of each Sample.
4. Label each Sample for location and application area.

D. Product List: Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules. Include color designations.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Paint: 5 percent, but not less than 1 gal. (3.8 L) of each material and color applied.

1.6 QUALITY ASSURANCE

A. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Architect will select one surface to represent surfaces and conditions for application of each paint system.

a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft. (9 sq. m).
b. Other Items: Architect will designate items or areas required.

2. Final approval of color selections will be based on mockups.

a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.

3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F (7 deg C).

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

1.8 FIELD CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F (10 and 35 deg C).

B. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

2.2 Basis-of-Design Product: Subject to compliance with requirements, provide Sherwin-Williams Company, or approved equal.

A. MPI Standards: Products shall comply with MPI standards indicated and shall be listed in its "MPI Approved Products Lists."

B. Material Compatibility:

1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.

C. Colors:
1. Steel rollup door at Restroom Building: Black or Gray provide color samples for owners selection
2. Steel hardware at custom entry signage: Black

2.3 SOURCE QUALITY CONTROL

A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure:

1. Owner will engage the services of a qualified testing agency to sample paint materials. Contractor will be notified in advance and may be present when samples are taken. If paint materials have already been delivered to Project site, samples may be taken at Project site. Samples will be identified, sealed, and certified by testing agency.
2. Testing agency will perform tests for compliance with product requirements.
3. Owner may direct Contractor to stop applying paints if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:

1. Concrete: 12 percent.
2. Fiber-Cement Board: 12 percent.
3. Masonry (Clay and CMUs): 12 percent.
4. Wood: 15 percent.
5. Portland Cement Plaster: 12 percent.
6. Gypsum Board: 12 percent.

C. Portland Cement Plaster Substrates: Verify that plaster is fully cured.

D. Exterior Gypsum Board Substrates: Verify that finishing compound is sanded smooth.

E. Verify suitability of substrates, including surface conditions and compatibility, with existing finishes and primers.

F. Proceed with coating application only after unsatisfactory conditions have been corrected.

1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and paint systems indicated.

B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection.

C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.

D. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.

E. Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces or mortar joints exceeds that permitted in manufacturer's written instructions.

F. Steel Substrates: Remove rust, loose mill scale, and shop primer if any. Clean using methods recommended in writing by paint manufacturer but not less than the following:

1. SSPC-SP 2.
2. SSPC-SP 3.
3. SSPC-SP 7/NACE No. 4.
4. SSPC-SP 11.

G. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and areas where shop paint is abraded. Paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.

H. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

I. Aluminum Substrates: Remove loose surface oxidation.

J. Wood Substrates:

1. Scrape and clean knots. Before applying primer, apply coat of knot sealer recommended in writing by topcoat manufacturer for exterior use in paint system indicated.
2. Sand surfaces that will be exposed to view, and dust off.
3. Prime edges, ends, faces, undersides, and backsides of wood.
4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.

K. Plastic Trim Fabrication Substrates: Remove dust, dirt, and other foreign material that might impair bond of paints to substrates.

3.3 APPLICATION

A. Apply paints according to manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual."

1. Use applicators and techniques suited for paint and substrate indicated.
2. Paint surfaces behind movable items same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed items with prime coat only.
3. Paint both sides and edges of exterior doors and entire exposed surface of exterior door frames.
4. Paint entire exposed surface of window frames and sashes.
5. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
6. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.

B. Tint undercoats same color as topcoat, but tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Provide sufficient difference in shade of undercoats to distinguish each separate coat.

C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

E. Painting Fire Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:

1. Paint the following work where exposed to view:

a. Equipment, including panelboards.
b. Uninsulated metal piping.
c. Uninsulated plastic piping.
d. Pipe hangers and supports.

e. Metal conduit.
f. Plastic conduit.
g. Tanks that do not have factory-applied final finishes.

3.4 FIELD QUALITY CONTROL

A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.

1. Contractor shall touch up and restore painted surfaces damaged by testing.
2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written recommendations.

3.5 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces. com/MPI.

3.6 EXTERIOR PAINTING SCHEDULE

A. Cement Board Substrates:

1. Latex System

a. Prime Coat: Latex, exterior, matching topcoat.
b. Prime Coat: Primer, alkali resistant, water based.

1) Sherwin William All Surface Enamel Latex Primer

c. Intermediate Coat: Latex, exterior, matching topcoat.

d. Topcoat: Latex, exterior, low sheen (MPI Gloss Level 3-4).

1) Sherwin Williams; Latitude Exterior Latex.

B. Steel and Iron Substrates:

1. Alkyd System

a. Prime Coat: Primer, alkyd, anticorrosive, for metal.

1) Sherwin William; Kem Bond HS Universal Metal Primer.

b. Prime Coat: Shop primer specified in Section where substrate is specified.

c. Intermediate Coat: Exterior, alkyd enamel, matching topcoat.
d. Topcoat: Alkyd, exterior, flat (MPI Gloss Level 1).

1) Sherwin Williams; Pro Industrial Enamel HS Alkyd.

C. Wood Substrates: Exposed framing.

1. Latex over Alkyd Primer System:

a. Prime Coat: Primer, alkyd for exterior wood.

1) Sherwin Williams: A-100 Exterior Fast Dry Stain Blocking Alkyd Primer.

b. Intermediate Coat: Latex, exterior, matching topcoat.

c. Topcoat: Latex, exterior, low sheen (MPI Gloss Level 3-4).

1) Sherwin Williams; A-100 Exterior Acrylic Latex.

D. Wood Substrates: Wood trim.

1. Latex System:

a. Prime Coat: Primer, alkyd for exterior wood.

1) Sherwin Williams: A-100 Exterior Fast Dry Stain Blocking Alkyd Primer.

b. Intermediate Coat: Latex, exterior, matching topcoat.

c. Topcoat: Latex, exterior, low sheen (MPI Gloss Level 3-4).

1) Sherwin Williams; A-100 Exterior Acrylic Latex.

END OF SECTION 09 91 13

Section 09 93 00 - Staining and Transparent Finishing

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 surface preparation and application of wood stains and transparent finishes on the following substrates:

1. Exterior Substrates:

a. Exposed wood beams and columns.
b. Exposed framing.
c. Exposed wood siding.
d. Dressed lumber (finish carpentry or woodwork).
e. Tongue & Groove ceiling lumber.
f. Custom Entry Signage

B. Related Requirements:

1. Section 099113 "Exterior Painting" for exterior coatings.

1.3 DEFINITIONS

A. MPI Gloss Level 1: Not more than 5 units at 60 degrees and 10 units at 85 degrees, according to ASTM D 523.

B. MPI Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D 523.

C. MPI Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D 523.

D. MPI Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D 523.

E. MPI Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D 523.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product. Include preparation requirements and application instructions.

1. Include printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.
2. Indicate VOC content.

B. Samples for Initial Selection: For each type of product.

C. Samples for Verification: For each type of finish system and in each color and gloss of finish required.

1. Submit Samples on representative samples of actual wood substrates, 8 inches by 8 inches long.
2. Apply coats on Samples in steps to show each coat required for system.
3. Label each coat of each Sample.
4. Label each Sample for location and application area.

D. Product List: Cross-reference to finish system and locations of application areas. Use same designations indicated on Drawings and in schedules. Include color designations.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Stains and Transparent Finishes: 1 gal. of each material and color applied.

1.6 QUALITY ASSURANCE

A. Mockups: Apply mockups of each finish system indicated and each color selected to verify preliminary selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.

1. Architect will select one surface to represent surfaces and conditions for application of each type of finish system and substrate.

a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft. for tongue and groove decking and one column for each structure.
b. Other Items: Architect will designate items or areas required.

2. Final approval of stain color selections will be based on mockups.

a. If preliminary stain color selections are not approved, apply additional mockups of additional stain colors selected by Architect at no added cost to Owner.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

1.8 FIELD CONDITIONS

A. Apply finishes only when temperature of surfaces to be finished and ambient air temperatures are between 50 and 95 deg F.

B. Do not apply finishes when relative humidity exceeds 85 percent, at temperatures less than 5 deg F above the dew point, or to damp or wet surfaces.

C. Do not apply exterior finishes in snow, rain, fog, or mist.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products: Sherwin Williams or approved equal listed in wood finish systems schedules for the product category indicated.

2.2 MATERIALS, GENERAL

A. MPI Standards: Products shall comply with MPI standards indicated and shall be listed in its "MPI Approved Products List."

B. Material Compatibility:

1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, products shall be recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

2.3 SOURCE QUALITY CONTROL

A. Testing of Materials: Owner reserves the right to invoke the following procedure:

1. Owner will engage the services of a qualified testing agency to sample wood finishing materials. Contractor will be notified in advance and may be present when samples are taken. If materials have already been delivered to Project site, samples may be taken at Project site. Samples will be identified, sealed, and certified by testing agency.
2. Testing agency will perform tests for compliance with product requirements.
3. Owner may direct Contractor to stop applying wood finishes if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying materials from Project site, pay for testing, and refinish surfaces finished with rejected materials. Contractor will be required to remove rejected materials from previously finished surfaces before refinishing with complying materials if the two finishes are incompatible or produce results that, in the opinion of the Architect, are aesthetically unacceptable.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Maximum Moisture Content of Exterior Wood Substrates: 15 percent, when measured with an electronic moisture meter.

C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

D. Proceed with finish application only after unsatisfactory conditions have been corrected.

1. Beginning finish application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates indicated.

B. Remove hardware, covers, plates, and similar items already in place that are removable. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and finishing.

1. After completing finishing operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.

C. Clean and prepare surfaces to be finished according to manufacturer's written instructions for each substrate condition and as specified.

1. Remove dust, dirt, oil, and grease by washing with a detergent solution; rinse thoroughly with clean water and allow to dry. Remove grade stamps and pencil marks by sanding lightly. Remove loose wood fibers by brushing.
2. Remove mildew by scrubbing with a commercial wash formulated for mildew removal and as recommended by stain manufacturer.

D. Exterior Wood Substrates:

1. Scrape and clean knots, and apply coat of knot sealer before applying primer.
2. Prime edges, ends, faces, undersides, and backsides of wood.

a. For solid hide stained wood, stain edges and ends after priming.
b. For varnish-coated stained wood, stain edges and ends and prime with varnish. Prime undersides and backsides with varnish.

3. Countersink steel nails, if used, and fill with putty or plastic wood filler tinted to final color. Sand smooth when dried.

3.3 APPLICATION

A. Apply finishes according to manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual."

1. Use applicators and techniques suited for finish and substrate indicated.
2. Finish surfaces behind movable equipment and furniture same as similar exposed surfaces.
3. Do not apply finishes over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.

B. Apply finishes to produce surface films without cloudiness, holidays, lap marks, brush marks, runs, ropiness, or other surface imperfections.

3.4 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing finish application, clean spattered surfaces. Remove spattered materials by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from finish application. Correct damage by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or

3.5 SYSTEM SCHEDULE

A. Wood Substrates: Exposed framing, Exposed wood siding, Exposed wood posts/beams, Custom Entry Signage.

1. Semitransparent Stain System:

a. Prime Coat: Stain, exterior, solvent based, semitransparent, matching topcoat.
b. Topcoat: Stain, exterior, solvent based, semitransparent.

1) Sherwin Williams; WoodScapes Exterior Polyurethane Semi-Transparent House Stain or approved equal.

2) Stain Colors: Architect to select from manufacturer's range of colors.

3) Samples: provide at least 3 samples on representative substrates per requirements. Basis of Design per Sherwin Williams Woodscapes colors: SW 3503 – White Birch, SW 3521 – Crossroads, SW – 3508 Covered Bridge

B. Wood Substrates: Tongue and Groove Ceilings.

1. Clear, Two-Component Polyurethane System:

a. Prime Coat: Two-component polyurethane matching topcoat.
b. Intermediate Coat: Two-component polyurethane matching topcoat.
c. Topcoat: Varnish, aliphatic polyurethane, two component (MPI Gloss Level 6 or MPI Gloss Level 7.

1) Sherwin Williams: Minwax Water Based Helmsman Indoor/Outdoor Spar Urethane.

END OF SECTION 09 93 00

Section 10 14 26 - Post and Panel/Pylon Signage

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. Nonilluminated post and panel signs.
   a. Hub Locator Kiosk
   b. Trailhead Kiosk
2. No Trespassing Sign & Cemetery Sign
3. Trail Name Post
4. Trail Confidence Marker
5. Custom DORA Bike Park Entry Signage

B. Related Requirements:

1. Section 015000 "Temporary Facilities and Controls" for temporary Project identification signs and for temporary informational and directional signs.
2. Section 033000 "Cast-in-Place Concrete" for concrete foundations, concrete fill in postholes, and setting anchor bolts in concrete foundations for signs.
3. Section 044313.13 “Anchored Stone Masonry”
4. Section 099300 “Staining and Transparent Finishing”
5. Section 099113 “Exterior Painting”

1.3 COORDINATION

A. Furnish templates and tolerance information for placement of sign-anchorage devices embedded in permanent construction by other installers.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Mockups: for Custom DORA Bike Park Entry Signage
1. Provide (1) full-size mockup of the DORA Bike Park Secondary Entry Sign as indicated on Detail B / L-503. Mockup should follow the approved required shop drawings. Mockup may be constructed on site in situ and incorporated into the final signage

following corrections made. Other examples of the Custom DORA Bike Park Entry Signage may not be constructed until the mockup is approved.

C. Shop Drawings: For Trailhead Kiosk, Custom DORA Bike Park Entry Signage

1. Include fabrication and installation details and attachments to other work.
2. Show sign mounting heights, footings/mountings, locations of supplementary supports to be provided by others, and accessories.

D. Samples for Verification: For each type of sign assembly, showing all components and with the required finish(es), in manufacturer's standard size unless otherwise indicated and as follows:
1. Trailhead Kiosk: Provide (1) full-size sample of each graphic printed on vinyl laminate per requirements.
2. Hub Locator Kiosk: Provide (1) full size sample of each printed graphic printed on vinyl laminate per requirements.

E. Sign Schedule: Use same designations specified or indicated on Drawings or in a sign schedule.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For manufacturer or fabricator.

B. Sample Warranty: For special warranty.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For signs to include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer or fabricator.

1.8 FIELD CONDITIONS

A. Field Measurements: Verify locations of anchorage devices embedded in permanent construction by other installers by field measurements before fabrication, and indicate measurements on Shop Drawings.

1.9 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

    a. Deterioration of finishes beyond normal weathering.
    b. Deterioration of embedded graphic image.
    c. Separation or delamination of sheet materials and components.

2. Warranty Period: **Five** years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Accessibility Standard: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines for Buildings and Facilities for signs.

2.2 POST AND PANEL/PYLON SIGNS – CUSTOM ENTRY SIGNAGE

A. Post and Panel Sign: Sign of single-panel configuration; with smooth, uniform surfaces and support assembly; with message and characters having uniform faces, sharp corners, and precisely formed lines and profiles; and mounted to a steel and timber frame as follows:

1. Sign face:
    a. 1/8” thk steel or aluminum.
    b. Powder coated with clear overcoat for weather resistance on all sides.
    c. Landscape Architect to provide the design image for sign manufacturer’s fabrication.
    d. Sign to be mechanically fastened to the Cedar posts.
2. Wood posts: shall be a rustic cedar with rough sawn finish, 8x8”
    a. Finish: per Staining and Transparent Finishing requirements.
3. Steel Structural Posts: per Drawings.
    a. Finish: all steel painted Black, per Exterior Painting requirements.
4. Fasteners: Steel, as recommended by the Custom Entry Signage fabricator.
    a. Finish: all fasteners to be painted Black, per Exterior Painting requirements.
5. Existing Boulders: contractor to identify options onsite and provide photos to the Landscape Architect for approval.

2.3 POST AND PANEL/PYLON SIGNS – TRAIL HEAD KIOSK

A. Post and Panel Sign: Sign of multi-panel configuration; with smooth, uniform surfaces and support assembly; with message and characters having uniform faces, sharp corners, and precisely formed lines and profiles; and as follows:

1. Basis-of-Design Product:
    a. Cone Mountain Bike Park 2-Panel Kiosk by:

b. First Chair Designs Inc
c. PO Box 1491, Edwards, CO, 81632
d. Rich Grayson, 970) 446 6395

2. Or Equal, subject to approval by Architect

3. Single-Panel Sign Frame: Entire perimeter.

a. Material: Aluminum or Steel.
b. Material Thickness: 1/8” or as recommended by sign fabricator.
c. Frame Depth: 2” or as recommended by sign fabricator.
d. Profile: Square.
e. Corner Condition in Elevation: Square.
f. Finish and Color: Black baked enamel or powder coat.

4. Sign-Frame Mounting: As indicated.
5. Posts: 6x6” Cedar Posts.

6. Sign-Panel-Face Finish and Applied Graphics:
a. Photo-Image Graphics: Manufacturer's standard multicolor, 600-dpi minimum.
b. Vinyl Laminate Printed Graphic, or other as indicated by the signage manufacturer as appropriate for outdoor use and exposure to rain for 10 years minimum.
c. Overcoat: Manufacturer's standard baked-on clear coating.

7. Text and Typeface: Match font and graphics provided by the Architect.

8. Contractor to provide shop drawings for the sign product, including materials, assembly, fasteners, mounting/footings.

9. Contractor to submit samples per Section 1.4(C).

2.4 POST-AND-PANEL SIGN: HUB LOCATOR KIOSK

A. Post-and-Panel Sign: Sign with smooth, uniform surfaces and support assembly; with message and characters having uniform faces, sharp corners, and precisely formed lines and profiles; and as follows:

1. Basis-of-Design Product: Trail Signage System, 18x24”, SPF1824
a. Nutrom OSM
b. PO Box 487
c. North Olmstead, OH 44070
d. sales@nutromosm.com
e. Or Equal, subject to approval by the Architect.
2. Size: 18” x 24” graphic panel
3. Steel or Aluminum frame and mounting collar.
4. Frame finish: Black baked-enamel or Powder coat finish.
5. Graphic: Vinyl laminate color graphic, 600 dpi min., UV resistant and indicated by the manufacturer as being appropriate for outdoor use and exposure to rain for 10 years.

6. Overcoat: manufacturer's standard baked-on clear overcoat.
7. Mounting: Frame and mounting collar to be mounted on a 4x4" cedar post
8. Contractor to submit samples per Section 1.4(C).

2.5 NO TRESPASSING SIGN & CEMETERY SIGN

A. Panel Sign: Sign with smooth, uniform surfaces and support assembly; with message and characters having uniform faces, sharp corners, and precisely formed lines and profiles; and as follows:
1. Size: 14"x10" or 12"x12" or 12x18" with rounded edges.
2. Material: Aluminum, 0.040" thick minimum.
3. Graphic: Vinyl laminate color graphic, UV resistant and indicated by the manufacturer as being appropriate for outdoor use and exposure to rain.
4. Mounting: to existing trees or cedar fence posts on site with stainless steel mechanical fasteners per Drawings.
5. Text: per Drawings.

2.6 TRAIL NAME POST

A. Panel Sign: Sign with smooth, uniform surfaces and support assembly; with message and characters having uniform faces, sharp corners, and precisely formed lines and profiles; and as follows:
1. Basis-of-Design Product: Dual-Flex Fiberglass Marker Post
   a. Rockart Signs
   b. 3006 N. Maple
   c. Mesa, AZ 85215
   d. (480) 854-3400
   e. Or Equal, subject to Architect's approval.
2. Size: 3" wide min. x 62" height min, with one pointed end for burial.
3. Material: Fiberglass.
4. Color: Brown.
5. Graphic: 3" wide Color decal, surface applied on (1) side, and indicated by the manufacturer as suitable for outdoor use and exposure to rain.
   a. Graphic to be provided by the Architect.
   b. Architect to review and approve final decal graphics from printer prior to order of materials.
6. Mounting: as indicated in Drawings.

2.7 TRAIL CONFIDENCE MARKER

A. Panel Sign: Sign with smooth, uniform surfaces and support assembly; with message and characters having uniform faces, sharp corners, and precisely formed lines and profiles; and as follows:

1. Basis-of-Design Product: Trailite Markers – Arrow Style
   a. Nutrom OSM

b. PO Box 487
c. North Olmstead, OH 44070
d. sales@nutromosm.com
e. Or Equal, subject to approval by the Architect.

2. Size: 3" diameter minimum.
3. Shape: Circular, square, or diamond shape.
4. Aluminum, Fiberglass, or polymer material indicated by the manufacture as suitable for outdoor use and exposure to rain.
5. Mounting: mechanical fastening to existing trees with stainless steel fasteners.
6. Colors:
   a. Blue – for intermediate bike trails
   b. Green – for beginner bike trails
   c. Black – for advanced bike trails
   d. Red – for hiking trails
   e. White – for paved access trail

2.8 MATERIALS

A. Aluminum Sheet and Plate: ASTM B 209 alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated.

B. Aluminum Extrusions: ASTM B 221 alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated.

C. Steel Materials:
   1. Steel Sheet: Uncoated, cold-rolled, ASTM A 1008/A 1008M, commercial steel, Type B, exposed.
   2. Steel Members Fabricated from Plate or Bar Stock: ASTM A 529/A 529M or ASTM A 572/A 572M, 42,000-psi (290-MPa) minimum yield strength.
   3. Steel Tubing or Pipe: ASTM A 500, Grade B.
   4. Bolts for Steel Framing: ASTM A 307 or ASTM A 325 (ASTM A 325M) as necessary for design loads and connection details.
   5. For steel exposed to view on completion, provide materials having flat, smooth surfaces without blemishes. Do not use materials whose surfaces exhibit pitting, seam marks, roller marks, rolled trade names, or roughness.

D. Polycarbonate Sheet: ASTM C 1349, Appendix X1, Type II (coated, mar-resistant, UV-stabilized polycarbonate), with coating on both sides.

E. Paints and Coatings for Sheet Materials: Inks, dyes, and paints that are recommended by manufacturer for optimum adherence to surface and are UV and water resistant for colors and exposure indicated.

2.9 ACCESSORIES

A. Fasteners and Anchors: Manufacturer's standard as required for secure anchorage of signage, noncorrosive and compatible with each material joined, and complying with the following:

1. Use concealed fasteners and anchors unless indicated to be exposed.
2. For exterior exposure, furnish hot-dip galvanized or stainless steel devices unless otherwise indicated.
3. Exposed Metal-Fastener Components, General:

a. Fabricated from same basic metal and finish of fastened metal unless otherwise indicated.
b. Fastener Heads: For nonstructural connections, use oval countersunk screws and bolts with tamper-resistant, Spanner-head or one-way-head slots unless otherwise indicated.

4. Inserts: Furnish inserts to be set by other trades into concrete or masonry work.

B. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.

C. Anchoring Materials:

1. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107/C 1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.
2. Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with water at Project site to create pourable anchoring, patching, and grouting compound.

a. Water-Resistant Product: At exterior locations, provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended by manufacturer for exterior use.

2.10 FABRICATION

D. General: Provide manufacturer's standard sign assemblies according to requirements indicated.

1. Preassemble signs in the shop to greatest extent possible. Disassemble signs only as necessary for shipping and handling limitations. Clearly mark units for reassembly and installation, in locations concealed from view after final assembly.
2. Mill joints to tight, hairline fit. Form joints exposed to weather to resist water penetration and retention.
3. Comply with AWS for recommended practices in welding and brazing. Provide welds and brazes behind finished surfaces without distorting or discoloring exposed side.

Clean exposed welded and brazed joints of flux, and dress exposed and contact surfaces.

4. Conceal fasteners and anchors unless indicated to be exposed; locate exposed fasteners where they will be inconspicuous.
5. Internally brace signs for stability and for securing fasteners.

E. Sign Message Panels: Construct sign-panel surfaces to be smooth and to remain flat under installed conditions within a tolerance of plus or minus 1/16 inch measured diagonally from corner to corner.

1. Coordinate dimensions and attachment methods to produce message panels with closely fitting joints. Align edges and surfaces with one another in the relationship indicated.
2. Increase panel thickness or reinforce with concealed stiffeners or backing materials as needed to produce surfaces without distortion, buckles, warp, or other surface deformations.
3. Continuously weld joints and seams unless other methods are indicated; grind, fill, and dress welds to produce smooth, flush, exposed surfaces with welds invisible after final finishing.

F. Post Fabrication: Fabricate posts designed to withstand wind pressure indicated for Project location and of lengths required for installation method indicated for each sign.

1. Aluminum Posts: Manufacturer's standard 0.250-inch thick, extruded-aluminum tubing unless otherwise indicated, with brackets or slots to engage sign panels. Include post caps, fillers, spacers, junction boxes, access panels, reinforcement where required for loading conditions, and related accessories required for complete installation.
2. Steel Posts: Fabricate from minimum **0.250-inch** thick steel tubing unless otherwise indicated. Include post caps, fillers, spacers, junction boxes, access panels, reinforcement where required for loading conditions, and related accessories required for complete installation.

    a. Hot-dip galvanize post assemblies after fabrication according to ASTM A 123/A 123M.

3. Direct Burial: Fabricate posts 36 inches (910 mm) longer than height of sign to permit direct burial or embedment in concrete foundations or concrete-filled postholes.
4. Baseplates: Fabricate posts with baseplates welded to bottom of posts. Drill holes in baseplate for anchor-bolt connection.

    a. Provide preset anchor bolts of size required for connecting posts to concrete foundations.

5. Sleeves: Fabricate posts 18 inches longer than height of sign to permit embedment in sleeves cast in concrete foundations or concrete-filled postholes. Provide sleeves by manufacturer, sized to receive outside diameter of posts. Size sleeves for direct embedment in concrete foundations or concrete-filled postholes and to prevent sign movement, but not less than 30 inches for embedment.

G. Pylon Fabrication: Fabricate pylon signs with integral base consisting of channels, angles, plates, or other fittings. Design and fabricate pylon and anchorage to withstand wind pressure indicated for Project location. Detail anchorage so that water can drain out of assembly without obstruction. Drill holes in members for anchor-bolt connection. Provide anchor bolts of size required for connecting base to concrete foundations.

1. Internal Frames: Manufacturer's standard internal steel framing system and anchorage, modified as required for Project requirements. Provide welded construction. Cut, drill, and tap units to receive hardware, bolts, and similar items.

a. Hot-dip galvanize steel framing system after fabrication according to ASTM A 123/A 123M.

2.10 GENERAL FINISH REQUIREMENTS

A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

C. Directional Finishes: Run grain with long dimension of each piece and perpendicular to long dimension of finished trim or border surface unless otherwise indicated.

D. Organic, Anodic, and Chemically Produced Finishes: Apply to formed metal after fabrication but before applying contrasting polished finishes on raised features unless otherwise indicated.

2.11 ALUMINUM FINISHES

A. Baked-Enamel or Powder-Coat Finish: AAMA 2603 except with a minimum dry film thickness of 1.5 mils. Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

2.12 METALLIC-COATED STEEL FINISHES

A. Surface Preparation: Clean surfaces of oil and other contaminants. Use cleaning methods that do not leave residue. After cleaning, apply a conversion coating compatible with the organic coating to be applied over it. Clean welds, mechanical connections, and abraded areas and apply galvanizing repair paint, complying with SSPC-Paint 20, to comply with ASTM A 780/A 780M.

B. Factory Prime Finish: After cleaning and pretreating, apply an air-dried primer compatible with the organic coating to be applied over it.

C. Baked-Enamel or Powder-Coat Finish: After cleaning and pretreating, apply manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat to a minimum dry film thickness of 2 mils (0.05 mm).

2.13 STEEL FINISHES

A. Surface Preparation: Remove mill scale and rust, if present, from uncoated steel, and prepare for coating according to coating manufacturer's written instructions.

1. For Baked-Enamel or Powder-Coat Finish: After cleaning, apply a conversion coating compatible with the organic coating to be applied over it.

B. Factory Prime Finish: After surface preparation and pretreatment, apply manufacturer's standard, fast-curing, lead- and chromate-free, universal primer.

C. Baked-Enamel or Powder-Coat Finish: After cleaning and pretreating, apply manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat to a minimum dry film thickness of 2 mils (0.05 mm).

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of signage work.

B. Verify that sign-support surfaces are within tolerances to accommodate signs.

C. Verify that anchor inserts are correctly sized and located to accommodate signs.

D. Verify that electrical service is correctly sized and located to accommodate signs.

E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Install signs using installation methods indicated and according to manufacturer's written instructions.

1. Install signs level, plumb, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.
2. Install signs so they do not protrude or obstruct according to accessibility standard.
3. Before installation, verify that sign components are clean and free of materials or debris that would impair installation.
4. Corrosion Protection: Coat concealed surfaces of exterior aluminum in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.

3.3 INSTALLING POSTS

A. Vertical Tolerance: Set posts plumb within a tolerance of 1/16 inch in 3 feet.

B. Direct-Burial Method:

1. Excavation: Excavate posthole to dimensions indicated. Reconstruct subgrade that is not firm, undisturbed, or compacted soil, or that is damaged by freezing temperatures, frost, rain, accumulated water, or construction activities by excavating an additional 12 inches backfilling with satisfactory soil or well-graded aggregate, and compacting to original subgrade elevation.
2. Setting in Earth: Set post in position, support to prevent movement, and backfill with satisfactory soil or well-graded aggregate as recommended in writing by manufacturer. Place and compact backfill in 6-inch lifts, compacting each lift.
3. Setting in Cast-in-Place Concrete: Set post in position, support to prevent movement, and place concrete for concrete foundation as indicated.
4. Setting in Preformed Hole in Concrete Foundation: Form or core drill holes in concrete foundation not less than 3/4 inch (20 mm) larger than outside dimension of post for installing posts in concrete. Set post in position, shim to prevent movement, and fill annular space between post and hole with nonshrink, nonmetallic grout, mixed and placed to comply with manufacturer's written instructions.

    a. Cover anchorage joint in concrete foundations with flange of same metal and finish as post, welded to post after placing anchoring material.
    b. Leave anchorage joint exposed with 1/8-inch anchoring material sloped away from post.

C. Baseplate Method:

1. Preset Anchor Bolts: Set post baseplate in position over anchor bolts projecting from concrete foundation, shim and support post to prevent movement, place washers and nuts, and tighten. Fill shim space with nonshrink, nonmetallic grout, mixed and placed to comply with manufacturer's written instructions.

2. Drilled-in-Place Anchor Bolts: Set post baseplate in position over concrete foundation, locate and drill anchor holes, shim and support post to prevent movement, place washers and anchor bolts, and tighten. Fill shim space with nonshrink, nonmetallic grout, mixed and placed to comply with manufacturer's written instructions.

D. Sleeve Method: Set post in position in sleeve and support post to prevent movement, fill annular space between post and sleeve with nonshrink, nonmetallic grout, mixed and placed to comply with manufacturer's written instructions.

1. Cover anchorage joint with flange of same metal and finish as post, welded to post after placing anchoring material.
2. Leave anchorage joint exposed with 1/8-inch anchoring material sloped away from post.

E. Reverse-Sleeve Method: Set post in position over the projecting insert and support post to prevent movement, drill posts and inserts for through bolts, and install and tighten through bolts.

3.4 INSTALLING PYLONS

A. Vertical Tolerance: Install pylons plumb within a tolerance of 1/16 inch in 3 feet.

B. Attachment with Preset Anchor Bolts: Set pylon base in position over anchor bolts projecting from concrete foundation, shim and support pylon to prevent movement, place washers and nuts, and tighten. Fill shim space with nonshrink, nonmetallic grout, mixed and placed to comply with manufacturer's written instructions.

C. Attachment with Drilled-in-Place Anchor Bolts: Set pylon base in position over concrete foundation, locate and drill anchor holes, shim and support pylon to prevent movement, place washers and anchor bolts, and tighten. Fill shim space with nonshrink, nonmetallic grout, mixed and placed to comply with manufacturer's written instructions.

3.5 ADJUSTING AND CLEANING

A. Remove and replace damaged or deformed signs and signs that do not comply with specified requirements. Replace signs with damaged or deteriorated finishes or components that cannot be successfully repaired by finish touchup or similar minor repair procedures.

B. Remove temporary protective coverings and strippable films as signs are installed.

C. On completion of installation, clean exposed surfaces of signs according to manufacturer's written instructions, and touch up minor nicks and abrasions in finish. Maintain signs in a clean condition during construction and protect from damage until acceptance by Owner.

END OF SECTION 10 14 26

Section 10 73 00
Specialties Manufacturer of Protective Covers

Product Guide Specification

PART 1 - GENERAL

1.01 DESCRIPTION OF PRODUCT

A. Shelter Type: **20'X30' Craftsman Gable style shelter with Tongue & Groove and Standing Seam roof panels.**
B. Roof Slope: **4:12**
C. Clear height under Tie Beam (UTB): **9'-0".** This is the clearance under the tie beam which spans between the columns.
D. The Basis-of-Design manufacturer for the pre-engineered shelter is Icon Shelter Systems, Inc.
    a. 1455 Lincoln Ave, Holland, MI, 49423
    b. (800) 748-0985
    c. Tim Witvoet
    d. Tim.Witvoet@iconshelters.com
E. An Equal specialties manufacturer may be offered by the Contractor for approval by the Architect and Owner. A preliminary set of plans, details, and specifications covering the information in Drawings and this Specification must be provided to the Architect and Owner no less than seven (7) calendar days prior to the bid opening date for review and pre-approval. The Bidder will be notified in writing if their proposed substitution for Specialty Manufacturer is accepted, and must receive said approval to include in their Bid.
F. Contractor shall be aware that the provision of the scope of work outline in this Specification is considered a LONG LEAD ITEM and a schedule of the proposed design, supply, delivery, and installation shall be prepared and delivered to the Architect within THREE WEEKS of execution of construction contract with the City of Joplin.
G. The Contractor shall be responsible for recognizing that these critical project materials warrant timely attention. Under no circumstances except the failure to comply with all the specification requirements be a reason for substitution of unacceptable materials.
H. It is the responsibility of the Contractor to apply for applicable permits for building construction based on the sealed plans provided by the Icon Shelter Systems or Pre-Approved Equal specialty manufacturer.

1.02 REFERENCES

A. REFERENCED STANDARDS
    1. AISC – American Institute of Steel Construction
        a. AISC Steel Construction Manual – 14th edition
        b. AISC 360-10 Specification for Structural Steel Buildings
    2. ASTM – American Society for Testing and Materials
        a. ASTM A36/A36M – Standard Specification for Carbon Structural Steel; 2008
        b. ASTM A325 – Standard Specification for Structural Steel Bolts, Heat Treated, 120/105 ksi Minimum Tensile Strength; 2010

c. ASTM A563 – Standard Specification for Carbon and Alloy Steel Nuts; 2007a
d. ASTM A500 – Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2010a
e. ASTM A653/A653M – Standard Specification for Sheet Steel, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvanealed) by the Hot Dip Process; 2010
f. ASTM A792/A792M – Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy Coated by the Hot-Dip Process; 2010
g. ASTM F1554 – Standard Specification for Anchor Bolts, Steel, 36, 50 and 105 ksi Yield Strength; 2007a

3. AWS – American Welding Society
   a. D1.1
   b. D1.3
   c. D1.8
4. OSHA – Occupational Safety and Health Administration
   a. Steel Erection Standard 29 CFR 1926.750 Part R
5. SSPC – Steel Structures Painting Council
   a. SSPC-SP 2 – Hand Tool Cleaning; 2004
   b. SSPC-SP 10/NACE No. 2 – Near White Blast Cleaning; 2007
6. LEED – Leadership in Energy and Environmental Design
7. ISO – International Organization for Standardization

B. RELATED REQUIREMENTS
1. City of Joplin Standard Technical Specifications
2. 044313.13 Anchored Stone Masonry Veneer
3. 099300 Staining and Transparent Finishing
4. 323300 Site Furnishings

1.03 SYSTEM DESCRIPTION

A. The structure shall be a pre-engineered package and shall be shipped as a pre-cut (excluding standing seam roof panels) and pre-fabricated package that shall include the structural framing members, roof panels, fasteners and roof trim as well as job specific installation instructions. The structure will be shipped in an un-assembled package for ease of shipment and minimum shipping charges.

1.04 SUBMITTALS

A. Submit a minimum of four (4) sets of submittal drawings and (2) sets of structural calculations signed and sealed by a Professional Engineer licensed in the state of Missouri.

B. PRODUCT DESIGN REQUIREMENTS:
1. The structure shall meet the following design requirements:
   a. Building Code: shall follow all applicable state and local standards, including 2018 International Building Code, and including local amendments. Amendments include but not limited to the following:
   b. Rooftop Snow Load: 30 PSF

c. Wind Gust: 115 MPH
d. Minimum Footing Dimensions: 16” diameter x 30” depth

C. SUBMITTAL REQUIREMENTS
1. Calculations:
a. Design according to the requirements of the national, state or local building codes as indicated in Section 1.04.B.
b. Calculations shall include all member design for each different member type.
c. Connection design for each different connection that will determine the design of the bolts, welds, plate thickness and anchorage to the foundation.
d. Foundation design shall be for the loads applied, not a generic foundation design, while taking into account all soils information.
2. Submittal Drawings:
a. Anchor bolt layout with all appropriate dimensions for installation.
b. Site specific foundation design.
c. Isometric as well as elevation and plan views of the farming members along with the member sizes and locations indicated on the drawings.
d. Connection details for every connection on the frame.
e. Roof panel connections and trim installation details.
f. All accessories on the structure shall have an installation detail as well as connection details.

D. FOUNDATION DESIGN
1. The foundation design shall be supplied by the manufacturer.
2. Anchor bolts shall be supplied by the manufacturer.
3. Foundation materials and labor shall be provided by the structure contractor.
4. Owner should provide site specific soils information for proper foundation design, if that data is not provided the foundation will be design for the minimum soil values allowed by code.
a. Foundation design shall be coordinated with the Geotechnical Engineering Report dated 9/11/2024, by Palmerton & Parrish, Inc.

1.05 QUALITY ASSURANCE

A. MANUFACTURER QUALIFICATIONS
1. The product shall be designed, engineered and fabricated at a facility operated and directly supervised by the manufacturer.
2. The manufacturer shall have a minimum of 15 years in steel shelter fabrication.
3. Full Time on Staff Quality Assurance Manager.
4. All welders must be AWS certified for welding steel structures.
5. Membership in the American Welding Society (AWS).
6. Membership in the American Institute of Steel Construction (AISC).
7. Full Time on Staff Licensed Engineer.
8. Published Quality Control System manual.
9. Quality Control System must pass an annual audit by a Third Part Agency.
10. ISO 9001 certification for Powder Coating System.

1.06 FIELD OR SITE CONDITIONS

A. Foundations shall be installed per the ICON (or Pre-Approved Equal's) installation drawings.
   1. All foundations shall be cast at the same elevation unless specifically noted on the installation drawings.

B. Anchor bolts shall be placed in the foundation as per the ICON (or Pre-Approved Equal's) installation drawings utilizing the anchor bolt template supplied with the anchor bolts.
   1. Anchor bolts shall be installed per the dimensions and orientation shown on the drawings.

1.07 MANUFACTURER WARRANTY

A. Shelter shall have a 10-year limited warranty on the steel framing members.

B. Shelter shall have a 10-year limited warranty on the powder-coated elements.

C. For all Metal Roofing there will be a pass-through warranty direct from the metal Roofing supplier, warranty shall be provided on request.

2.01 SHELTER SYSTEM AND MATERIALS

A. MANUFACTURERS:
   1. Acceptable Manufacturer: ICON Shelter Systems, Inc., 1455 Lincoln Rd., Holland, MI, 49423. Email: info@iconshelters.com, Website: www.iconshelters.com.
      1) Or Approved Equal, per the requirements of this Specification.
   2. Pricing for this specific project and specified shelter can be requested from:
      1) Sean Schmeiser
         1455 Lincoln Ave
         Holland, MI 49423
         616-396-0919
         Sean.Schmeiser@iconshelters.com
         Tim Witvoet
         Tim.Witvoet@iconshelters.com

   3. The product shall be designed and fabricated at a facility operated and directly supervised by the manufacturer.

B. SUBSTITUTION LIMITATIONS:
   1. Substitutions must be provided a minimum of seven (7) calendar days prior to bid. The Bidder will be notified in writing if their proposed substitution for Specialty Manufacturer is accepted, and must receive said approval to include in their Bid.
   2. Alternate suppliers shall meet the requirements, qualifications and provide proof of certifications listed under Section 1.01 DESCRIPTION OF PRODUCT and 1.05 QUALITY ASSURANCE.

3. Alternate suppliers shall provide documentation that the power-coat system being provided meets or exceeds the ICON supplied powder-coat system listed under Section 2.01(c)(8).

C. PRODUCT REQUIREMENTS AND MATERIALS:
   1. GENERAL:
      a. The pre-engineered and pre-fabricated package of parts shall be pre-cut and packaged unless noted otherwise. These packages will include all parts and pieces necessary to field assemble

         the shelter at the jobsite. The shelter shall be shipped in knocked down format to minimize shipping expenses. Field labor will be kept to a minimum with no on-site welding required.
   2. CONCRETE FOR FOUNDATIONS:
      a. Concrete shall have a minimum 28-day compressive strength of 2,500 psi unless noted otherwise on the foundation detail.
      b. Reinforcing steel shall be ASTM A615, Grade 60.
   3. COLUMNS:
      a. Hollow Structural Section (HSS) columns shall meet ASTM A500, Grade B with a minimum wall thickness of 3/16" (0.1875").
      b. Unless the columns are direct buried in the foundation the columns shall attach to the foundation with a minimum of four (4) anchor rods and shall meet OSHA Steel Erection Standard 29 CFR 1926.755(a)(1).
   4. STRUCTURAL FRAMING:
      a. All Hollow Structural Sections (HSS) shall meet ASTM A500, Grade B. "I" Beams, tapered columns or open channel sections shall not be accepted for primary members.
   5. COMPRESSION RINGS:
      a. Compression rings shall be made of ASTM A36 structural plate or of structural channel welded together to form the ring. All connections not requiring compression rings shall use ASTM A500, Grade B HSS sections for these connections.
   6. CONNECTION REQUIREMENTS:
      a. Anchor rods shall be ASTM F1554, Grade 36 unless otherwise noted.
      b. Structural fasteners shall be ASTM A325 high strength bolts and A563 nuts.
      c. All structural fasteners shall be hidden within the framing members whenever possible.
      d. No field welding shall be required to finish the construction of the shelter.
      e. Manufacturer shall supply extra fasteners.
   7. ROOFING MATERIALS:
      a. PRIMARY ROOF DECK – TONGUE & GROOVE WOOD DECKING
         1) Decking shall be 2 x 6 nominal tongue and grooved wood decking.
         2) Wood species shall be Southern Yellow Pine, kiln dried, #1 Square Reversable.
         3) Fascia shall be pine plank.
         4) 30# felt shall be supplied when the secondary roofing is supplied by ICON.
      b. SECONDARY ROOF DECK – MEDALLION-LOK STANDING SEAM ROOFING
         1) Roofing shall be a minimum of 24-gauge Galvalume steel sheet with ribs that are 1 3/4" tall and the panels are 16" wide. Ribs shall run with the slope of the roof for proper drainage.

2) Roof outside surface shall be a baked on Kynar 500 paint finish (or approved Equal) and shall be supplied in one of the manufacturer's standard colors: Black, to be confirmed by the Architect.
    - Ceiling color to be a "wash coat" primer.
3) All roof panel angles shall be cut in the field.
4) Roofing shall be installed over wood roof deck with 30# felt installed before the metal roof deck.
5) Metal roofing trim shall match the color of the roof and shall be factory made from 26- gauge Kynar 500 painted Galvalume sheet steel.
6) Trim includes panel ridge caps, hip caps, eave "J" trim, splice channels, rake trim, roof peak cap and corner trim as applicable for the model selected. Trim may need to be field cut to length. Please refer to the installation drawings for additional information and detail.
7) Ridge, hip and valley caps shall be pre-formed with a single central bend to match the roof slope and shall be hemmed on both edges.
8) Roof peak caps shall be pre-fabricated with no field assembly required.
9) Roofing is attached to sub-framing with clips.

8. FACTORY FRAME FINISH:
    a. E-COAT/ POWDERCOAT:
        1) The steel shall be shot-blasted to the specification of SSPC-SP10 near white blast cleaning. SSPC-SP2 hand tool cleaning will not be an acceptable alternative.
        2) The shot-blasted parts are then washed with zinc-phosphate in an eight (8) stage washer.
        3) The steel is then immersed in a liquid epoxy and coated through an electro-deposition process (E-coat).
        4) The parts are then coated with a color coat of TGIC polyester powder and then one clear coat for a final finish thickness of 5 to 10 mils.
9. ACCESSORIES
    a. ELECTRICAL ACCESS
        1) Standard in all column bases is a 3" diameter hole, located in the center of the plate. This allows electrical wiring into the column base.
        2) Contractor and Specialty Manufacturer of the shelter shall coordinate to allow installation of lights and conduits according to the Electrical Drawings and Specifications.

PART 3 - EXECUTION

3.01 STORAGE AND HANDLING

A. When the shelter arrives at the jobsite protect the products from weather, sunlight and damage.

B. When unloading, pad the forks and use other precautions to protect the powder-coated finish. Do not use chains to move the materials, use straps. Handle all

materials carefully in the field to avoid scratching the powder-coat finish.

C. Contractor shall store the product elevated from the soil to allow full air circulation around the materials as do not introduce mold, decay, fungi or insects into or on the materials. One end of the materials shall be elevated higher than the other end if storage will be longer than a few days as to allow the water to run off the materials.

3.02 INSTALLATION OF MATERIALS

A. The shelter shall be placed on prepared foundations that were designed by the manufacturer (unless otherwise noted). Materials for these foundations are not supplied by ICON (or Pre-Approved Manufacturer) but by the foundation installation contractor. Foundation shall be constructed to all local building code requirements and per good construction practices for the specific site conditions.
   1. In accordance with OSHA Steel Erection Standard 29 CFR 1926.750 Part R, anchor rods shall be installed for proper column stability and shall have a minimum of four (4) anchor bolts per column. Therefore, no single anchor rod column base connections shall be allowed.

B. The contractor shall install all parts and pieces per the manufacturer's supplied installation instructions and these specifications.

C. The interface with other work required is to be coordinated by the customer or the customer's agent. Some design may have electrical or plumbing requirements that are not supplied by ICON or Pre-Approved Equal manufacturer.

D. Tolerances on structural steel members are set according to AISC Code of Standard Practice for Steel Buildings and Bridges and have been used for the fabrication of this product. These tolerances will not and cannot be increased. No field slotting or opening of holes will be allowed without proper guidance from the ICON Engineering Department.

3.03 REPAIR

A. No field modifications or corrections are allowed without authorization from the ICON Engineering Department.

3.04 SITE QUALITY CONTROL

A. ICON does not require any on-site inspections or testing but these may be required by local authorities and the local building inspector. Please be aware of any on-site requirements prior to starting installation.

END OF SECTION

Section 13 34 23 - Pre-Engineered Restroom Building

Specification Date: 10/03/2024

SECTION 1: GENERAL REQUIREMENTS

1.1 SUMMARY

A. It is the responsibility of the Contractor to apply for necessary permits for the construction of this building based on the sealed plan sets provided by the Building Supplier.

B. The Basis-of-Design Building Supplier is Romtec, Inc. An Equal may be provided if approved by the Architect, subject to the requirements of this Specification and Drawings.

C. Contractor shall be aware that the provision of the scope of work outline in this Specification is considered a LONG LEAD ITEM and a schedule of the proposed design, supply, delivery, and installation shall be prepared and delivered to the Architect within THREE WEEKS of execution of construction contract with the City of Joplin.

D. The Contractor shall be responsible for recognizing that these critical project materials warrant timely attention. Under no circumstances except the failure to comply with all the specification requirements be a reason for substitution of unacceptable materials.

E. Specification covers the provision of a Pre-Engineered Restroom Building with roof extension, size as indicated in the Drawings. The restroom building shall be a 4-season structure with insulation, heating, 2 ADA-accessible restroom stalls, and a mechanical space for storage of a Gator-type maintenance vehicle, as well as point of connection for site water, sewer, and electric utilities.

1.2 RELATED REQUIREMENTS

A. City of Joplin Standard Technical Specifications

B. 044313.13 Anchored Stone Masonry Veneer

C. 099300 Staining and Transparent Finishing

D. 323300 Site Furnishings

SECTION 2: BUILDING SUPPLIER SCOPE

2.1 SUMMARY

A. The work shall include furnishing the sealed architectural, structural, mechanical, and electrical plan sets and furnishing the structural, mechanical, and electrical building components as a complete, pre-designed restroom building package as shown on drawings and as specified herein.

2.2 GENERAL REQUIREMENTS

A. Packaged building design and engineering and furnishing all specified building package components shall be supplied by Romtec, Inc., or pre-approved alternate, hereafter designated as the ***building supplier***.

B. The ***building supplier*** shall be a single source design, engineering, and manufacturing firm who shall meet all the following requirements.

C. The packaged building shall be a current standard product of ***building supplier***, or modification of a current standard product of the ***building supplier.***
D. ***Building supplier*** shall be regularly engaged in and have at least ten (10) years of experience in packaged building engineering, design, supply, and construction.
E. The ***building supplier*** must meet or exceed the product specifications. The Romtec, Inc. building package is an approved guide and example.
F. Alternate ***building suppliers*** shall demonstrate that they have designed, engineered, produced, delivered, and constructed at minimum ten (10) functioning site-built buildings of similar type. Project completion dates and a reference contact from the owner of each project must be provided.
G. Alternate ***building suppliers*** must disclose all instances of any prior municipal reviewer or landscape architect's rejection of the same or similar product as an "or equal" to the specified basis of design building package.
H. Bidders who propose and alternate *building supplier* other than Romtec, Inc. are required to provide a complete submittal package minimum of seven (7) calendar days prior to the bid opening date with a set of preliminary plans, details, and specifications covering all information shown in Drawings and this Specification. The Bidder will be notified in writing if their proposed substitution for Specialty Manufacturer is accepted, and must receive said approval to include in their Bid.
I. Any products proposed as "or equal" that are not as specified must be specifically listed in the alternate ***building supplier*** submittal package and accompanied by manufacturers data sheets for review.
J. The building and its concrete footings, foundation, and slab are to be engineered by the ***building supplier*** to meet site-specific conditions, including wind and snow loading, local frost depth, and ground conditions.
K. Fasteners that are normally included with individual components, as we all any atypical fasteners, shall be supplied by ***building supplier***.
L. Building is to be designed and constructed to meet local codes and approvals for permanent structures. Any building that is temporary, permanently relocatable, prefabricated modular, an offsite constructed product, or constructed of precast material is not an accepted equal to permanent, onsite, conventional construction. Local codes requirements include, but are not limited to:
    1. Rooftop snow load: 30 PSF
    2. Wind Gust: 115 MPH
    3. Minimum Footing Dimensions: 16" diameter x 30" depth
M. No approval by any external entity will override the local building authority's codes and inspections. Seals meant for modular homes and production plant certifications will not be allowed in lieu of sealed plans from a licensed engineer and conventional inspection during construction.
N. Building sidings, treatments, and roofing are to be as specified. Precast buildings with painted textures are not considered architecturally equivalent.
O. The ***building supplier*** shall provide complete, code-compliant building plans including plans, elevations, sections, and details, under seal of a National Kitchen and Bathroom Association (NKBA) certified technical designer.
P. The ***building supplier*** shall provide complete structural calculations meeting code for design loads and seismic design under seal of a professional Engineer with current license in the state where the project is located.
Q. The reviewing authority reserves the right to review or reject all submittals at its sole discretion.

R. All work and materials shall comply with current industry building codes and regulations for the state where the project is located.
S. Americans with Disabilities Act Accessibility Guidelines (ADAAG) will be followed in design, manufacture, and construction.
T. Building Supplier shall coordinate the building design with the Geotechnical Engineering Report dated 9/11/2024, by Palmerton & Parrish, Inc.

2.3 DESIGN & SUBMITTAL DOCUMENTATION

A. The ***building supplier*** work shall include the design of the architectural, mechanical, structural, and electrical components that will be required for this building.
B. The building will be designed as a complete building package to be delivered to the job site for construction on- site by the contractor.
C. Within one (1) week of contract award, the ***building supplier*** shall submit the packaged building preliminary Scope of Supply and Design Submittal (SSDS), including the building plan view and elevation drawings.
D. The ***building supplier*** will provide complete submittal documentation in the ***building supplier's*** standard electronic submittal format for review.
E. The preliminary SSDS will be reviewed by relevant parties and returned to the ***building supplier*** with any required revisions to the terms, product data sheets, and/or building plan view and elevation drawings noted as comments.
F. The ***building supplier*** shall make any required corrections or revisions and resubmit the preliminary SSDS until the preliminary SSDS is approved by the relevant parties.
G. Once the preliminary SSDS has been approved, the ***building supplier*** will provide full sealed plan sets stamped by an engineer licensed in the state that the building is located for review by the permitting authority.
H. Up to three (3) wet stamped sets of the plans and structural calculations shall be provided by ***building supplier***
before any additional fees apply. Standard plan set size is 11" x 17".
I. Permitting authority will review the full sealed plan set and return with any required revisions or corrections noted as comments.
J. ***Building supplier*** shall provide one full round of sealed plan revisions in response to permitting authority comments before any additional fees are allowed.
K. The following sections shall be included in the ***building supplier***'s preliminary Scope of Supply and Design Submittal. Incomplete submittals will be rejected and returned to the bidder.
    1. INTRODUCTION
    2. BUILDING DESIGN,
        (a) SUPPLIED ITEMS
        (b) EXCLUDED ITEMS
        (c) PLAN VIEW AND ELEVATION DRAWINGS
    3. PRODUCT DATA
    4. WARRANTY & LIMITATIONS

Note: Overall site plan is not part of ***building supplier's*** *scope.*

2.4 WARRANTY

A. The building package and all associated components provided by ***building supplier*** shall be warranted against defects in materials and workmanship for a period of not less than one (1) year from the date of acceptance. Acceptance is the date of delivery of the building package, or, if delivery is delayed for any reason beyond

building supplier's control, the date that the building and all its associated components were ready to deliver.

B. ***Building supplier*** shall pass through to owner all relevant manufacturers warranties for individual products and components of the building package.

SECTION 3: BUILDING PACKAGE PRODUCTS

3.1 APPROVED BUILDING SUPPLIERS

A. Romtec, Inc.,
18240 North Bank Road, Roseburg, OR 97470
Tel: 541-496-3541; Fax: 541-496-0803; Email:
RIsales@romtec.com Web: www.Romtec.com

B. Requests for use of an alternate ***building supplier*** will be considered in accordance with provisions of Section 1 and 2.

3.2 BUILDING DESCRIPTION

C. Refer to drawings for quantities, dimensions, locations, and installation methods for the materials and items described in this section.
D. Building dimensions shall match what is indicated on drawings.
E. Building shall be designed for 4-season use, including insulation and winter heating to maintain the integrity of all plumbing and electrical fixtures, and minimum user comfort.

3.3 PLUMBING FIXTURES & ACCESSORIES

F. The following plumbing fixtures and accessories, or Approved Equals, shall be supplied by ***building supplier***.
G. Toilet shall be floor mount, top supply, white vitreous china.
H. Flush valve shall be a chrome, manual lever with ADA compliant metal oscillating non-hold-open handle.
I. Lavatory shall be 19 in. x 17 in. white vitreous china and wall hung with anti-splash rim and concealed front overflow.
J. Faucets shall be deck mounted single hole single supply metering, sink faucet.
K. Grab bars shall be stainless steel.
L. Toilet paper dispenser shall be stainless steel, wall mount with two-roll capacity.
M. Soap/Sanitizer Dispenser shall be Bradley Corp. Diplomat Series Model 6A01, surface-mounted automatic foam soap/sanitizer dispenser, with face formed with contemporary contours, radii, and finish matching related accessories in manufacturer's designer series. Capacity 27 oz (800 ml). Equipped with hinged cover and completely concealed mounting plate. Vandal resistant filler hole cover and sight gauge. Corrosion-resistant foam soap/sanitizer valve.
N. Surface mounted baby changing station shall be foundations model 5410339 horizontal diaper changing station constructed of polyethylene body with stainless steel exterior.
O. Floor mount, 24"x24" mop sink with faucet, holder and guard in the mechanical room.
P. Brass hose bib for maintenance water supply in the mechanical room.

3.4 ELECTRICAL

A. The following electrical fixtures, or Approved Equals, shall be supplied by **building supplier**.
B. Light fixtures shall be supplied by **building supplier**.
C. Exterior lights to be LED downlights with cast-aluminum housing with corrosion resistant paint in dark bronze. Polycarbonate lens.
D. Exterior lights controlled by photocell.
E. Restrooms to include 6" recessed truss lights.

F. Restroom lights controlled by motion sensor.
G. Interior surface mount, 48" LED light fixtures in the mechanical room.
H. Mech room lights controlled by switch (switches by installer).
I. Surface mount, 1000 - 2750-Watt wall heater in mechanical room only shall be supplied by **building supplier**.
J. Mechanical exhaust package with in-line fans shall be supplied by **building supplier**.
K. Mechanical heated air intake.
L. Main breaker panel shall be supplied by **building supplier**.
M. Breaker Panel shall be 100 Amp, single-phase, rain tight.
N. *Note: Breaker panel shall be sized to accept only the loads of the **building supplier** electrical fixture package. The **building supplier** should modify the main breaker panel as needed to be most efficient based on any design changes*.
O. Building heater system located in mechanical room shall be provided to ensure the 4-season integrity of the building plumbing and electrical system, and minimum comfort for occupants.

3.5 STRUCTURE

A. Concrete Masonry Units (CMU, or approved Equal, shall be supplied by ***building supplier***.
   a. Walls shall be constructed of 8"W x 16"L x 8"H smooth-face mortar joint concrete masonry units (concrete blocks).
   b. Blocks shall be manufactured to ASTM C90 designation for load bearing concrete masonry units.
   c. Block color to be ***Gray***.
B. Exterior wall finish shall be Cedar Wood Board & Batten siding.
   a. Siding shall be mounted over OSB sheathing supplied by ***building supplier***.
   b. Cedar board Size 1x12", Grade C and Better.
   c. Cedar batten Size 1x3", Grade C and Better.
   d. Stone veneer will be provided by the **building installer, per** requirements of **044313.13 Anchored Stone Masonry Veneer.**
C. Sanitary tile cove base on interior restroom walls to be supplied by ***building supplier***.
D. Door system components or Approved Equals shall be supplied by ***building supplier***.
   a. Doors shall be Steelcraft® SL18 standard laminated honeycomb core and 18-gauge galvanized steel.
   b. Door frame shall be pre-welded Steelcraft® 3-Sided flush frame, 16-gauge galvannealed A-60 steel.
   c. Doors and frames shall be powder coated ***black***.
   d. Masonry door clips (3/16" dia.) for door frame shall be fitted between the doorframe and concrete blocks to bond frame to wall. Door clips shall allow full internal grouting of the frame during installation.
   e. Hinges shall meet ANSI A5112 with non-removable pin and two ball bearings.
   f. Hager 5100 Series Grade 1 door closer shall be constructed of cast iron.
   g. Door shall have 0.038" gauge, stainless steel protection plates.
   h. Doors shall have aluminum alloy 6063, T5 temper mill finish saddle thresholds, model 424E.
   i. Doors shall have aluminum alloy 6063, T5 temper synthetic rubber polymer blend neoprene sweeps, model 200NA, anodized aluminum finish.
   j. 10. Restroom doors shall have Hager 3700 series interconnected locks with occupancy indicator.

3.6 ROOFING

A. The following roof components, or Approved Equal, shall be supplied by ***building supplier***.
B. Timber Truss with steel post roof extension with exposed truss plates.
   a. All exposed steel to be powder coated black.

b. Column bases to be wrapped with CMU, finished in custom stone veneer.

C. Roof system shall consist of wood truss package.

D. Building supplier shall provide the following items:
   a. Batt insulation.
   b. 1"x4" Cedar Trim
   c. Simpson anchors/ties
   d. Roof Sheathing
   e. Lumber for truss blocking, top-of-wall blocking, eave/vent blocking
   f. Vents
   g. Ice and water shield
   h. Interior trim boards

E. Roofing shall be Fabral, 26-gauge, Horizon 16, standing seam panels, with 16 in. coverage width.

F. Roofing package shall include inside and outside foam closures, matching trim (eaves, gables, and ridge) and fasteners, sheet metal flashing (all sides), and 30# felt (under metal).

G. Roofing color to be **Black**, to be confirmed by the ***owner*** from the manufacturers standard color chart.

3.7 DELIVERY, STORAGE, AND HANDLING

A. The ***building supplier*** freight shall be based on delivering the product on a 48' to 53' flatbed or van truck and trailers, or as close to those dimensions as can legally access the site. Overall dimensions of the truck and trailers allowed to access the site are: 70' overall length, 102" wide and 168" high.

B. ***Building supplier*** shall deliver organized building package components in stages as shrink-wrapped pallets that correspond to a typical sequence of construction. A bill of material stating the stages of palletized components shall be included with every delivery.
   i. Stage 1 pallets shall include structural components such as block, frames, vents, beams, connectors, trusses, etc.
   ii. Stage 2 pallets shall include second stage structural components such as filler wall material, windows, skylights, roofing, etc.
   iii. Stage 3 pallets shall include structural finish components such as siding material, tile, doors etc.
   iv. Stage 4 pallets shall include plumbing and electrical fixtures and other finish materials such as toilets, sinks, drinking fountains, electrical fixtures, accessories, etc.

SECTION 3: BUILDING INSTALLER SCOPE

3.1 SUMMARY

A. The installing contractor or subcontractor, hereafter designated as the *building installer,* is responsible for building package installation. *Building installer* work will generally include foundation/pad construction and building package assembly/construction.

B. <u>Note</u>*: Building supplier's scope is separate from the building installer's scope. Romtec, Inc., is the approved building supplier, not a designated building installer.*

3.2 CONSTRUCTION SUBMITTALS

A. If required by ***owner*** and/or reviewing authority, ***building installer*** shall submit product data sheets and relevant information about the specified ***building installer*** supplied products below for review and approval.

3.3 WARRANTY

A. ***Building installer's*** work shall be warranted against defects in materials and workmanship for a period of not less than one (1) year from the date of acceptance. Acceptance is the date that installation work for the building package is completed, including any relevant final punch list. In the event that final acceptance of the completed building is delayed for reasons beyond ***building installer's*** control, the warranty shall be one (1) year from the completion of ***building installer's*** installation work and demobilization.

B. ***Building installer*** shall pass through to owner all relevant manufacturers warranties for individual products and components supplied by ***building installer***.

3.4 STRUCTURE

A. Masonry (concrete) grout shall be supplied and installed by ***building installer***.
   a. Grout shall have a minimum compressive strength of 2,500 psi at 28 days, 9+/-1" slump, with max ½" aggregate.
   b. Fine or coarse grout may be used in accordance with 2009 UBC.
   c. All CMU block must be fully grouted and may not be wetted.

*B. Note: If required for installation, **building installer** will be responsible for providing appropriate equipment and labor for notching CMU block for bond beams, cutting CMU block to make any required shapes, and/or grinding CMU block for fixture mounting.*

C. Rebar for walls shall be supplied and installed by ***building installer***.
   a. All walls shall have # 4 and # 5 rebar. See final approved plans for spacing.
   b. All rebar used in the building must meet ASTM A615 manufacturing standards and is to be placed per the final approved plans.

D. Interior block wall finish shall be latex epoxy paint supplied and installed by ***building installer***.

E. Interior floors to be sealed concrete finish supplied by ***building installer***.

F. Sealant for all exposed wood shall be supplied and installed by ***building installer***.

G. Sealant for all exterior CMU block is required, to be supplied and installed by ***building installer***.

H. Cedar siding is primed & stained on-site by ***building installer***.
   a. Siding shall be mounted over OSB sheathing (sheathing supplied by ***building supplier***).

I. Rain gutters and downspouts are supplied and installed by ***building installer***.

J. Stone building veneer and Stone column base wrap shall be provided by the building installer, per the requirements of **044313.13 Anchored Stone Masonry Veneer.**

3.5 ELECTRICAL

A. Electrical rough-in, installation and trim shall be provided by ***building installer***.

B. All underground and/or overhead service to building shall be as specified in the final site plan.
   i. ***Building installer*** is responsible for all necessary wire, connectors, grounding, conduit, and related items to install the building package electrical components and meet all relevant national, state, and local codes.
   ii. ***Building installer*** shall supply and install all switches and outlets required to complete the building package installation.

3.6 CAST IN-PLACE CONCRETE FOR BUILDING PACKAGE

A. All equipment, labor, trades, and materials for cast-in-place concrete shall be provided by ***building installer***.
    a. Includes all materials and labor for building package foundations/footings and interior slabs.
B. Footings for the building package are to be dug by the ***building installer*** and poured on-site to meet local code for permanent structures. A prefabricated, modular mat placed on compacted base is not an accepted equal to a site specific, site poured, engineered foundation.
C. Engineered fill shall be ¾" minus crushed aggregate around footings, foundations, and slabs, or as required in the final approved plans.
D. Slab vapor barrier shall be 6-mil continuous plastic under the concrete slab, or as required in the final approved plans.
E. The foundation shall be installed as designed with all cast in-place concrete poured to dimensions specified, or as required in the final plans.
    a. Footings will be built to minimum 30" depth or greater if required by local frost depth or permitting authority.
    b. Minimum compressive strength of foundation concrete shall be 3,000 psi at 28 days, 4" +/-1" slump, with max ¾" aggregate, cured in accordance with ACI 308, or as required in approved final plans.
    c. Slabs shall have a fine broom finish with joints required in flat work as shown on plans.
    d. Steel rebar shall be installed as specified in final plans.
F. ***Building installer*** shall supply and install concrete slab sealer.
    a. Concrete slab sealer shall be a water-based, transparent curing, sealing and dust proofing compound with two (2) coats to be applied per manufacturer's instructions.

3.7 PLUMBING

A. Plumbing rough-in, installation and trim within 10' of the building footprint shall be provided by ***building installer***.
    a. All underground water service and sewer drain(s) from building to be as specified in final approved site plan.
    b. Building water shutoff valve, drain, and all rough piping shall be as shown on final building plans. Final installation location to be determined onsite.
    c. Install the building package plumbing fixtures per the final approved plans.
    d. Piping shall be installed per the final approved plans with minimum pipe sizing per 2009 Uniform Plumbing Code Section 610.
    e. Provide a connection from building water supply to a free-standing water fountain adjacent to the building structure per drawings.
B. Floor drains in the building shall be supplied and installed by ***building installer***.
    a. All floor drains shall be as shown on final approved plans.

3.8 OTHER MATERIALS & EQUIPMENT

A. Unless otherwise specified, the following products and materials are supplied by ***building installer*** (if applicable).
    a. Building package installation
    b. Cast-in-place concrete foundations, footings, interior slabs
    c. Concrete slab & block sealer
    d. Mortar
    e. Concrete grout
    f. Rebar
    g. Latex epoxy paint
    h. Caulk for siding
    i. Plumbing rough in, installation and trim

j. Electrical rough in, installation and trim
k. Switches & outlets
l. Typical fasteners; for example: roofing nails, staples, etc.
m. Fasteners not included in product packaging
n. Wood sealant for all decking, glulam beams, posts, and extensions
o. All other items within the building footprint indicated on final plans or required by building codes to complete installation of the building package which are not specifically stated as supplied by ***building supplier***.

3.9 DELIVERY, STORAGE, AND HANDLING

A. The ***building installer*** will be responsible for all equipment and labor required for off-loading of the delivered building package onsite.
B. The ***building installer*** will assume responsibility for adequate protection and maintenance of delivered building package materials from weather, damage, and pilferage during installation work. Any failure to adequately protect building package materials that affects the warranty of those materials will be at ***building installer's*** expense.
C. ***Building installer*** shall collect and maintain for final delivery to owner any operation & maintenance manuals included by individual product manufacturers with their respective product packaging. Any failure to collect, maintain, and/or deliver these O&M manuals to the ***owner*** that results in fees from ***building supplier*** for additional copies shall be at ***building installer's*** expense.

SECTION 4: CONTRACTOR SCOPE ITEMS

The items in this section may be provided by the same ***building installer*** as defined in Section 3 above (typically when a single entity is acting as both the ***building installer*** and ***contractor***), or the items in this section may be provided by a separate entity such as a general contractor or site contractor, hereafter designated as ***contractor*** (typically when the ***building installer*** is a separate subcontractor). ***Contractor*** work will generally include site preparation and grading, excavations for structures, backfill and/or structural backfill, and any site or utility work outside the building package footprint.

Items in this section are generally to be completed prior to ***building installer*** beginning its installation work described in Section 3 above.

4.1 CONSTRUCTION SUBMITTALS

A. If required by ***owner*** and/or reviewing authority, ***contractor*** shall submit product data sheets and relevant information about the specified ***contractor*** supplied products below for review and approval.

4.2 WARRANTY

A. ***Contractor's*** work shall be warranted against defects in materials and workmanship for a period of not less than one (1) year from the date of acceptance. Acceptance is the date that installation work for the building package is completed, including any relevant final punch list. In the event that final acceptance of the completed building is delayed for reasons beyond ***contractor's*** control, the warranty shall be one (1) year from the completion of ***contractor's*** installation work and demobilization.
B. ***Contractor*** shall pass through to owner all relevant manufacturers warranties for individual products and components supplied by ***contractor***.

4.3 ELECTRICAL

A. Incoming electrical utility lines to within approximately 10' of the building shall be provided by ***contractor*.**
   1. All underground and/or overhead service to building shall be as specified in the final site plan.
   2. Electric meter base and all rough wiring, switches, plugs and circuit breakers shall be as shown on final plans.

B. ***Contractor*** supplies and installs the meter base and meter.

4.4 CAST IN-PLACE CONCRETE FOR BUILDING EXTERIOR

A. All equipment, labor, trades, and materials shall be supplied by **contractor.**
   1. Includes all materials and labor for exterior/entry slabs and sidewalks.

B. Refer to drawings for sidewalks and entry slabs.
   1. Minimum concrete compressive strength of 2,500 psi at 28 days, or as required in final approved plans.
   2. Remesh or rebar reinforcement shall be used in sidewalks.
   3. All sidewalks shall be finished with a fine broom with control joints installed per the final approved site plan.

4.5 PLUMBING

A. Incoming plumbing to within approximately 10' of the building shall be provided by ***contractor***.
   1. All underground water service and sewer drain(s) from building to be as specified in final approved site plan.
   2. Building water shutoff valve is to be supplied and installed by ***contractor***.
   3. ***Contractor*** is responsible to ensure that incoming water pressure is sufficient to meet building package fixture demands.
   4. Minimum water pressure at toilet and urinal flush valves shall be 40 psi with minimum pipe sizing as per 2009 Uniform Plumbing Code Section 610, or as required in final approved plans.

B. Water line drain valve shall be supplied and installed by ***contractor***.

C. Sewer line backflow check valve shall be supplied and installed by ***contractor***.

4.6 OTHER MATERIALS & EQUIPMENT

A. Unless otherwise specified, the following products and materials are supplied by ***contractor***.
   1. All items not specifically listed as supplied by ***building supplier*** or ***building installer***.
   2. Any item listed as supplied by "contractor" or "others".

B. Unless specified in the plans or submittals, ***contractor*** supplies the following items (if applicable):
   1. Incoming electrical, water, sewer, and gas utilities.
   2. Asphalt paving
   3. Masonry pavers
   4. Sidewalks
   5. Landscaping
   6. Site grading
   7. Exterior/entry slabs
   8. Drain valves and backflow check valves
   9. Branch circuit breakers
   10. Irrigation Equipment
   11. Fire alarm and fire suppression equipment
   12. Lighting equipment not attached to the building.
   13. All other items exterior of the building footprint indicated on final plans or required by building codes which are not specifically stated as supplied by ***building supplier or building installer***.

4.7 DELIVERY, STORAGE, AND HANDLING

A. The ***contractor*** will assume responsibility for adequate protection and maintenance of the installed building package materials after completion of installation work by ***building installer***. Any failure to adequately protect building package materials that affects the warranty of those materials will be at ***contractor's*** expense.

SECTION 5: OWNER'S SCOPE

5.1 ONGOING MAINTENANCE

A. ***Owner*** is responsible for ongoing maintenance of the completed building after completion of work by building installer and contractor.

5.2 SITE PLAN

A. ***Owner*** (or owner's site engineer) is responsible for providing the final approved site plan to ***building supplier*** and/or ***building installer***.

5.3 SPECIAL INSPECTION

A. If required, special inspection(s) services shall be provided by ***owner***.
B. If special inspection(s) are required by the permitting authority or relevant agency(ies), then the ***building supplier***, ***building installer***, and/or ***contractor*** shall provide reasonable assistance to the ***owner*** to accommodate the special inspection(s).

Section 26 01 26 - Testing Electrical Systems

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions on Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to work of this Section.

B. Contractor shall note that this section shall be considered a Supplement to testing requirements outlined or described in other sections of these specifications.

1.02 WORK INCLUDES

A. Extent of Work as required by the Drawings and these Specifications

1.03 RELATED WORK

A. Specified elsewhere:

1. Section 26 05 00 – Common Work Results for Electrical
2. Section 26 05 19 – Low Voltage Conductors and Cables
3. Section 26 05 26 - Grounding and Bonding for Electrical Systems

1.04 QUALITY ASSURANCE

A. Regulatory Requirements

1. Governing Codes:
   a. NFPA 70 – National Electrical Code (most current issue)

1.05 SUBMITTALS

A. Submit under provisions of Division 1.

1. Test Reports:
   a. Test of entire electrical system as noted herein. Submit to the Engineer in triplicate.

PART 2 PRODUCTS

2.01 MATERIALS

A. Furnish all equipment, tools, manpower, and labor to perform specified testing.

PART 3 EXECUTION

3.01 TESTING

A. After wires and cables are in place and connected to devices and equipment, the system shall be tested for short circuits, improper grounds, and other faults. When fault condition is present, the trouble shall be rectified, then re-tested. Where cable is found defective or damaged, it shall be removed and replaced in entirety; do not field repair. Cost for correction shall be considered incidental to the project.

B. All wiring devices and electrical apparatus furnished under this contract, when ground or shorted on any integral "live" part, shall be removed and the trouble rectified by replacing all defective parts and materials. Cost of correction is considered incidental to the project.

C. All feeder cables and other power distribution apparatus shall have a Megger resistance test conducted to determine that insulation resistance is not less than that recommended by the manufacturer, or as noted below.

Unless otherwise recommended by the manufacturer, insulation resistance testing shall meet or exceed the following on 600 Volt equipment utilizing 500 Volt resistance test instrument:

Conductors .....50 Meg-Ohms
Motors.....5 Meg-Ohms
Switchboards, MCC's and Panelboards.....25 Meg-Ohms
Power Transformers.....5 Meg-Ohms

D. Contractor shall furnish all tests and shall provide all test equipment, meters, instruments, cable connections or apparatus necessary for performing tests as specified herein. All costs for testing shall be considered incidental to this item and will not be paid for separately.

E. Examine connections to equipment for proper phase relationships. Rotate phase conductors as necessary in order to correct.

F. All motors shall be tested under Section 26 29 01. All motors shall be tested for correct direction of rotation. Run tests on all motors shall be tested for correct direction of rotation. Run tests on all motors and verify that proper overload devices have been installed. Coordinate this task with motor supplier.

G. Testing of Ground System

1. Each and all grounded cases and metal parts associated with electrical equipment shall be tested for continuity of connection with the ground bus system by the Contractor in the presence of the Engineer or his representative.
2. All grounding electrode conductors brought in from the ground field shall be tested for satisfactory continuity and by resistance measurement between the electrical equipment ground bus and the ground field. The grounding path shall not exceed 0.010 ohms.

3. Each Ground Field shall be tested for resistance to earth a “three-terminal” or “fall-of-potential” test as described in IEEE Standard #81. As an alternate, a specially designed clamp-on instrument such as AEMC Model 3710 (now superseded by Model 6416) or 3730 (now superseded by Model 6417) may be used if found acceptable to the engineer. Based upon measured field data, the Contractor shall calculate the ground field resistance and furnish record copies to the Engineer and Owner for record. In no case shall the ground field resistance exceed 25 ohms. If the resistance is found to be higher than 25 ohms, one additional rod shall be driven with a minimum separation equal to the length of the ground rod used and connected in parallel with the rod under test.
4. Exterior ground field resistance testing shall not be measured during unusually wet weather and should be performed during normal weather and soil conditions. Any tests incorrectly performed or not performed to the satisfaction of the engineer will be repeated. Costs for all such re-testing shall be considered incidental to the project.
5. All specified maximums and minimums of this specifications must be met. Complete test records of all tests shall be made and shall show resistance values obtained and calculations of same, showing method of test and calculation.

3.02 CORRECTION OF DEFECTS

A. When tests disclose any unsatisfactory workmanship or equipment furnished under this contract, correct defects and retest. Repeat tests until satisfactory results are obtained.

B. When any wiring or equipment is damaged by tests, repair or replace such wiring or equipment. Test repaired items to ensure satisfactory operation.

END OF SECTION 26 01 26

Section 26 05 00
Common Work Results for Electrical

PART 1 GENERAL

1.01 WORK INCLUDES

A. Work included in this section is general in nature and applicable to electrical system work. Contractor is also directed to other sections of Division 26 - Electrical for additional related specifications for items described in this section.

B. Work included in this section shall apply to installation and testing of all materials and equipment necessary to completely install electrical system as shown on drawings and as described herein in these specifications, or as may be necessary for a complete and operational electrical system.

C. Unless otherwise noted, all electrical equipment shown on project drawings shall be furnished under Division 26.

D. Drawings pertaining to this installation indicate general location of conduits, wiring, distribution and motor control centers, lighting and outlets, and other details necessary for installation of system.

E. Electrical installation as shown on drawings and as specified herein is based upon best available information, with regard to characteristics of mechanical equipment specified. In the event changes are necessary in order to accommodate mechanical equipment furnished, necessary revisions will be made with approval of Owner’s representative.

F. Any minor changes in location of equipment, to include conduits, outlets, etc., from those shown on drawings, shall be made without extra charge if so directed by Owner’s representative. These changes shall be any changes in location that, had new location been the bid-upon location, would not have resulted in an increase in contract construction cost over that actually bid.

G. All electrical equipment shall be installed in conformance with applicable sections of NPFA 70 - National Electrical Code, respective equipment manufacturer's directions, as detailed on drawings and as specified herein. Any installations which void U.L. listing (or other third-party listing) and/or manufacturer's warranty of a device or equipment shall NOT be permitted.

H. RELATED CONTRACT WORK DESCRIBED ELSEWHERE IN THESE SPECIFICATIONS:

Electrical Contractor shall note that it is not the intent of these Division 26 specifications herein to be all-inclusive of electrically related work to be performed as part of this contract.

Contractor shall also comply with electrical requirements in these sections of the

specifications, including, but not limited to, wiring of motors, control panels furnished by others, HVAC equipment and all other electrically powered equipment furnished by others under this project.

1.02 LAWS AND ORDINANCES

A. In installation of this work, Contractor shall comply in every respect with requirements of National Electrical Code (NEC), National Board of Fire Underwriters, and any state and local requirements, laws and ordinances as may be applicable.

B. If, in opinion of the Contractor, there is anything in drawings or specifications that will not strictly comply with above laws, ordinances and rules, the matter shall be referred to the attention of the Owner's representative for a decision before proceeding with that part of the work. No changes on drawings or in specifications shall be made without the full consent of Owner's representative.

C. Contractor shall obtain and pay for all licenses, permits and inspections required by above laws, ordinances and rules for entire electric wiring job called for in these specifications and accompanying drawings.

1.03 DRAWINGS

A. Drawings for electrical work will be a part of electrical drawings to which will be added, during the period of construction, any other detail drawings as may be necessary in opinion of Owner's representative, to show proper installation of various appliances or equipment with relation to project.

B. Drawings and specifications are intended to be descriptive only, and any error or omissions of detail in either shall not relieve Contractor from obligations thereunder to install in correct detail any and all materials necessary for complete and operating electrical systems to extent shown on drawings and described in this specification.

C. Contractor shall, during progress of job, record any and all changes or deviations from original drawings, and, at completion of project, shall deliver to Owner's representative a single marked-up set of "as-built" drawings.

1.04 SHOP AND ERECTION DRAWINGS

A. This Contractor shall prepare shop drawings for all parts of his work. Before commencing any work or providing any material, Contractor shall submit for approval of Owner's representative all drawings relating to construction, arrangement or disposition of equipment entering into contract, and show complete equipment with manufacturer's specifications of same.

B. Shop drawings of all distribution and motor control centers, panels, power and lighting systems, fixtures, wire, cables, devices, etc. shall be submitted for approval, as well as complete details of all systems not shown in detail on drawings.

C. Shop drawings shall be fully descriptive of all materials and equipment to be incorporated into this project. Contractor shall carefully check all submitted shop

drawings, making sure they are complete in all details and cover specific items as hereinafter specified.

D. Shop drawings shall be submitted in sufficient quantity as required by the General Conditions.

E. No material or equipment shall be allowed at the site until shop drawings approved by the Engineer are received by the Resident Engineer at the site.

F. The following information shall be clearly marked on each shop drawing, catalog cut, pamphlet, specifications sheet, etc. submitted:

PROJECT TITLE:
BRANCH OF WORK: ELECTRICAL
NAME OF BUILDING OR LOCATION:
PAGE OF DRAWINGS OR SPECS WITH WHICH EQUIPMENT COMPLIES:
DATE:
SUBMITTED BY:

PART 2 PRODUCTS

2.01 PRODUCTS SHALL BE AS SPECIFIED IN OTHER SECTION AND AS DETAILED ON THE DRAWINGS

PART 3 EXECUTION

3.01 EQUIPMENT STORAGE

A. Except as indicated below, all electrical equipment considered to be a part of this contract shall be stored before installation in a warm, dry, indoor area so as to protect the equipment from physical damage, freezing, dirt and any other harmful effects.

B. The following electrical equipment shall be permitted to be stored outdoors on pallets or without direct contact with the earth, under tarpaulins or plastic covers:

1. Conduit. Does not include boxed fittings, etc., which shall be stored indoors.
2. Ground Rods.
3. Wire and Cable.
4. Strut-type framing members. Does not include boxed hardware, which shall be stored indoors.
5. Other electrical equipment not listed herein, with written approval of the Owner’s Authorized Representative.

C. The following electrical equipment shall be permitted to be stored exposed outdoors on pallets or without direct contact with the earth:

1. Light Poles. Does not include light fixtures or boxed hardware, which shall be stored indoors.

2. Other electrical equipment not listed herein, with written approval of the Owner's Authorized Representative.

D. The installation of electrical equipment shall not begin until the structure, if required, within which the equipment is to be permanently housed, is complete enough to provide protection from weather and vandalism (i.e. roof, windows and temporary padlockable or permanent doors installed).

E. The Contractor will be responsible for ensuring conformance with these procedures.

3.02 EQUIPMENT MOUNTING

A. All equipment and materials shall be installed and completed in a first-class workmanlike manner. The right is reserved to direct the removal and replacement of any item, which in the opinion of the Owner's Representative and/or Architect/Engineer does not present an orderly and reasonably neat or workmanlike appearance, provided such items can be properly installed in an orderly way by usual methods in such work.

B. The approximate location of all equipment and devices is shown on the Drawings. The Owner's Representative and/or Architect/Engineer reserves the right to change the location of all equipment or devices 6 ft in any direction at no additional cost provided such changes are requested before final installation.

C. Install all equipment with ample space allowed for removal and repair. Provide ready accessibility to removable parts of equipment and to all wiring without moving equipment which is installed or which is already in place. Provide access panels for all devices installed above non-accessible ceilings and/or within walls or partitions.

D. Install electrical equipment with due consideration to ventilating ducts, HVAC equipment, mechanical piping, etc., adjusting locations as necessary.

E. Electrical equipment shall be installed to maintain minimum clearances per Article 110 of NEC and ANSI C2 (National Electrical Safety Code.)

F. Electrical Contractor shall be responsible for furnishing and setting all anchor bolts required to install Electrical Contractor's equipment.

G. Where concrete mounting pads are required for electrical equipment mounting, Electrical Contractor shall furnish all concrete and form work necessary to complete the installation.

H. Where electrical equipment is located on damp or wet walls or locations as directed, it shall be "stand-off" mounted a minimum of ½" from wall in a manner so that rear of equipment is freely exposed to surrounding air. Method of mounting shall be approved by Owner's representative before equipment is mounted.

I. Unless otherwise noted, top of safety-switches, control panels, and similar equipment shall be 5'-0" above finish floor or finish grade.

J. Enclosures for panelboards, switches or overcurrent devices shall not be used as junction boxes, auxiliary gutters or raceways for conductors feeding through or

tapping-off to other switches or overcurrent devices, unless adequate space for this purpose is provided and the equipment is listed for this use.

K. In order to maintain NEC ratings and classifications of cables, do not combine conduit contents or modify conduit materials of construction unless specifically directed or shown otherwise on project documents.

L. Per NEC 300.11(A)(2), when independent electrical equipment support wires are installed within dropped-ceiling areas, they shall be distinguished by color, tagging, or other permanent effective means.

3.03 COORDINATION

A. Provide day-to-day coordination with the work of other contractors engaged in this project. Execute the work in a manner not to interfere with other Contractors, and vice-versa.

B. Coordinate with other contractors regarding the location and size of pipes, raceways, ducts, openings, devices, so that there may be no interferences between installation or of the progress of any contractor.

C. Coordinate installation of equipment and wiring with the established construction schedule.

D. Provide temporary platforms and handrails as required, to allow installation of electrical components and raceway systems.

3.04 PROTECTION OF WORK

A. Protect work from injury by keeping all conduit and boxes capped and plugged or otherwise protected. This includes damage by freezing and/or stoppage from building materials, sand, dirt, or concrete.

B. Protect all equipment and fixtures from damages during the project, provide all tarpaulins, drop cloths, barricades, temporary heaters or auxiliary equipment.

C. All materials or equipment damaged during construction shall be repaired or replaced with new items to the satisfaction of the Architect/Engineer.

END OF SECTION 26 05 00

Section 26 05 19
Low-Voltage Electrical Power Conductors and Cables

PART 1 GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Work included in this section is supply of wire and cable to provide a complete and operational electrical system.

B. Any bid submitted to the Owner which contains cost adjustments for the current price of metals (copper and/or aluminum) will be rejected. Qualified bids in any form will not be considered.

C. Unless otherwise specified or detailed on the project drawings, all wire and cable shall be installed in conduit.

D. Unless otherwise specified or detailed on drawings, all wire and cable on this project shall be copper construction only.

E. Related Sections

1. Section 26 05 00 – Common Work Results for Electrical
2. Section 26 05 33 - Raceway and Boxes for Electrical Systems
3. Section 26 05 26 - Grounding and Bonding for Electrical Systems

F. Reference to Standards

1. ANSI/NFPA 70 - National Electrical Code
2. U.L Standard No. 44 - Thermoset-Insulated Wires and Cables.
3. IPCEA Publication No. S-66-524.
4. Federal Specification J-C-30B
5. ASTM Specification B-8.

1.03 SUBMITTAL REQUIREMENTS

A. Submit under provisions of Division 01.

B. Contractor shall submit for all cable types and sizes used on this project.

1.04 QUALIFICATIONS

A. Wire and cable shall be manufactured and supplied by a company regularly engaged in business of furnishing wire and cable. If required by Owner's representative, manufacturer shall submit a certification to a minimum experience of five years in manufacture of wire and cable.

1.05 DELIVERY, STORAGE AND HANDLING

A. Wire and cable shall be delivered on reels or coiled in boxes. Wire and cables shall be stored and handled to prevent damage to conductor and insulation.

1.06 MAINTENANCE SERVICE (WARRANTY)

A. All equipment shall be warranted to be free from defects in material and workmanship for period of one year from date of substantial completion established by the Owner.

PART 2 PRODUCTS

2.01 EQUIPMENT SPECIFICATION

A. THHN/THWN

Unless otherwise noted on the plans or specifications, all interior power wiring installed under this project shall be dual rated type THHN/THWN.

Cable shall be 600 Volt rated, sized as indicated on the drawings. Cable shall comply with Underwriters Laboratories Standard U.L. 83. Cables shall be rated 90°C in dry locations 75°C in wet locations. Conductors shall be annealed copper.

2.02 COLOR CODING

A. Color code conductor insulation for #10 AWG or smaller conductors. Color code conductors #8 AWG or larger with colored tape or colored insulation. Standard colors:

	120/240V 1 Phase 3W	240 V or 208/120V 3 Phase 3 or 4W	480V 3 Phase 3 or 4W	240/120V 3 Phase 4W, ⍰
Phase A	Black	Black	Brown	Black
Phase B	Red	Red	Orange	Orange (high leg)
Phase C	N/A	Blue	Yellow	Blue
Neutral	White	White	Gray	White
Ground	Green	Green	Green	Green

B. Control wiring insulation color shall be red.

C. 120 VAC control wiring from a separate source (for example, 120 V control wiring from a control panel that supplies a remote located starter) shall be with yellow color insulation.

D. 24 VDC wiring shall be Blue for Positive and White with Blue Stripe for Negative.

2.03 WIRE PULLING LUBRICANT

A. Pulling lubricant shall be UL listed, water based, polymer solution. Lubricants containing waxes, soaps or combustible materials are not acceptable. Contractor shall verify the compatibility of the selected cable pulling lubricant and cable jacket materials proposed. Manufacturers/Lubricants shall be as follows, or equivalent:

1. American Polywater - Polywater J
2. Ideal Industries - ClearGlide
3. American Colloid - Poly-X
4. Buchanan - Quick Slip
5. ARNCO – HydraLube

2.04 SPLICES AND JOINTS

A. Splices and joints shall be as described below, or approved equivalent.

B. Interior applications:

1. #8 and smaller conductors:
   a. Ideal “sing nut” type insulated connectors.
   b. Scotchlok R, B, and Y type insulated connectors.
2. #6 and larger conductors:
   a. New construction: For straight line connections, use compression connector with rubber insulating cover or boot.
   b. New construction: For “Tee” cable taps, use compression connector with rubber insulating cover or boot.
   c. Existing construction: For taps in cabinets, gutters and other close locations, use O-Z/Gedney type XW & XWC, XTP & XTPC or, PMX &PMXC, or equivalent.

C. Exterior applications

Note that below grade splices in manholes, handholes and vaults will not be allowed on this project unless specifically shown on drawings. Conductors are to be pulled continuous end-to-end unless otherwise noted or directed by the Engineer in writing.

1. #8 and smaller conductors:
   a. Twist-on connectors pre-filled with silicone-based sealant to protect against moisture and corrosion. Units shall be UL 486D listed as weatherproof, waterproof and suitable for direct burial. Units shall be Ideal Industries “Underground” #64 or King Innovation “Dryconn King 6 Blue” Filled Waterproof Connectors, or equivalent.
2. #6 and larger conductors:

a. NSI/Polaris ISRW Series "Blue"
b. Ilsco Series USPA, DBK, SSK or PDSS

2.05 LINE MARKING TAPE

A. Where required or noted on the drawings, line marking tape shall be installed as specified in Section 26 05 41 - Underground Electrical Construction

PART 3 EXECUTION

3.01 INSTALLATION (WIRE CONDUCTORS)

A. Wire and cable shall be installed using accepted industry methods to prevent damage to conductors and insulation. Installation shall comply with all applicable sections of NEC regarding conduit fill.

B. No splices shall be permitted in conduit bodies. All splices shall be made in junction boxes, control panels and cabinets provided for that purpose as detailed or required by need.

C. Neatly train and lace wiring inside boxes, equipment and panelboards.

D. Drawings are diagrammatic in showing circuitry routing between devices and equipment. Provide all phase conductors, neutrals, switched and unswitched legs, grounds, etc., as required for a complete and operational electrical system.

E. All 120V circuits shall have individual neutral conductors. 120V circuits with "shared" neutral conductor shall not be permitted.

F. Minimum wire size shall be #12 unless otherwise noted. Where protected by 15A fuses, control wiring may be #14 AWG.

G. All conductors shall be continuous without splices except at locations approved for the purposes of splicing.

H. All wire sizes shall be stranded except where specifically approved otherwise.

I. All circuits shall be labeled in compliance with Section 26 05 53 – Identification for Electrical Systems.

J. Pulling eyes on conductors or a basket weave grip shall be used for pulling cable. Woven wire cable grips shall be used to pull all single conductor cable where pulling eyes are not available. Preferred method for pulling conductors is factory-installed eyes attached to conductors. All sharp points and edges on the hardware attaching the pulling rope to the cable shall be taped to prevent snagging or damaging the raceway.

K. When a cable grip or pulling eye is used for pulling, the area of the cable covered by the grip or seal plus 6 inches shall be cut off, and discarded when the pull is completed. When pulling loops are used, the entire loop shall be cut off and discarded when the pull is completed.

L. A non-binding type of swivel, or swivel connection shall be inserted between the pulling rope and the cable pulling eye, grip or loop to prevent twisting under strain and allow for free rotation of the cable during pulling.

M. The pulling tension of any cable shall not exceed the maximum tension recommended by the cable manufacturer. Pulling mechanisms of both the manual and power types shall have the rated capacity clearly marked on the equipment. Cable shall be installed using either hand-tension or by use of specially-designed "cable-tuggers". Any cable pulled through conduit using trucks, back-hoe's, earthmoving equipment or similar apparatus will be rejected and will be replaced with new cable at the Contractor's expense.

N. Break-away shear-pins or other acceptable method of tension limitation shall be utilized on mechanical pulling equipment to prevent over-stressing cable during installation. To avoid insulation damage from excessive sidewall pressure at bends, the pulling tension, in pounds at a bend, shall not exceed 300 times the radius of the bend in feet.

O. As soon as the cable is pulled into place, the pulling eyes, cable grips, or pulling loops shall be removed. On exterior pulls, the remaining cable ends shall be temporarily resealed with either a minimum of three (3) wraps of 2" Scotch #23 rubber splicing tape or heat-shrink caps. Exposed cable ends shall be wrapped in such a manner to prevent unintentional water entry. Cable ends or seals shall be installed prior to the end of the workday.

P. Cable shall not be bent to a radius of less than 4 times the overall diameter, including installation apparatus.

Q. Cable supports and securing devices shall be installed to provide adequate support without deformation of the cable jackets or insulation.

R. Cables shall be routed within manholes and vaults such that adequate working space is provided within the structure for cable splicing and for the installation of future cables.

S. All damaged or rejected cable shall be removed from the project site and replaced at no additional expense to the project.

3.02 CONNECTIONS AND TERMINATIONS (WIRE CONDUCTORS)

A. Identify each conductor in panelboards, junction or pull boxes, or troughs with a permanent pressure sensitive label with suitable numbers or letters for easy recognition. Identify control wiring at each end and in junction boxes with numeric wire number corresponding to control wiring diagram.

B. Thoroughly clean wire before installing lugs and connectors.

C. Make splices, taps and terminations to carry full ampacity of conductors without perceptible temperature rise.

D. Terminate spare conductors with electrical tape, identify as “spares” and roll up in box.

3.03 TESTING (WIRE CONDUCTORS)

A. Inspect wiring for physical damage and proper connection.

B. All wire and cable shall be tested for continuity and short circuits prior to energizing circuits. Verify proper phasing, adjust as required.

END OF SECTION 26 05 19

Section 26 05 26
Grounding and Bonding for Electrical Systems

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Furnish products listed and classified by Underwriters Laboratories, Inc., as suitable for purpose specified and shown.

1.02 Work under this item includes the electrical grounding and bonding of the service entrance gear, electrical distribution equipment, metallic raceways, metallic enclosures, utilization equipment and other appurtenances for the work or equipment to be furnished under this project. In general, all work shall meet or exceed that defined in article 250 of the national electrical code NEC/NFPA 70.

1.03 This specifications section neither replaces any NEC requirements, nor are any NEC requirements not specifically identified considered deleted from the scope of work. Items listed in this section are furnished to either augment or exceed those established by NEC.

1.04 SUMMARY

A. Equipment grounding conductors

B. Grounding Electrodes

C. Grounding Electrode Conductors

D. Bonding

E. Related Sections
   1. Section 26 05 00 – Common Work Results for Electrical
   2. Section 26 43 13 – Surge Protective Devices for Low Voltage Power Circuits

F. Reference to Standards
   1. Article 250; ANSI/NFPA 70 - National Electrical Code (NEC)
   2. NFPA 780 – Standard for the Installation of Lightning Protection Systems

1.05 SUBMITTALS

A. Submit under provisions of Division 01.
   1. Ground rods
   2. Exothermic welding components

1.06 QUALIFICATIONS (RESERVED)

1.07 QUALITY ASSURANCE (RESERVED)

1.08 DELIVERY, STORAGE AND HANDLING

A. Ground rods shall be tie-wrapped together and stored away from contact with the earth.

B. Exothermic welds and hardware items shall not be shipped loose but shall be in boxes, labeled with material and equipment enclosed. Boxes shall be stored away from contact with earth and shall be protected from weather.

1.09 REGULATORY REQUIREMENTS (RESERVED)

1.10 COORDINATION

A. Installation of all Grounding and Bonding shall be coordinated with other trades and Sub-Contractors. Special attention is required for installation of Concrete-Encased Electrodes within structural footings.

1.11 MAINTENANCE SERVICE (WARRANTY)

A. All equipment shall be warranted to be free from defects in material and workmanship for a period of one year from date of substantial completion established by the Owner.

1.12 EXTRA MATERIALS (SPARE PARTS) (RESERVED)

PART 2 PRODUCTS

2.01 MANUFACTURERS (RESERVED)

2.02 EQUIPMENT SPECIFICATION

A. Ground rods shall be UL listed, single-piece, 3/4" diameter by 10' long copper-clad steel with minimum 10 mil copper cladding.

All buried connections of grounding and bonding components shall be via exothermic weld only. Clamp or compression grounding connections below grade will be rejected and replaced at Contractor's expense.

B. Exothermic Welding Equipment Manufacturers
   1. Erico – Cadweld
   2. Continental Industries – Therm-O-Weld
   3. Hagar – Ultraweld

C. Grounding conductors shall be 600 volt, same insulation type as used for phase conductors, green in color unless otherwise noted.

D. Grounding electrode conductors in contact to earth shall be bare, stranded, annealed copper. Grounding Electrode Conductors shall be the larger of that detailed on the project drawings, specified herein or as required by NEC.

PART 3 EXECUTION

3.01 EXAMINATION (RESERVED)

3.02 PREPARATION (RESERVED)

3.03 INSTALLATION

A. A continuous grounding system shall be provided throughout the facility. The Contractor shall furnish and install all grounding and bonding as required per NEC and all Local Codes, whether or not specifically shown on the project drawings.

B. Except for separately derived systems, a single-point ground system is intended throughout the facility. So-called “Multi-point”, “independent”, “clean” or “separate” grounding systems that are not inter-bonded to the single-point facility system do not comply with NEC, are unsafe, and will be rejected.

1. On occasion, supplemental driven ground rods may be required on the project drawings. All such supplemental ground rods are to be bonded to the equipment grounding conductor and are NOT intended to indicate any separation of, or isolation from, the facility grounding system.

C. Equipment ground conductors (green insulated) shall be used solely for grounding and bonding purposes and be kept entirely separate from grounded neutral conductors (white insulation), except where bonded at the Service Entrance equipment.

1. The system Neutral and Ground conductors shall be bonded together through the Main Bonding Jumper in the Service Entrance Equipment only.
2. Unless otherwise directed on the project drawings, Grounding Electrode Conductors shall terminate on the Neutral Bus within the Service Entrance equipment.
3. The Main Bonding Jumper within the Service Entrance equipment shall be accessible for visual inspection.

D. Bond the system Neutral and Ground within Utility-owned KWH metering or Current-Transformer (C.T.) Cabinets ONLY if specifically required by the serving Utility. Otherwise, bond the system neutral and the ground in Service Entrance Equipment as described below.

E. Service Entrance Equipment Grounding and Bonding

1. Furnish grounding bushings on all metallic service conduits entering Service Entrance Equipment. Bond each bushing to Neutral bus in the Service Entrance Equipment as required by NEC Article 250.92 and 250.102C.
2. The System (Main) Bonding Jumper shall be installed within the Service Entrance Equipment and shall connect the Neutral Bus to the Ground Bus.
    a. The Main Bonding Jumper shall consist of either a U.L. Listed bonding link furnished by the Service Equipment manufacturer or a copper bonding conductor sized to requirements in NEC Article 250.28D.

    b. Do not re-bond Neutral and Ground downstream unless required by special conditions, such as those described in NEC Article 250.32.

F. Grounding Electrode System

1. As a minimum, the Grounding Electrodes shall comply with NEC Articles 250.52 and 250.53. Where present at each new building or structure, all available Grounding Electrodes defined in NEC Article 250.52A1 thru A4 shall be interconnected to form the Grounding Electrode System.
2. Per NEC Article 250.68A, the Grounding Electrode System shall be installed in such a manner that each connection point may be visually inspected, unless encased by concrete or earth.
3. Per NEC Article 250.64, Grounding Electrode Conductors shall be installed without splice between Service Entrance Equipment Neutral bar and Grounding Electrodes. Where required due to distance or construction, splicing shall be permitted by means of exothermic welding only. Irreversible "H" and "C" type compression connectors shall NOT be utilized for Grounding Electrode Conductors.
   a. Where exposed or visible, all Grounding Electrode Conductors (regardless of size) shall be protected from physical damage using non-metallic conduit, such as Schedule 40 PVC. Extend protective conduit as close as practical to the Grounding Electrode. Any metallic conduits installed by the Contractor for grounding electrodes must be bonded at both ends per NEC Article 250.64E.
   b. Where a copper Grounding Electrode System Bus-Bar is indicated on the project drawings, it shall be sized as noted but no less than ¼"T x 2"W x 24"L.. Size of the single copper Grounding Electrode Conductor between the Service Entrance Neutral Bus and the Grounding Electrode System Bus-Bar shall be the larger of that shown in NEC Table T250.66 or as noted on the project drawings.
      Connection of Grounding Electrode Conductors to a Grounding Electrode System Bus-Bar shall be through the use of listed compression-type lugs bolted to the Bus-Bar.
4. Grounding Electrode Conductors shall be individually installed from the Service Entrance Neutral Bus (or Grounding Electrode System Bus-Bar) to the respective Grounding Electrode. "Looping" of Grounding Electrode conductors (extending a suitably-sized single grounding electrode conductor from electrode-to-electrode) shall NOT be utilized without written approval from the Engineer.
5. Connection of Grounding Electrode Conductors to individual Grounding Electrodes shall comply with NEC Article 250.70.
   a. Connection at all Grounding Electrodes shall be by use of exothermic welding. Clamp or compression connection connections shall NOT be utilized without written approval from the Engineer.
   b. Below-grade ground rod and associated ground wire shall be clean and dry before performing the exothermic weld. Verify that the proper size and type of exothermic weld kit is used before beginning work
   c. Exothermic welds shall be left exposed for inspection and approval before backfilling or otherwise concealing. Any unacceptable exothermic welds shall be redone, including any necessary replacement material (ground rods, ground wires, etc.) as needed to provide an accepted exothermic weld.

6. Non-Metallic conduits containing grounding electrode conductors shall not be supported with metal clamps that completely encircle the conduit. Use nylon nuts, bolts, straps and/or reinforced fiberglass or premium grade plastic resin strut support with non-metallic hardware as manufactured by Aickinstrut, or equivalent.
7. All of the following shall be interconnected, where available:

a. Bond metallic underground water piping in direct contact with earth for no less than 10 feet per NEC Article 250.52A1. Size of the copper bonding jumper shall be the larger of that shown in NEC Table T250.66, or as noted on the project drawings. Installation shall comply with NEC Article 250.53. Connection shall be made at a point less than 5 feet from where the metallic water piping enters the facility. Furnish bonding around removable equipment (water meters, etc.) per NEC Article 250.68B.
   i. Note that NEC Article 250.53D2 requires a Supplemental Grounding Electrode when a metallic underground water pipe is the sole Grounding Electrode. The Supplemental Grounding Electrode shall be one of those described in NEC Articles 250.52A2 through 250.52A7. See also paragraph 26 05 26-3.03F8 below.

b. Metal frames of building or structure shall be bonded per NEC Article 250.52A2. Size of the copper bonding jumper shall be the larger of that shown in NEC Table T250.66, or as noted on the project drawings. Installation shall comply with NEC Article 250.53.

c. Furnish concrete-encased electrodes (commonly called “Ufer” ground) per NEC Article 250.52A3 and install per NEC Article 250.53.
   i. The size of the copper conductor which is the sole connection to the concrete-encased electrode shall be the larger of that shown on the project drawings or #4 AWG.
   ii. The Concrete-Encased Electrode (CEE) shall be no less than #4 rebar (½” diameter) with a minimum length of 20 feet long placed in bottom of concrete footing encased by no less than 2” of concrete in direct contact with earth.
   iii. Within the concrete encasement, connect the grounding electrode conductor to the re-bar by means of exothermic weld, Cadweld, or equivalent. Compression connections will not be accepted as an alternate termination method of connection within the concrete envelope.
   iv. The Contractor shall provide all necessary coordination between the Sub-Contractors and trades for the implementation of this item before concrete is placed.
   v. Do not use Insulated (plastic or epoxy coated) re-bar for concrete-encased electrodes. If the structural construction requires insulated or plastic-coated re-bar, add a minimum of 20 feet bare, non-coated re-bar to create the Grounding Electrode.
   vi. For installations that may structurally utilize re-bar smaller than #4, tie-wrap a minimum of 20’ length of no smaller than #4 AWG bare copper Grounding Electrode to the re-bar in the bottom of the footing prior to installation of concrete.

d. Furnish a Grounding Electrode Ground-Ring only where specifically noted on the project drawings. Ground-Ring shall comply with NEC Article 250.52A4 requirements and be installed per NEC Article 250.53. Where utilized, all Ground-Rings must encircle the entire facility (form a closed-loop). Size of the copper Grounding Electrode Conductor which is the sole connection to the ground-loop shall be the larger of that shown on the project drawings or #2 AWG.

8. On projects where the only Grounding Electrode listed in NEC Article 250.52A through 250.52D is a metallic underground water pipe, it must be supplemented by another grounding electrode per NEC Article 250.53D2. Unless directed otherwise, the supplemental grounding electrode shall be a driven ground field.
   a. Ground field shall consist of a triangle 10 feet on each side, with a driven ground rod at each vertex of the triangle. Size of the copper Grounding Electrode Conductor, and the bonding jumpers between all ground rods, shall be the larger of that shown on the project drawings or #6 AWG.
   b. If required due to space constraints, furnish two (2) ground rods a minimum of 10 feet apart. Deviations from the triangular-shaped ground field shall require written approval by the Engineer prior to installation.

G. All metallic raceways, boxes, enclosures, etc. shall include an insulated equipment ground conductor. Due to corrosion, metallic raceway and conduit connectors alone WILL NOT be considered as meeting this requirement. The Equipment Grounding Conductor shall positively bond all electrical components and utilization equipment to the facility ground system.

H. All metallic boxes used for electrical equipment shall include listed grounding screws or lugs. No more than one grounding conductor shall be installed per lug location unless lug is listed for multiple conductors.

I. The largest factory-scored concentric conduit knockouts shall be used to provide conduit bonding to NEMA 1 & 3R enclosures.
   1. If required, provide a conduit reducing hub for the specific conduit size terminated.

J. Equipment Grounding Conductors shall be sizes as shown in NEC T250.122, but no less than #12 AWG.

K. Isolated, exposed metal conduit segments (e.g. within manhole or handhole) shall be bonded with a bare copper conductor sized from NEC T250.122. Bonding jumper size shall be based upon the largest ampacity circuit contained within.

L. Bonding of metallic components of manhole and handhole frames and lids as well as all exposed metal conduit sections of underground duct bank is covered under Specifications 26 05 41- Underground Electrical Construction.

M. All other exposed metal piping (e.g. air, fire-protection, natural gas, metallic process piping etc.) and exposed structural steel not used as a Grounding Electrode shall be bonded to the Grounding Electrode System per NEC Article 250.104. Size of the copper bonding jumper shall be no smaller than that shown in NEC Table T250.66.

N. All communications systems described in NEC Chapter 8 shall be bonded to system ground. Installation shall comply with NEC Article 250.94 and Articles 800, 810, 820 and 830. Size of the copper bonding jumper shall be #6 AWG unless otherwise noted on the project drawings.

O. General Requirements for Separately Derived Systems (e.g. Two-Winding Transformers)

Solidly-Grounded Separately-Derived Systems shall be installed per NEC Article 250.30 requirements. In general, the following shall apply for solidly-grounded two-winding transformers unless specifically directed otherwise on the project drawings.

1. Primary Equipment Ground conductor shall terminate on transformer ground lug “G”.
2. Install the transformer “X0-G” link, or system bonding jumper, within the transformer housing only. Where the System Bonding Jumper consists of a field-installed copper conductor, it shall be sized to NEC Table 250.66 but not less than 12½% of the total cross-sectional area of the secondary phase conductors.
3. Secondary Neutral conductors shall be terminated on transformer “X0” Lug.
4. Secondary Equipment Ground conductors shall be terminated on transformer ground lug “G”.
5. Bond the transformer Neutral “XO” to the nearest grounding electrode in accordance with Article 250.30A7 of the NEC. The grounding electrode conductor shall be sized per Table 250.66, "Grounding Electrode Conductor for Alternating-Current Systems of the latest edition of NEC. Grounding Electrode conductor shall be installed in either non-metallic conduit (Schedule 40 PVC) or bonded at both ends of metallic conduit per NEC Article 250.64E.
6. Neutral and Ground Bus in all downstream equipment shall be kept isolated. Do not re-bond downstream unless required by special conditions, such as those described in NEC Article 250.32.

3.04 MANUFACTURER’S FIELD SERVICES (RESERVED)

3.05 TESTING

A. As described in Specifications Section 26 01 26.

B. All grounded metal cases and parts associated with electrical equipment shall be tested for continuity with ground system.

C. If requested, testing shall be performed in the presence of the Owner’s representative.

D. Provide a copy of all testing reports to Engineer for record purposes.

END OF SECTION 26 05 26

Section 26 05 29
Hangers and Supports for Electrical Systems

PART 1 GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Strut-type framing for conduit and equipment supports

B. Cable Rack saddle-type supports

C. Anchors and Fasteners

D. Related Sections

1. Section 26 05 00 – Common Work Results for Electrical

E. Reference to Standards

1. ANSI/NFPA 70 - National Electrical Code.
2. NECA - National Electrical Contractors Association.
3. ASTM No. A570 G33
4. ASTM No. A-123
5. ASTM No. A-525
6. Furnish products listed and classified by Underwriters Laboratories, Inc., as suitable for purpose specified and shown.

1.03 SUBMITTALS

A. Submit under provisions of Division 01.

B. Product Data: Provide manufacturer's catalog data for fastening systems and supports.

C. Manufacturer's instructions: Include application conditions and limitations for use stipulated by Product testing agency specified under Regulatory Requirements. Include instructions for storage, handling, protection, examination and installation of Product.

1.04 QUALIFICATIONS (RESERVED)

1.05 QUALITY ASSURANCE (RESERVED)

1.06 DELIVERY, STORAGE AND HANDLING

A. Stored conduit and equipment supports shall not be in contact with earth, but shall be on pallets or other above-grade supports. Conduit and equipment supports shall be covered to minimize exposure to weather.

B. Anchors and fasteners shall be stored in their original containers in a clean, dry place. They shall not be exposed to weather.

1.07 COORDINATION (RESERVED)

1.08 MAINTENANCE SERVICE (WARRANTY)

A. All equipment shall be warranted to be free from defects in material and workmanship for a period of one year from date of substantial completion established by the Owner.

1.09 EXTRA MATERIALS (SPARE PARTS) (RESERVED)

PART 2 PRODUCTS

2.01 MOUNTING STRUT

A. Where utilized, strut-type metal framing shall be provided to mount and support electrical equipment and enclosures as indicated on the drawings.

B. Strut-type supports shall be cold-formed steel, with corrosion-resistant coating acceptable to authorities having jurisdiction.

C. Metal Items for Use Outdoors or in Damp Locations: Hot dipped galvanized steel.

D. Raceway and Cable Supports: Manufactured clevis hangers, riser clamps, straps, threaded C-clamps with retainers, ceiling trapeze hangers, wall brackets, and spring-steel clamps or click-type hangers.\

E. Pipe Sleeves: ASTM A 53, Type E, Grade A, Schedule 40, galvanized steel, pin Ends.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine all supports and fasteners for straightness, rust and corrosion. Do not use any equipment that is not straight or is rusted or corroded.

3.02 PREPARATION

A. All equipment shall be clean at time of installation. Remove all burs.

3.03 INSTALLATION

A. Install products in conformance with manufacturer's instructions and as detailed in drawings.

B. Provide anchors, fasteners and supports in accordance with NECA Standard of Installation. Do not use spring steel clips or clamps except as noted in Section 26 05 29-3.03H.

C. Do not fasten supports to pipes (except where detailed on drawings), ducts, mechanical equipment (except where detailed on drawings), or conduit.

D. Install surface mounted cabinets, enclosures and panelboards with a minimum of four anchors.

E. Provide materials, sizes and types of anchors, fasteners, and supports necessary to carry loads of equipment and conduits. Consider weights of equipment and conduit when selecting products.

F. Provide all necessary hardware, such as floor flanges, in order to install equipment as specified or as shown on the drawings.

G. Include knee-braces and stiffeners as necessary to provide rigid support such that equipment does not bounce or sway.

H. Use spring-lock washers under all nuts.

3.04 INTERFACE WITH OTHER PRODUCTS (RESERVED)

3.05 MANUFACTURER'S FIELD SERVICES (RESERVED)

END OF SECTION 26 05 29

Section 26 05 33
Raceway and Boxes for Electrical Systems

PART 1 GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Work included in this section is conduits, raceways and fittings required for operation and maintenance of facility.

B. Related Sections

1. Section 26 05 00 – Common Work Results for Electrical
2. Section 26 05 19 – Low Voltage Conductors and Cable
3. Section 26 05 29 – Hangers and Supports for Electrical Systems

C. Reference to Standards

1. Federal Specifications WW-C-581d
2. Federal Specifications WW-C-540c
3. Federal Specifications WC-1094-A
4. ANSI C80.1
5. ANSI C80.3
6. ANSI C80.5
7. ANSI/NEMA OS-1 – Sheet Steel Outlet Boxes, Device Boxes, Covers and Box Supports
8. UL 50 – Enclosures for Electrical Equipment
9. UL Standard UL-1 Standard for Flexible Metal Conduit
10. UL Standard UL-6 Electrical Rigid Metal Conduit – Steel
11. UL Standard UL-6A Electrical Rigid Metal Conduit – Aluminum, Red Brass and Stainless Steel
12. UL Standard UL-651 Standard for Schedule 40, 80, Type EB and a Rigid PVC Conduit and Fittings.
13. UL Standard UL-651A Schedule 40 and 80 High Density Polyethylene (HDPE) Conduit.
14. UL Standard UL-797 Electrical Metallic Tubing - Steel
15. UL Standard UL-1479 Standard for Fire Tests of Penetration Firestops.
16. NEMA RN1

17. NEMA RN2
18. NFPA 70 (NEC)
19. NEMA TC-2
20. NEMA TC-3
21. NEMA TC-7
22. NEMA 250

1.03 SUBMITTALS (SUBMIT ONLY ON TYPES APPLICABLE FOR PROJECT)

A. Submit under provisions of Division 01.

B. Schedule 40 Galvanized Rigid Steel Conduit

C. PVC Coated Galvanized Rigid Steel Conduit

D. Schedule 40 Aluminum Rigid Conduit

E. Electrical Metallic Tubing (EMT)

F. Rigid PVC Conduit

G. Flexible Metal Conduit

H. Liquid Tight Flexible Metal Conduit

I. Explosion-proof Flexible Metal Couplings

J. High-Density Polyethylene Conduit (Unit Duct)

K. Fittings and Conduit Bodies

L. Expansion/Deflection Fittings

M. Lay-In Wireway

N. Conduit Seals
   1. Conduit Fire Stopping
   2. Conduit Water Seals
   3. Conduit Explosion Proof Seals

1.04 QUALIFICATIONS

A. All materials shall be purchased new from suppliers/manufacturers regularly engaged in the business of electrical conduit, ducts and fittings.

B. Junction and pull boxes shall be manufactured and supplied by a company regularly engaged in business of furnishing junction and pull boxes. If required by Owner's representative, manufacturer shall submit a certification to a minimum experience of five years in manufacture of junction and pull boxes. Junction and pull boxes shall be U.L. listed.

1.05 DELIVERY, STORAGE AND HANDLING

A. Conduits shall not be shipped loose, but shall be bundled by sizes. Threads of metal conduits shall be protected by plastic caps. Fittings shall be stored in boxes. All equipment shall be stored on pallets to prevent contact with earth and shall be covered with plastic sheeting to protect them from dirt and weather.

B. Junction and pull boxes shall not be shipped loose, but shall be in boxes with labels indicating size and type. These boxes shall be stored away from contact with earth and protected from weather and abuse.

1.06 MAINTENANCE SERVICE (WARRANTY)

A. All equipment shall be warranted to be free from defects in material and workmanship for a period of one year from date of substantial completion established by Owner.

PART 2 PRODUCTS

2.01 EQUIPMENT SPECIFICATION

Note that all types specified below may not be used on every project. Refer to project drawings for individual project requirements.

A. Schedule 40 Galvanized Rigid Steel Conduit:

Conduit shall be of heavy wall type fabricated from mild steel tubing and shall have a hot-dipped galvanized inner and outer coating, with a final coating of zinc chromate. Conduit and installation shall comply with all requirements in NEC Article 344. Mounting hardware shall be corrosion resistant, stainless steel, or galvanized steel.

B. Schedule 40 Rigid Aluminum Conduit

Conduit shall be of 6063 aluminum alloy, T-1 temper (Former designation T-42). Rigid aluminum conduit shall be third-party listed for use in classified (hazardous) locations. Conduit and installation shall comply with all requirements in NEC Article 344. Do not utilize steel or iron conduit fittings with aluminum conduit. Mounting hardware shall be corrosion resistant: stainless steel or aluminum.

C. Rigid PVC Conduit:

Conduit shall be Schedule 40 or Schedule 80, as noted on the drawings, PVC, 90°C, UL rated or approved equivalent. Material shall comply to NEMA Specification TC-2 (Conduit), TC-3 (Fittings-UL-514), and UL-651 (Standard for rigid nonmetallic conduit). Conduit and fittings shall carry a UL label (on each 10 foot length of conduit and stamped or molded on every fitting). Conduit and fittings shall be identified for type and manufacturer and shall be traceable to location of plant and date manufactured. Markings shall be legible and permanent. Clean rework material, generated by manufacturer's own conduit production, may be used by same manufacturer, provided end products meet requirements of this specification. Conduit and fittings shall be homogeneous plastic material free from visible cracks,

holes, or foreign inclusions. Conduit bore shall be smooth and free of blisters, nicks or other imperfections which could mar conductors or cables. Conduit, fittings and cement shall be compatible to assure system integrity and shall be as shown on project drawings, or equal. Conduit and installation shall comply with all requirements in NEC Article 352. Mounting hardware shall be corrosion resistant: nonmetallic support straps or PVC conduit clamps with stainless steel hardware, designed for the installation of PVC conduit, which allows the conduit to expand and contract freely over varying temperature changes.

D. Liquid Tight Flexible Metal Conduit (Non-Hazardous Areas):

Liquid tight flexible metal conduit shall consist of polyvinyl jacket over flexible hot dip galvanized steel tubing. Flexible conduit shall be completely sealed from liquids, dust, dirt and fumes, be resistant to oil, gasoline, grease and abrasion. Jacket shall also be sunlight resistant. Flexible conduit shall be U.L. listed and comply with Article 351 of NEC. Flexible conduit shall be Flexi-Guard Type UAG, as manufactured by O-Z/Gedney, or equal. Conduit and installation shall comply with all requirements in NEC Article 350.

E. High-Density Polyethylene (HDPE) Conduit (Unit Duct and Directional Bore)

Unit duct shall be installed with additions, options and exceptions as noted herein. Unless otherwise specified, the Polyethylene Duct shall be Schedule 40 and comply with the following:

1. NEMA TC-7 Smooth Wall Coilable Polyethylene Electrical Plastic Duct
2. ASTM D-3485 Standard specification for Smooth Wall Coilable Polyethylene (PE) Conduit (Duct) for preassembled wire and cable.
3. ASTM D-2477 Standard Specifications for Polyethylene (PE) Plastic Pipe, Schedules 40 and 80, Based on Outside Diameter
4. ASTM D-3350 Standard Specifications for Polyethylene Plastics Pipe and Fittings Materials
5. NEC Art 353 High Density Polyethylene Conduit; Type HDPE Conduit.
6. U.L. 651 Continuous length HDPE

Materials used for the manufacture of the polyethylene conduit and casing shall be high-density polyethylene that meets or exceeds a cell classification of 334430C (Black) or 334430E (Colored Shell) per ASTM D-3350. Recycled and reclaimed materials from outside the manufacturer's plant shall not be utilized in manufacture. Black material shall contain a minimum of 2% carbon black for long-term protection against UV degradation. The base resign used in the manufacture of the product shall contain a high-quality anti-oxidant package. The wall thickness shall be in accordance with ASTM D-2447. Conduit or casing shall be continuously marked with durable printing at intervals no greater than five (5) feet. Coils and reels shall have sequential footage marks. In order to prevent the entrance of dirt and water, the open ends of each length of reeled flexible duct, and all installed lengths prior to termination, shall be sealed by plastic caps. Polyethylene duct shall be Tamaqua, CPChem (Division of Chevron Phillips Chemical), Cablecon (by Integral Corp.) or

equivalent. All fittings shall be specifically designed for use with polyethylene conduit. All terminations of polyethylene conduit to other conduit types shall be made utilizing fittings listed for the purpose. Solvent bonding of polyethylene conduit shall utilize American Polywater Corp. BonDuit Conduit Adhesive, or approved equivalent. Conduit and installation shall comply with all requirements in NEC Article 353.

F. Fittings and Conduit Bodies:

Unless otherwise specified, all fittings and conduit bodies shall be manufactured from the same type of material as the conduit system (aluminum, galvanized steel, PVC, etc.)

Field Modifications to Existing Rigid Metal Conduit Systems ONLY: Where modifications to existing rigid conduit installations make threading of field cuts impossible, use Type HK series couplings by Thomas & Betts/Steel City, or equivalent.

G. Expansion and Deflection Fittings

Where noted on project drawings, or required by the nature of construction location, furnish conduit Expansion, Deflection or Expansion/Deflection Fittings. Expansion and deflection fittings shall be compatible with other conduit materials and be type AX (expansion), DX (deflection) or AXDX (expansion/deflection) as manufactured by O-Z/Gedney, or equivalent.

H. Pull Cords

Each empty conduit shown or described on the drawings shall be furnished with a pull cord to facilitate future conductor installation. Cord shall consist of non-deteriorating, non-metallic, non-cotton construction such as polyester or nylon material. Minimum tensile strength of all pull strings shall be 200#. Leave minimum of 12 inches slack at each termination or end. Any references on project drawings to "pull wire" shall be interpreted as a pull cord as described herein.

2.02 SEALING

A. Moisture Seal:

1. When electrical conduits are installed in sleeves, core-drilled holes or box outs, seal between conduit and penetration of perimeter walls, ceilings or floors to prevent entry of water.
2. Seal conduit penetrations of roof with flashings compatible with roof design and approved by Roofing System Manufacturer and Engineer.
3. Seal annular space between conductors and conduit wall of all conduit terminations where conduit enters a building from below grade in order to block moisture migration into electrical equipment. In addition seal conduits entering electrical equipment located either interior or exterior that once

installed condensation is created in the electrical equipment due the electrical system being connected to areas with a different temperature. Conduit moisture barrier material shall not harden and be compatible with both wire insulation and conduit materials. Installed product shall be easily removed for maintenance or modifications, regardless of the length of time material has been installed. Conduit moisture seal material shall be:

a. "Hydroblock" by WaterGuard Technology Products
16023 East Freeway
Channelview, Texas 77530-4365
Phone: (281) 862-0300
Fax: (281) 862-0314

b. American Polywater Corporation
Polywater Duct Sealant FST-250 Series
P.O. Box 53
Stillwater, MN 55082
Phone: (651) 430-2270
Fax: (651) 430-3634

c. O-Z/Gedney
Type DUX Water Sealing Compound

2.03 BOXES

A. Dimensions of all boxes shall meet or exceed NEC Article 370 requirements. Boxes larger than 12 inches in any dimension shall be hinged type.

B. Flush mounted exterior boxes in floors, walkways and walls shall be NEMA 4, cast aluminum, Crouse Hinds, Killark, or equal. For supplemental corrosion protection, boxes encased in poured concrete shall have an asphalt paint coating applied to surfaces in contact with concrete prior to installation. Note that an asphalt paint coating is not required on boxes installed in masonry brick or block walls.

C. Surface mounted interior junction and pull boxes used with Schedule 40 PVC conduit shall be nonmetallic and shall be as manufactured by Carlon, or equal.

D. Surface mounted interior junction and pull boxes used with GRS or EMT conduit shall be NEMA OS-1, stamped galvanized steel.

E. Flush mounted interior boxes in concrete floors and concrete walls shall be NEMA 4, cast aluminum, Crouse Hinds, Killark, or equal, and shall be supplied with asphalt paint applied to all surfaces in contact with concrete.

F. Boxes used to support light fixtures shall be of metallic construction and capable of supporting installed fixtures.

G. Exterior junction and pull boxes located in non-hazardous, non-classified areas shall be NEMA 4X stainless steel or aluminum. Provide waterproof conduit hubs, Meyers or equivalent, for all conduit terminations at enclosures. Gasketed lock-nuts will not meet this requirement.

H. Acceptable manufacturers:
1. Appleton Electric Co.
2. Carlon
3. Crouse-Hinds Co.
4. Hammond
5. Hennessy Outdoor Enclosures.
6. Hoffman Co.
7. Hubbell-Killark Electric Mfg. Co.
8. O.Z./Gedney Co.
9. Square D.
10. Thomas & Betts

PART 3 EXECUTION

3.01 INSPECTION

A. All conduits shall be inspected for proper fit and finish, for out-of-round and for proper thickness. All burrs and flashing shall be removed. Conduit and fittings shall be clean and free of obstructions.

3.02 INSTALLATION

A. Unless otherwise specified or detailed on the project drawings, all wire and cable shall be installed in conduit.

B. Unless otherwise shown on the project drawings, minimum conduit trade-size shall be 3/4". Larger sizes shall be installed where noted or where required by NEC.

C. In general, no aluminum conduit shall be cast in concrete or in direct contact with earth. Where such contact is found necessary or where specifically noted on project drawings, either coat all aluminum contact surfaces with a protective bituminous coating (such as Carboline Bitumastic 50 or 300M) or alternately substitute galvanized rigid steel conduit for the sections which are in contact with concrete or earth.

D. Interior Conduit Applications:
1. Above Grade or Floor:
Rigid aluminum type unless otherwise noted on the project drawings.
2. Below Grade or Floor:
Schedule 40 PVC or galvanized rigid steel at the Contractor's option. Where interior conduits exit from below floor or grade to above grade furnish conduit transition between types no more than 6" above finish floor.

E. Exterior Conduit Applications
1. Above Grade:
Rigid aluminum type unless otherwise noted on the project drawings. Where

conduits exit to above grade transition to conduit type shall be no more than 6” from penetration.

2. Below Grade:

   Schedule 40 PVC, HDPE or galvanized rigid steel at the Contractor’s option. Where conduits exit from grade to above grade furnish conduit transition between types no more than 6” above finish floor.

3. Conduits containing grounding electrode conductors shall be Schedule 40 PVC.

F. Moisture Seal of Below-Grade Conduits

1. Seal annular space between conductors and conduit wall of all conduit terminations where conduit enters from below grade in order to block moisture migration into electrical equipment. Install product only after conductors have been installed, terminated and commissioned for service. Install moisture seal products per all manufacturers instructions and requirements.

G. Conduit size and fill requirements shall comply with appropriate conduit fill tables in Annex C of NEC. It should be noted these are minimum requirements and larger conduit sizes or smaller fill requirements shall be used whenever specified or detailed on drawings.

H. Flexible conduit shall be provided as a connection between each motor junction box (or any other piece of equipment subject to movement or vibration) and rigid conduit system. Liquid-tight and explosion-proof flexible conduit shall not exceed 3' in length.

I. Ream conduits only after threads are cut. Cut joints square to butt solidly into couplings. Where necessary to join two pieces of conduit and it is impossible to use standard coupling, use three piece conduit coupling. Use of running thread is prohibited. This applies to all rigid conduit installations, underground or otherwise. In order to comply with NEC Article 300.6(A), all rigid steel conduit shall have field-cut threads re-coated using an electrically conductive, corrosion-resistant compound, Thomas & Betts/Shamrock “Kopr-Shield” (a product of Jet Lube, Inc.), or equivalent.

J. Make all joints in underground conduit watertight with approved joint compound. Temporarily plug conduit openings to exclude water, concrete or any foreign materials during construction. Clean conduit runs before pulling in conductors.

K. Hickey hand-bends will not be acceptable for conduits one inch (1") and larger. Use pre-manufactured factory elbows or bends fabricated with hydraulic bending machine. Field bending of all PVC conduit shall be accomplished with use of equipment approved by conduit manufacturer. Open flame bending equipment will not be acceptable.

L. A run of conduit between outlet and outlet, between fitting and fitting or between outlet and fitting shall not contain more than the equivalent of four quarter turn bends (360°), including bends immediately at an outlet or fitting.

M. At all conduit terminations furnish locknuts on both sides of enclosure plus an insulated bushing unless conduit termination is into a factory-threaded conduit opening or watertight (Myers-type) hub.

N. All conduit terminations at NEMA 4 or 4X enclosures shall be made with watertight (Myers-type) hubs listed for the application.

O. Do not run conduit below or adjacent to water piping, except where permitted by Owner's representative.

P. Run exposed conduits parallel with walls and at right angles to building lines, not diagonally.

Q. Support exposed PVC conduit runs on walls or ceiling every three feet (3') and support exposed rigid metal conduit runs on walls or ceiling every five feet (5') with stainless steel or PVC coated galvanized cast one hole straps, clamp backs and anchors. Provide lead shield insert anchors, with stainless steel round head machine screws, for concrete and brick construction. In wood construction, use stainless steel round head wood screws. Where steel members occur, drill and tap and use stainless steel round head machine screws.

R. In brick construction, drill hole for insert near center of brick, not near edge or in mortar joint.

S. Support two or more PVC exposed hanging parallel conduit runs every three feet (3') and support exposed rigid metal hanging parallel conduit runs every five feet (5') with trapeze hangers. Hanger assembly to consist of concrete inserts, threaded solid rod, washers, nuts and cross members nominally one and five-eighths inch (1-5/8") by one and five-eighths inch (1-5/8") non-metallic framing, as specified in Section 26 05 29 – Hangers and Supports for Electrical Systems. Anchor each conduit individually to cross members of every other hanger with cast one hole straps, clamps backs and proper sized stainless steel or non-metallic machine bolts and nuts.

T. Perforated metal strapping of any kind is prohibited.

U. Provide expansion and deflection fittings in all conduits which pass through or over building expansion joints. All expansion and deflection fittings shall be designed for, and compatible with, the conduit types on which they are installed.

V. Grounding Electrode Conductors shall be installed in non-metallic PVC conduit or bonded to both ends of metallic conduit to comply with NEC 250.64.

W. All conduit and fittings installed in Classified Areas shall be third part listed for the applicable Hazardous Location.

3.03 BOXES INSTALLATION

A. Junction or pull boxes required by code or need which are not detailed on drawings shall be considered incidental to proposal price and will not be paid for separately.

B. Any damage to equipment enclosures, pull or junction boxes shall be immediately repaired or replaced to satisfaction of Owner's representative.

C. All pull or junction boxes surface mounted in any interior damp location shall be "standoff" mounted 1/2" from the wall in a manner to promote air circulation completely around the box.

D. The contractor shall coordinate the installation of flush mounted junction boxes with the general and mechanical work as required at each structure.

E. Flush mounted junction boxes to be installed in precast top slabs shall be furnished by the contractor for installation, and shall be furnished completely assembled, including conduit nipples and stub-outs with ends covered by protective caps.

F. Provide knockout closures to cap unused knockout holes where blanks have been removed (for non-hazardous location boxes).

G. All mounting hardware shall be corrosion resistant.

H. All metal junction boxes shall be bonded to ground with a ground wire connection.

END OF SECTION 26 05 33

Section 26 05 53 - Identification for Electrical Systems

PART 1 GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. This section includes field-installed nameplates, labeling and identification methods for electrical equipment, components and wiring.

B. Related Sections

1. Section 26 05 00 – Common Work Results for Electrical

C. Reference to Standards

1. ANSI/NFPA 70 - National Electrical Code

1.03 SUBMITTALS

A. Submit under provisions of Division 01.

B. Product Data: Provide catalog data for nameplates, labels and markers.

C. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by Product testing agency specified under Regulatory Requirements. Include instructions for storage, handling, protection, examination, preparation and installation of Product.

D. During course of construction, Contractor shall submit Wiring Identification Tables, listing wire marker identification schedules of all proposed wiring and terminations.

1.04 QUALIFICATIONS (RESERVED)

1.05 QUALITY ASSURANCE (RESERVED)

1.06 DELIVERY, STORAGE AND HANDLING

1.07 COORDINATION (RESERVED)

1.08 MAINTENANCE SERVICE (WARRANTY) (RESERVED)

1.09 EXTRA MATERIALS (SPARE PARTS) (RESERVED)

PART 2 PRODUCTS

2.01 MANUFACTURERS (RESERVED)

2.02 EQUIPMENT SPECIFICATION

A. Nameplates and legend plates shall be engraved three-layer laminated plastic, black letters on white background. Legends (wording) shall be as detailed on drawings or as directed by Owner's representative.

B. Arc Flash labels shall be polyester type that are waterproof.

C. All wire markers installed on electrical equipment above grade shall be weatherproof and water resistant. Wire identification labeling, whether factory applied or written in the field, shall utilize an adhesive that does not soften or weaken over time. Sleeve or tubing type labels may be utilized as an alternate. Paper adhesive-backed wire markers will be rejected and replaced at the Contractor's expense. Wire marker labels shall be as manufactured by Brady, or equivalent.

D. All wire markers installed below grade in manholes, handholes or vaults shall be waterproof. Markers shall be non-corroding plastic clip-on sleeve type construction. Markers shall be permanently factory-printed such that label identification will not deteriorate due to time or contact with water. Wire markers used below grade shall be Brady Clip-Sleeve, or equivalent.

E. Provide and install Safety Stripe Tapes on finished floors around electrical gear noting clearances required per NEC Article 110.26. Tape shall be minimum 2" in width with alternating black/yellow striping. Tape shall be Scotch/3M #5702 or equivalent.

PART 3 EXECUTION

3.01 EXAMINATION (RESERVED)

3.02 PREPARATION

A. Degrease and clean surfaces to receive nameplates, legend plates and markers.

3.03 INSTALLATION

A. Secure nameplates and legend plates to equipment using screws or adhesive.

B. Nameplates or legend plates shall be provided for all disconnects, enclosed starters, control panels, transformers, level meters, flow meters and recorders.

C. Per NEC 110.16: Arc Flash warning labels shall be included for all electrical equipment, such as switchboards, switchgear, panelboards, industrial control panels, meter socket enclosures and motor control centers, that are likely to require examination, adjustment, servicing, or maintenance while energized. Labels shall be field or factory marked to warn qualified persons of potential electric arc flash

hazards. Label shall be permanently affixed, able to withstand the environment involved and shall not be hand written.

D. Per NEC 408.4 (B) All switchboards, switchgear and panelboards supplied by a feeder shall be permanently marked to indicate which device or equipment where the power originates. Label shall be self-adhesive, polyester type waterproof and shall not be handwritten.

E. Wiring Device identification labels shall be furnished and installed on all wiring device cover plates per Specifications Sections 26 27 26-3.01O and 26 27 26-3.01P.

F. Contractor shall develop the Wiring Identification Tables to be used for ALL wiring terminations on this project, and shall submit Tables for review and comment by Owner's Representative prior to installation of any conductors or cables.

G. Provide wire markers for ALL wires and terminations. By "all", this is intended to include, but not be limited to, all terminations at distribution panelboards, motors, valves, heaters, fan coils, heat pumps, fans, dampers, all MCC terminations, instrumentation & controls, terminal blocks and strips, etc. Wire identification shall be unique to wire that is marked or to terminal that wire lands upon. Identification of a run of wire from termination to termination shall be same throughout run.

H. Provide wire markers in all manholes, handholes and vaults.

I. Include markers labeled "SP" on all spare conductors.

3.04 INTERFACE WITH OTHER PRODUCTS (RESERVED)

3.05 MANUFACTURER'S FIELD SERVICES (RESERVED)

3.06 AS-BUILT WIRING IDENTIFICATION TABLE

A. Upon completion of project, Contractor shall provide five copies of as-built Wiring Identification Table. This table shall list all circuits installed as part of this work and shall give identification of all wires and terminations as installed and marked.

Table shall include routing of all conductors installed in the project from end-to-end including each conduit, manhole, handhole and vault through which each conductor passes. Include and identify all spare conductors.

END OF SECTION 26 05 53

Section 26 10 05 - Service Entrance

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract.

1.02 SUMMARY

A. Work included in this section is labor, equipment and materials necessary to provide a complete and operational service entrance as detailed on drawings and specified herein. All work shall be as shown on project drawings and coordinated with serving utility requirements.

B. The work described in this Specification Section is for information only. The Contractor shall comply with all requirements of the Serving Utility effective at the time of the installation of the Service Entrance. This may result in different installation methods and different equipment supply and installation by the Contractor than shown on the plans or specified herein. All material, equipment and labor required to furnish and install a complete and operational Service Entrance in compliance with Serving Utility requirements shall be considered incidental to the contract work.

1. The electrical service for the Restroom/Storage facility shall be a 320Amp, 120/240VAC, single phase, 3 wire service.
2. The electrical service for the Zora Road Parking Lot shall be 100AMP, 120/240VAC, single phase, 3 wire service.

C. Serving Utility shall furnish and install:

1. Medium-Voltage primary cable, installation and terminations.
2. Service transformer
3. All metering transformers (C.T.'s and P.T.'s as appropriate). (Note, Contractor shall furnish and install metering transformer cabinet if not furnished by serving Utility.)
4. Termination of secondary conductors on secondary lugs of pad-mount transformer. Conductors to be provided and pulled by Contractor.
5. KWH Meter instrument. (Note, Contractor shall furnish and install kWH Meter Base if not furnished by serving Utility.)
6. Installation of secondary metering conductors between metering transformer enclosure and KWH meter equipment. Conduit and pull string meeting utility requirements is to be provided and installed by Contractor.

D. Contractor shall furnish and install:

1. For the Restroom/Storage facility:

a. Install the utility meter.
b. Provide schedule 80 pvc conduit from the meter to 30" min below grade extending 10' outside of the building and cap. Include Galvanized Rigid Steel conduit for the bend. Riser on Medium voltage pole.

2. For the Zora Parking Lot
   a. Provide the riser up the utility pole per utility requirements.
   b. Provide conduit and wiring from pole to Lighting Controller.
3. Any additional work as required by serving utility but not specifically noted herein shall be considered incidental to this section.
4. Grounding and Bonding for Service Entrance is covered under Section 26 05 26.

E. Related Sections
1. Section 26 01 26 – Testing Electrical Systems
2. Section 26 05 00 – Common Work Results for Electrical
3. Section 26 05 26 – Grounding and Bonding for Electrical Systems

F. Reference to Standards
1. ANSI/NFPA 70 - National Electrical Code

1.03 UTILITY
Name: Liberty Utilities
Contact Individual: Tyler Lipscomb
Phone No.: 1 (417) 793-0621
Email: Robert.lipscomb@libertyutilites.com

1.04 CONTRACTOR SHALL NOTE THAT ALL "NEW SERVICE" OR "ONE TIME CHARGES" THAT MAY BE BILLED BY THE SERVING UTILITY SHALL BE PAID FOR BY THE CONTRACTOR AND INCLUDED WITH THE BASE BID PRICE UNDER THIS ITEM. THEY WILL NOT BE PAID FOR SEPARATELY.

1.05 DELIVERY, STORAGE AND HANDLING

A. Equipment shall be stored in original cartons, where applicable, and away from contact with earth and protected from weather and abuse.

1.06 SUBMITTALS (RESERVED)

1.07 QUALIFICATIONS (RESERVED)

1.08 QUALITY ASSURANCE (RESERVED)

1.09 REGULATORY REQUIREMENTS

A. Contractor shall comply with all requirements of serving utility.

1.10 COORDINATION

A. Contractor shall coordinate service installation with serving utility.

1.11 MAINTENANCE SERVICE (WARRANTY)

A. Cable and appurtenances shall be warranted to be free from defects in material and workmanship for a period of one year from date of substantial completion.

1.12 EXTRA MATERIALS (SPARE PARTS) (RESERVED)

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Contractor shall comply with all requirements of serving utility.

PART 3 EXECUTION

3.01 INSTALLATION

A. Contractor shall furnish and install utility metering equipment as required by serving utility and shall coordinate the location of this metering with serving utility and owner's authorized representative.

3.02 TESTING

A. Entire service entrance system shall be tested. Perform testing in accordance with serving utility's recommendations.

B. Comply with all applicable items in Section 26 01 26 – Testing Electrical Systems.

END OF SECTION 26 10 05

Section 26 24 16 - Panelboards

PART 1 GENERAL

1.01 WORK INCLUDES

A. Work included in this section is supply and installation of power and lighting panelboards to provide a complete and operational electrical system.

1.02 RELATED SECTIONS

A. Section 26 05 00 – Common Work Results for Electrical
B. Section 26 05 19 – Low-Voltage Conductors and Cables
C. Section 26 05 26 – Grounding and Bonding for Electrical Systems
D. Section 26 05 29 – Hangers and Supports for Electrical Systems
E. Section 26 05 33 – Raceway and Boxes for Electrical Systems
F. Section 26 05 53 – Identification for Electrical Systems
G. Section 26 43 13 – Surge Protective Devices for Low Voltage Power Circuits

1.03 QUALITY ASSURANCE

A. Panelboards shall be manufactured and supplied by a company regularly engaged in business of furnishing panelboards. If required by Owner's representative, manufacturer shall submit a certification to a minimum experience of five years in manufacture of panelboards.

1.04 REFERENCE TO STANDARDS

A. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum)

B. U.L. Standard 489 - Molded Case Circuit Breakers, Molded-Case Switches, and Circuit Breaker Enclosures

C. U.L. Standard 67 - Panelboards

D. NEMA PB 1.1 - Instructions for Safe Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less

E. NFPA 70 - National Electrical Code

F. NECA (National Electrical Contractors Association) "Standard of Installation"

G. NEMA AB 1 - Molded Case Circuit Breakers

H. NEMA ICS 2 - Industrial Control Devices, Controllers, and Assemblies

I. NEMA KS 1 - Enclosed Switches

J. NEMA PB 1 – Panelboards

1.05 SUBMITTALS

A. Submit under provisions of Division 01.

B. Submittals shall include outline and support point dimensions, voltage, main bus ampacity, integrated short circuit ampere rating, circuit breaker arrangement and sizes. Submittals shall also include manufacturer's installation instructions; indicating application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and starting the product.

1.06 DEVLIVERY, STORAGE AND HANDLING

A. Panelboards shall be stored indoors from time of delivery to jobsite, protected from weather and damage.

1.07 MAINTENANCE SERVICE (WARRANTY)

A. All equipment shall be warranted to be free from defects in material and workmanship for a period of one year from date of substantial completion established by the Owner.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Eaton/Cutler-Hammer
B. Square D
C. General Electric
D. Siemens
E. Equivalent

2.02 EQUIPMENT

A. Panelboard shall be provided with bolt-on circuit breakers of size and rating as detailed in panel schedule on plans. Breakers shall be 1, 2 or 3-pole with an integral crossbar to assure simultaneous opening of all poles in multipole circuit breakers. Breakers shall have an overcenter, trip-free, toggle-type operating mechanism with quick-make, quick-break action and positive handle indication. Handles shall have "ON", "OFF" and "TRIPPED" positions. Circuit breakers shall be UL listed in accordance with UL Standard 489.

B. Panelboards bus structure and main lugs or main circuit breakers shall have current ratings as shown on panelboard schedule. Bus material shall be copper with either silver or tin plating. Bus ratings shall be in accordance with UL Standard 67. Bus bar connections to branch circuit breakers shall be the "distributed phase" or phase sequence type.

C. Panelboard bus assembly shall be enclosed in a steel cabinet rated NEMA 1 (unless otherwise noted on the drawings). Box front shall include a door and have a flush, cylinder tumbler-type lock and catch and spring-loaded stainless-steel door pull.

Door shall have completely concealed hinges when closed and shall not be removable when locked. A circuit directory frame and card with a clear plastic cover shall be provided on door interior.

D. Panelboards shall be nominal 20" in width unless otherwise noted.

E. Panelboards rated 240 VAC or less shall have short-circuit ratings as shown on the drawings, or as herein scheduled, but not less than an integrated equipment rating of 10,000 amps RMS symmetrical. All units shall bear UL label.

F. Except where noted otherwise on the drawings, all panelboards shall have neutral bar and ground bar bonded together. Where neutral bar and ground bar are noted to be isolated, the contractor shall verify during wiring installation that neutral and ground conductors are terminated on the correct bar.

G. Where schedule on drawings indicates "SPARE", a complete circuit breaker of the ampacity and number of poles indicated is to be provided. Where schedule on drawings does not indicate a specific size circuit breaker provide a 20 AMP single pole circuit breaker for each of the remaining unused poles. Therefore, panelboard shall be filled with feeder circuit breakers.

H. Multi-pole circuit breakers with removable tie-links are not acceptable.

I. Tandem circuit breakers (two circuit breakers on single pole frame) are not acceptable.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install panelboards where shown on the plans, in accordance with manufacturer's directions and in accordance with NEMA PB1.1. Install panelboards plumb. Provide filler plates for unused spaces in panelboards. Provide typed circuit directory for each branch circuit panelboard. Revise directory to reflect circuiting changes as required.

B. Provide phenolic engraved legend plates for all panelboards to identify panelboard as well as voltage, phase and number of wires and location of where the feeder circuit originates (example" MDP, 120/240 VAC, 1 PHASE, 3 WIRE FED FROM UTILITY). Legend plates shall comply with Section 26 05 53 – Identification for Electrical Systems.

C. Panelboard Surge Protective Device shall be installed in compliance with Section 26 43 13.

3.02 TESTING

A. Panelboards and load centers shall be thoroughly tested after installation and connection to respective loads. Lighting panelboard phases shall be measured with all major items operating. Phase loads shall be within 20 percent of each other.

Rearrange circuits if required maintaining proper phasing for multi-wire branch circuits.

B. Test for shorts and high resistance grounds. Check for faulty operation of circuit breakers and correct as needed.

END OF SECTION 26 24 16

Section 26 27 26 - Wiring Devices

PART 1 GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Work in this section is supply and installation of receptacles and toggle switches.

B. Work shall also include supply and installation of device boxes for receptacles and toggle switches.

C. Work shall also include supply and installation of remote control pushbutton stations.

D. Work shall also include supply and installation of multi-outlet surface mounted raceway (where required).

E. Related Sections

1. Section 26 05 00 – Common Work Results for Electrical
2. Section 26 05 19 – Low-Voltage Conductors and Cables
3. Section 26 05 33 – Raceway and Boxes for Electrical Systems
4. Section 26 05 53 – Identification for Electrical Systems

F. REFERENCE TO STANDARDS

1. UL Standard 943 Class A
2. Federal Specification W-C-596F
3. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).
4. NEC Article 410-57
5. NEMA WD-1
6. NEMA WD-6
7. ANSI/NEMA OS-1 - Sheet Steel Outlet boxes, Device Boxes, Covers and Box Supports
8. U.L. 514A - Metallic Outlet Boxes
9. U.L. 498

1.03 SUBMITTAL REQUIREMENTS

A. Submit under provisions of Division 01.

1. Receptacles
2. Toggle switches
3. Weatherproof covers and device boxes

4. Remote control stations
5. Multi-outlet raceway (if used)

B. Where applicable, color of wiring devices to be identified during submittal review.

1.04 QUALIFICATIONS

A. Wiring devices shall be manufactured and supplied by companies regularly engaged in business of furnishing wiring devices. If required by Owner's representative, manufacturers shall submit certification to a minimum experience of five years in manufacture of respective wiring devices.

1.05 DELIVERY, STORAGE AND HANDLING

A. Supplied items shall not be shipped loose but shall be in boxes, labeled with material and equipment enclosed. Boxes shall be stored away from contact with earth and shall be protected from weather.

1.06 MAINTENANCE SERVICE (WARRANTY)

A. All equipment shall be warranted to be free from defects in material and workmanship for a period of one year from date of substantial completion established by the Owner.

PART 2 PRODUCTS

2.01 EQUIPMENT SPECIFICATION

A. Receptacles:
1. Receptacles shall be installed under this item where shown on drawings.
2. General Purpose Receptacles (Non-GFCI)

General purpose receptacles for all wall type convenience outlets in non-hazardous areas shall be of 20-amp, 125-volt, 3-wire grounding type, NEMA 5-20R, back and side wire compatible, heavy duty industrial specification grade. Verify color during shop drawing review.
a. Leviton 5362-W
b. Pass & Seymour 5362-AW
c. Hubbell HBL5362-W
d. Equivalent

3. Self-Test Ground Fault Circuit Interrupting (GFCI) Duplex Receptacles

Duplex receptacles with ground fault circuit interrupters (GFCI) shall be provided and installed where noted on drawings. Receptacle shall be tamper resistant. Include indicator light that is lighted when device is tripped. Self-test feature to conduct an automatic test, ensuring ground protection. If ground fault protection is comprised, power to the receptacle must be discontinued. Verify color during shop drawing review. GFCI Receptacles shall be of the following types:

a. Interior GFCI Applications (Non-Hazardous)
   i. Leviton “SmartLock Pro) GFNT2-X
   ii. Pass & Seymour 2097
   iii. Hubbell GFTRST20
   iv. Equivalent, meeting requirements noted.

b. Weather-Resistant, Self-Test GFCI Receptacles.

Where indicated on the drawings, UL Weather-Resistant GFCI receptacles in non-hazardous areas shall be 20-amp, 125-volts, 3-wire grounding type, NEMA 5-20R, back and side wire compatible, specification grade. Include indicator light that is lighted when device is tripped. Self-test feature to conduct an automatic test every three seconds, ensuring ground protection. If ground fault protection is comprised, power to the receptacle must be discontinued.

i. Leviton GFWT2
   ii. Pass & Seymour 2097WR
   iii. Hubbell GFWRST
   iv. Equivalent

4. Special Purpose Receptacles (Where Required)

Special purpose receptacles shall have amperage, voltage, number of poles, number of wires as required or as shown on drawings. Contractor shall verify compatibility between proposed special purpose receptacles and plugs of proposed equipment prior to ordering. Contractor shall also provide labels for special purpose receptacles.

B. Toggle Switches

1. Toggle switches shall be installed under this item.
2. General Purpose Toggle Switches

Units for use in non-hazardous, toggle-type applications shall be 20A, 120/277 VAC rated, back and side wired type, industrial specification grade. Switches shall be duty rated for 1 HP at 120 VAC. Verify color during shop drawing review.

a. Single Pole

Leviton 1221-2
Pass & Seymour CSB20AC1
Hubbell HBL1221
Equivalent

C. Unless noted otherwise on the drawings, wall plates shall be of nylon construction for resistance to impact, abrasion and mechanical stress fracture. Wall plate color shall match receptacle or switch at each location.

D. Weatherproof Receptacle Covers

1. All receptacle covers noted as "weatherproof" with the letters “WP” or installed outdoors shall comply with NEC Article 406.9B1. Units shall remain raintight whether or not a plug and cord is inserted. Covers shall be extra-deep, padlock able, cast aluminum construction, listed and identified as “extra duty” as manufactured by Intermatic WP1010HMXD, Hubbell, WP26EH, Pass & Seymour CA26WVor equivalent, horizontal, for use with GFCI receptacles.

E. Device Boxes

1. Where PVC conduit is used, associated device boxes shall be of FS design, non-metallic PVC, as manufactured by Carlon, or equivalent.
2. Where galvanized rigid metal conduit is used, associated device boxes shall be FS or FD design, metallic, as manufactured by Crouse-Hinds, or equivalent.

PART 3 EXECUTION

3.01 INSTALLATION

A. Unless otherwise specified on the drawings, use the following as a guide for mounting of device boxes and control operator (pushbutton) stations:

	Device	Height above finished floor to bottom of box
1.	Toggle wall switches	48 inches
2.	Receptacles in non-finished areas	48 inches

B. Unless otherwise noted on the drawings, boxes for wiring devices shall be flush mount construction such that device cover plates are flush with wall after installation.

C. Legend plates shall be securely attached using weatherproof adhesives in accordance with Section 26 05 53.

D. All receptacles and toggles switches shall be grounded with a ground conductor connected to their respective grounding terminal or screw.

E. Grounded conductors (neutrals) shall be continuous between outlets, boxes, devices, and so forth per NEC Article 300.13. Wiring device neutral connections shall not be utilized as splice points. Neutral path shall not be broken with wiring devices removed from boxes.

F. Test all receptacles, toggle switches and control stations for proper operation, including GFCI operation where applicable.

G. Modular devices are permitted for use. Modular connectors shall contain crimped and welded brass connections. Modular receptacles shall be listed to UL498, UL20, WC-596G, WC-896, Leviton Lev-Lok, Pass & Seymour PlugTail, or equal.

H. Ground device enclosure or box with a ground conductor connected to the respective grounding lug or screw.

I. Unless specifically shown otherwise on the drawings, all device boxes are to be flush mounted. This includes masonry construction.

J. Where boxes are to be installed in finished masonry walls, adjust position of outlets to suit masonry course lines.

K. Do not install boxes back-to-back in the same wall. Provide minimum 4 inches separation.

L. Provide insulation behind boxes mounted in exterior walls.

M. For boxes, outlets or multi-outlet raceway installed above counters or backsplashes, coordinate location and mounting height to agree with other trades and equipment.

N. Unless otherwise specified, install wall switches with “OFF” position down.

O. Unless otherwise specified, install duplex outlets with ground blade on the bottom if mounted vertically or to the right if mounted horizontally. Install GFCI receptacles in such that “Test” and “Reset” wording are oriented correctly.

P. Each duplex outlet cover shall be furnished with a 3/8”-1/2” adhesive label strip identifying its respective source of supply (e.g. LP1-15 for Lighting Panelboard LP-1 circuit #15). All labels shall be affixed to the exterior (outside) of each respective cover plate. All duplex outlet labels shall be installed in the same general location on each cover plate throughout the project.

Q. Each toggle wall switch shall be furnished with a 3/8”-1/2” adhesive label strip identifying its respective source of supply (e.g. LP1-16 for Lighting Panelboard LP-1 circuit #16). All toggle switch labels shall be affixed to the rear (inside) of the respective cover plate.

R. Exterior receptacles shall be mounted horizontal.

END OF SECTION 26 27 26

Section 26 43 13
Surge Protective Devices for Low Voltage Power Circuits

PART 1 GENERAL

1.01 WORK INCLUDES

A. This specification describes the requirements for Surge Protective Devices. Surge Protective Device equipment shall be furnished for all locations where noted on project Drawings, referenced in other equipment specifications or as described herein.

B. Unless noted otherwise on the drawings, new surge protection equipment shall be furnished with the following new equipment:
   1. Panelboards
   2. Other equipment where specifically noted on project drawings or specified herein.

C. Additionally, where drawings note to add surge protection to existing equipment, provide equipment as specified herein or as noted on the project drawings.

1.02 RELATED SECTIONS

A. Section 26 05 00 – Common Work Results for Electrical
B. Section 26 05 26 – Grounding and Bonding for Electrical Systems
C. Section 26 10 05 – Service Entrance
D. Section 26 24 16 – Panelboards

1.03 REFERENCE TO STANDARDS

A. ANSI/NFPA 70 - National Electrical Code (most current issue).

B. U.L. 1449/ANSI “3nd Edition” - Surge Protective Devices

C. U.L. 1283 – Electromagnetic Interference Filters.

D. IEEE C62.41– Recommended Practice on Surge Voltages in Low-Voltage AC Power Circuits

E. IEEE C62.45 – Guide on Surge Testing for Equipment Connected to Low-Voltage Power Circuits

F. NEMA LS-1 – Low Voltage Surge Protection Devices

1.04 DELIVERY, STORAGE AND HANDLING

A. Electrical surge protection equipment shall be stored in a clean dry place, away from construction.

1.05 SUBMITTALS

A. Submit under the provisions of Division 01.

B. Product Data: Provide catalog data for electrical surge protection equipment.

C. Provide information to verify 3rd party testing certification on assembled equipment ratings. Ratings on individual components will not meet this requirement and will not be considered.

D. Provide verification that the SPD complies with the required ANSI/UL 1449 3rd Edition listing by Intertek (ETL), Underwriters Laboratories (UL) or other Nationally Recognized Testing Laboratories (NRTL). Compliance may be in the form of a file number that can be verified on ETL's or UL's website or on any other NRTL's website, as long as the website contains the following information at a minimum: model number, SPD Type, system voltage, phases, modes of protection, Voltage Protection Rating (VPR), and Nominal Discharge Current (I_n). Language similar to "Manufactured in accordance with . . ." will not meet the intent of this specification requirement.

E. Manufacturer's Instructions:

Indicate application conditions and limitations of use stipulated by Product testing agency specified under Regulatory Requirements. Include instructions for storage, handling, protection, examination, preparation and installation of Product.

1.06 QUALIFICATIONS

A. Indicate application conditions and limitations of use stipulated by Product testing agency specified under Regulatory Requirements. Include instructions for storage, handling, protection, examination, preparation and installation of Product.

B. Third party tested for compliance.

1.07 QUALITY ASSURANCE (RESERVED)

1.08 REGULATORY REQUIREMENTS

A. Conform to requirements of ANSI/NFPA 70.

B. Furnish products listed and classified by Underwriters Laboratories, Inc., as suitable for purpose specified and shown.

1.09 COORDINATION (RESERVED)

1.10 MAINTENANCE SERVICE (WARRANTY)

A. As a minimum, all equipment shall be warranted to be free from defects in material and workmanship for a period of one year from date of substantial completion established by the Owner.

1.11 EXTRA MATERIALS (SPARE PARTS) (RESERVED)

PART 2 PRODUCTS

2.01 EQUIPMENT SPECIFICATION

A. UL Category Code VZCA = UL 1449 3rd Edition Surge Protective Devices.

B. All Electrical Surge Protection hardware shall be U.L. Listed and labeled as "Surge Protective Devices" under the latest edition of UL 1449 "3rd Edition".

C. Visual indication that surge suppressors are functioning properly shall be furnished in the form of display, pilot light or LED for each device. If manufacturer utilizes LED's or pilot lights, one indicator shall be provided for each leg of a multi-phase device.

D. Where Surge Protective hardware is not an integral part of a factory-assembled piece of equipment (such as factory installed in a switchboard or MCC), manufacturer or Contractor shall furnish all equipment, brackets and appurtenances necessary in order to properly install suppressors to manufacturer's requirements.

E. Electrical Requirements – Power Distribution Equipment

1. Unit operating voltage and configuration – Refer to Drawings
2. SPD Types:

Type 1: Can be installed before service disconnect overcurrent device. (Old equivalent: Secondary surge arrestor, lightning arrester.) Nominal Discharge Current Rating - 10kA or 20kA.

Type 2: Can only be installed after service disconnect overcurrent device. (Old equivalent: TVSS) Nominal Discharge Current Rating - 3kA, 5kA, 10kA or 20kA.

Type 3: Point of Utilization SPD. Installed a minimum 10m (30ft) of conductor between service disconnect overcurrent device and surge protective device. (Old equivalent: Plug-In surge strips, surge receptacles).

Type 4: Component SPD. Does not have full enclosure; intended solely for installation in another listed device. Must pass all tests relevant to installation location (Type 1 or Type 2). (Old equivalent: UR recognized component.)

3. The suppression system shall incorporate thermally protected metal oxide varistors (MOVs) as the core surge suppression component for the service entrance and all other distribution levels. The system shall not utilize silicon avalanche diodes, selenium cell, air gaps, etc.
4. Maximum Continuous Operating Voltage (MCOV) – The MCOV shall be greater than 125% of the nominal system operating voltage.
5. Protection Modes: The SPD must protect all modes of the electrical system being utilized. The required protection modes are indicated by bullets in the following table:

LN = Line to Neutral
LL = Line to Line

LG = Line to Ground
NG = Neutral to Ground

Wye System: LN-A Phase, LN-B Phase, LN-C Phase, LG-A Phase, LG-B Phase, LG-C Phase, NG

Single Phase System: LN-A Phase, LN-B Phase, LG-A Phase, LG-B Phase, NG

6. Voltage Protection Ratings (VPR) shall not exceed the following per UL-1449:

Modes	208Y/120	480Y/277
L-N; L-G; N-G	600 V	1000 V
L-L	900 V	1800 V

7. ANSI/IEEE Cat. C3 Let Through Voltage – The let through voltage based on IEEE C62.41 and C62.45 recommended procedures for Category C3 surges (20 kV, 10 kA) shall be less than:

Modes	208Y/120	480Y/277
L-L	1240V	2060V
L-G	1000V	1580V
L-N, N-G	890 V	1370 V

8. ANSI/IEEE Cat. B3/C1 Let Through Voltage – The let through voltage based on IEEE C62.41 and C62.45 recommended procedures for the ANSI/IEEE Cat. B3 ring wave (6000V, 3000A) shall be less than:

Modes	208Y/120	480Y/277
L-L	900V	1640V
L-G	550V	1050V
L-N, N-G	520 V	980 V

9. Each unit shall include an EMI/RFI filter. Filter shall comply with UL-1283.
10. Where practical, and to aid in keeping power lead/bus length short, Surge Protective Devices may be integrated into electrical distribution equipment enclosures.
11. In order to isolate the Surge Protective Devices under fault conditions, the assembly shall be U.L. rated for the same short circuit fault duty rating as the equipment to which it is connected. Provide supplemental fusing, if required, in order to meet this requirement. All overcurrent protection components shall be tested in compliance with UL 1449 – Limited Current Test and AIC Ratings.
12. Devices shall be provided with integral thermal protection to disconnect the suppression components during an overheated MOV condition.

13. Minimum Repetitive Surge Current Capability: The device shall be repetitive surge tested in every mode utilizing Category C3 waveshapes at minimum of one-minute intervals without suffering either performance degradation or more than 10% deviation of clamping voltage at a specified surge current. The minimum repetitive surge current capability as per ANSI/IEEE C62.41 and ANSI/IEEE C62.45 shall be:
    a. Branch Location Panelboard: 100 impulses per mode.
14. Voltage Protection Rating: The residual (limiting) voltage for a 6000V, 3000A, 8x20µs surge waveform that the Surge Protective Device is capable of withstanding shall be no less than that shown in the following table:

Minimum total Surge Current and Withstand Capability with Compliance to ANSI/IEEE C62.41 and NEMA LS-1			
Application	Per Phase	Per Mode	Surge Withstand Capabilities ANSI/IEEE C3 Wave (10kA)
Branch Locations (Non-S.E. Panelboards)	40 kA	20 kA	100 events

15. Lighting and Distribution Panelboard Requirements. The following additional requirements shall apply when drawings indicate that the Surge Protective equipment is to be integral to the panelboard and mounted within the enclosure housing.
    a. The Surge Protection units shall be tested to demonstrate suitability for ANSI/IEEE C62.41 Category C1 environments.
    b. The Surge Protective Device shall not limit the use of Through-feed lugs, Sub-feed lugs and Sub-feed breaker features, where applicable.
    c. The Surge Protective Device shall be immediately installed on the load side of the main breaker.
    d. The panelboard shall be capable of re-energizing upon removal of the Surge Protective Device.
    e. A direct bus bar connection shall be used to mount the Surge Protective component to the panelboard bus bar to reduce the impedance of the shunt path.
    f. The Surge Protected panelboard shall be constructed using a direct bus bar connection.
    g. The surge Protective Device shall be included and mounted within the panelboard by the manufacturer of the panelboard.
    h. The complete panelboard, including the Surge Protection Device shall be UL-67 listed.

PART 3 EXECUTION

3.01 EXAMINATION (RESERVED)

3.02 PREPARATION (RESERVED)

3.03 INSTALLATION

A. Surge protection equipment shall be installed per manufacturer's instructions and requirements.

END OF SECTION 26 43 13

Section 26 56 00 - Conventional Exterior Lighting

PART 1 GENERAL

1.01 WORK INCLUDES

A. Base Bid:
   1. Electrical Contractor shall provide
      a. Lighting fixtures and accessories complete as shown or implied on the Contract Documents.

1.02 DESCRIPTION

This section specifies the furnishing, installation, and connection of exterior luminaires, poles, and supports. The term “Lighting Fixtures”, “Fixture” and “Luminaire” are used interchangeably.

1.03 RELATED WORK

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

B. Specified Elsewhere
   1. Section 03 30 00 – Cast In Place Concrete
   2. Section 26 05 00 – Common Work Results for Electrical
   3. Section 26 05 19 - Low-Voltage Electrical Power Conductors and Cables
   4. Section 26 05 26 – Grounding and Bonding for Electrical Systems
   5. Section 26 05 33 – Raceway and Boxes for Electrical Systems

1.04 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

B. Products: Listed by a Nationally Recognized Testing Laboratory and classified as suitable for the purpose specified and indicated.

1.05 SUBMITTALS

A. Submit in accordance with Division 1, and the following requirements.

B. Shop Drawings:
   1. Clearly present sufficient information to determine compliance with drawings and specifications.
   2. Include electrical ratings, dimensions, mounting, details, materials, required clearances, terminations, wiring and connection diagrams, photometric data, ballasts, poles, luminaires, lamps, and accessories.

3. In addition to the printed copies of the submittal, a portable document format (pdf) of the submittal shall be transmitted via email to the Engineer.

C. Manuals: Two weeks prior to final inspection, submit four copies of operating and maintenance manuals to the Resident Engineer. Include technical data sheets, wiring and connection diagrams, and information for ordering replacement lamps, ballasts, and parts.

D. Certifications: Two weeks prior to final inspection, submit four copies of the following to the Architect/Engineer:
1. Certification by the manufacturer that the materials are in accordance with the drawings and specifications.
2. Certification by the contractor that the complete installation has been properly installed and tested.

E. Contract closeout information: Not required for Engineer/Architect review.
1. Operating and maintenance data.
2. Owner instruction report.
3. As-Built drawings

F. Warranties: Provide one (1) year minimum material and labor warranty on all components from date of substantial completion.

1.06 APPLICABLE PUBLICATIONS

A. Publications listed below (including amendments, addenda, revisions, supplements, and errata) form a part of this specification to the extent referenced. Publications are referenced in the text by designation only.

B. Aluminum Association Inc. (AA):
AAH35.1-06 Alloy and Temper Designation Systems for Aluminum

C. American Association of State Highway and Transportation Officials (AASHTO):

LTS-5-09 Structural Supports for Highway Signs, Luminaires and Traffic Signals

D. American Concrete Institute (ACI):
318-14 Building Code Requirements for Structural Concrete

E. American National Standards Institute (ANSI):
H35.1/H35 1M-17 American National Standard Alloy and Temper Designation Systems for Aluminum.

F. American Society for Testing and Materials (ASTM):
A123/A123M-17 Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products A153/A153M-16 Zinc Coating (Hot-Dip) on Iron and Steel Hardware
B108/B108M-15 Aluminum-Alloy Permanent Mold Casting C1089-13 Spun Cast Prestressed Concrete Poles

G. Illuminating Engineering Society of North America (IESNA) HB-9-00 Lighting Handbook
RP-8-14 Roadway Lighting
RP-20-98 Lighting for Parking Facilities
RP-33-99 Lighting for Exterior Environments
LM-5-96 Photometric Measurements of Area and Sports Lighting Installations LM-50-99 Photometric Measurements of Roadway Lighting Installations
LM-64-01 Photometric Measurements of Parking Areas
LM-72-97 (R2010) Directional Positioning of Photometric Data
LM-79-08 Approved Method for the Electrical and Photometric Measurements of Solid-Sate Lighting Products
LM-80-15 Approved Method for Measuring Lumen Maintenance of LED Light Sources
TM-15-11 Luminaire Classification System for Outdoor Luminaires

H. National Electrical Manufacturers Association (NEMA):
C136.3-14 For Roadway and Area Lighting Equipment – Luminaire Attachments
ICS 2-00 (R2005) Controllers, Contactors and Overload Relays Rated 600 Volts ICS 6-93 (R2006) Enclosures

I. National Fire Protection Association (NFPA):

70-20 National Electrical Code (NEC)
101-18 Life Safety Code

J. Underwriters Laboratories, Inc. (UL): 496-17 Lampholders
773-16 Plug-In, Locking Type Photocontrols for Use with Area Lighting 773A-06 Nonindustrial Photoelectric Switches for Lighting Control 1029-94 High-Intensity-Discharge Lamp Ballasts
1598-08 Luminaires
8750-15 Light Emitting Diode (LED) Light Sources for Use in Lighting Products

1.07 DELIVERY, STORAGE, AND HANDLING

Provide manufacturer's standard provisions for protecting pole finishes during transport, storage, and installation. Do not store poles on ground. Store poles so they are at least 12 in [305 mm] above ground level and growing vegetation. Do not remove factory-applied pole wrappings until just before installing pole.

PART 2 PRODUCTS

2.01. LIGHTING FIXTURES/MANUFACTURERS

A. Lighting fixtures shall be as per fixture schedule or an equal meeting the specifications as well as lighting output and distribution.

2.01 POLES

A. General:
1. Poles shall be as shown on the drawings, and as specified. Finish shall be as specified on the drawings.
2. The pole and arm assembly shall be designed for wind loading of 100 mph [161 km/hr], with an additional 30% gust factor, supporting luminaire(s) and accessories such as shields, banner arms, and banners that have the effective projected areas indicated. The effective projected area of the pole shall be applied at the height of the pole base, as shown on the drawings.
3. Poles shall be anchor-bolt type designed for use with underground supply conductors. Poles shall have handhole having a minimum clear opening of 2.5 x 5 in [65 x 125 mm]. Handhole covers shall be secured by stainless steel captive screws.
4. Provide a steel-grounding stud opposite handhole openings, designed to prevent electrolysis when used with copper wire.
5. Provide a base cover that matches the pole in material and color to conceal the mounting hardware pole-base and anchor bolts.
6. Hardware and Accessories: All necessary hardware and specified accessories shall be the product of the pole manufacturer.
7. Provide manufacturer's standard finish, as scheduled on the drawings. Where indicated on drawings,

B. Types:
1. Aluminum: Provide aluminum poles manufactured of corrosion resistant AA AAH35.1 aluminum alloys conforming to AASHTO LTS-4 for Alloy 6063-T6 or Alloy 6005-T5 for wrought alloys, and Alloy 356-T4 (3,5) for ASTM B108-03 cast alloys. Poles shall be seamless extruded or spun seamless type. Provide a pole grounding connection designed to prevent electrolysis when used with copper ground wire. Base covers for aluminum poles shall be cast from 356-T6 aluminum alloy in accordance with ASTM B108-03.
2. Steel: Provide (Round, Square) steel pole having a minimum 11-guage steel with minimum strength of 48,000 psi and (hot dipped galvanized, iron-oxide primed) factor finish.

2.02 FOUNDATIONS FOR POLES

A. Foundations shall be cast-in-place concrete, having 3000 psi minimum 28-day compressive strength.

B. Foundations shall support the effective projected area of the specified pole, arm(s), luminaire(s), and accessories, such as shields, banner arms, and banners, under wind conditions previously specified in this section.

C. Place concrete in spirally-wrapped treated paper forms for round foundations, and construct forms for square foundations.

D. Rub-finish and round all above-grade concrete edges to approximately 0.25 in [6 mm] radius.

E. Anchor bolt assemblies and reinforcing of concrete foundations shall be as shown on the drawings. Anchor bolts shall be in a welded cage or properly positioned by the tiewire to stirrups. Anchor bolts shall be steel rod having a minimum yield strength of 50,000psi; the top 12 inches of the rod shall be galvanized in accordance with ASTM A 153/A 153M.

F. Prior to concrete pour, install electrode per Section 26 05 26, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS.

2.03 LUMINAIRES

A. Luminaires shall be weatherproof, heavy duty, outdoor types designed for efficient light utilization, adequate dissipation of lamp and ballast heat, and safe cleaning and relamping.

B. Light distribution pattern types shall be as shown on the drawings.

C. Lenses shall be frame-mounted, heat-resistant, borosilicate glass, with prismatic refractors, unless otherwise shown on the drawings. Attach the frame to the luminaire housing by hinges or chain. Use heat and aging-resistant, resilient gaskets to seal and cushion lenses and refractors in luminaire doors.

D. Pre-wire internal components to terminal strips at the factory.

E. Bracket-mounted luminaires shall have leveling provisions and clamp-type adjustable slip-fitters with locking screws.

F. Materials shall be rustproof. Latches and fittings shall be non-ferrous metal.

G. Provide manufacturer's standard finish, as scheduled on the drawings. Where indicated on drawings, match finish process and color of pole or support materials. Where indicated on drawings,

H. Luminaires shall carry factory labels, showing complete, specific lamp and ballast information.

2.04 LAMPS

A. Install the proper lamps in every luminaire installed

B. Lamps shall be general-service, outdoor lighting types.

C. LED sources shall meet the following requirements:
   1. Operating temperature rating shall be between -40˚ F and 120˚ F.
   2. Correlated Color Temperature (CCT) 4000K unless indicated otherwise.
   3. Color Rendering Index (CRI) greater or equal than 85.
   4. The manufacturer shall have performed JEDEC (Joint Electron Devices Engineering Council) reliability tests on the LEDs as follows: High Temperature Operating Life (HTOL), Room Temperature Operating Life

(RTOL), Low Temperature Operating Life (LTOL), Powered Temperature Cycle (PTMCL), Non-Operating Thermal Shock (TMSK), Mechanical Shock Variable Vibration Frequency, and Solder Heat Resistance (SHR).

2.05 LED DRIVERS

A. LED Drivers shall meet the following requirements:
1. Drivers shall have a minimum efficiency of 85%.
2. Starting Temperature: -40 degrees F.
3. Input Voltage: 120 to 480 (±10%) volt.
4. Power Supplies: Class I or II output.
5. Surge Protection: The system must survive 250 repetitive strikes of "C Low" (C Low: 6kV/1.2 x 50 µs, 10kA/8 x 20 µs) waveforms at 1-minute intervals with less than 10% degradation in clamping voltage. "C Low" waveforms are as defined in IEEE/ASNI C62.41.2-2002, Scenario 1 Location Category C.
6. Power Factor (PF): ≥ 0.90.
7. Total Harmonic Distortion (THD): ≤ 20%.
8. Comply with FCC Title 47 CFR Part 18 Non-consumer RFI/EMI Standards.
9. Drivers shall be reduction of hazardous substances (ROHS)-compliant.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install lighting in accordance with the NEC, as shown on the drawings, and in accordance with manufacturer's recommendations.

B. Pole Foundations:
1. Excavate only as necessary to provide sufficient working clearance for installation of forms and proper use of tamper to the full depth of the excavation. Prevent surface water from flowing into the excavation. Thoroughly compact backfill with compacting arranged to prevent pressure between conductor, jacket, or sheath, and the end of conduit.
2. Set anchor bolts according to anchor-bolt templates furnished by the pole manufacturer.
3. Install poles as necessary to provide a permanent vertical position with the bracket arm in proper position for luminaire location.

C. Adjust luminaries that require field adjustment or aiming.

3.02 GROUNDING

Ground noncurrent-carrying parts of equipment, including metal poles, luminaires, mounting arms, brackets, and metallic enclosures, as specified in Section 260526, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS. Where copper grounding conductor is connected to a metal other than copper, provide specially-treated or tined connectors suitable and listed for this purpose.

3.03 ACCEPTANCE CHECKS AND TESTS

Verify operation after installing luminaires and energizing circuits.

END OF SECTION 26 56 00

Section 26 56 10 - High Mast Exterior Lighting

PART 1 GENERAL

1.01 SUMMARY

A. Work covered by this section of the specifications shall conform to the contract documents, engineering plans as well as state and local codes.

B. The purpose of these specifications is to define the lighting system performance and design standards for the Dover Outdoor Recreation Area (DORA) Bike Park in Joplin MO. The manufacturer/contractor shall supply a lighting system using an LED light source to meet or exceed the standards set forth in these specifications.

C. The primary goals of this sports lighting project are:
1. Guaranteed Light Levels: Light levels shall be guaranteed to not drop below specified target values for a period of 10 years.
2. Life-cycle Cost: The lighting system shall be energy efficient and cost effective to operate. All maintenance costs shall be eliminated for the duration of the warranty.
3. Control and Monitoring: Local controls shall be in a local pad lockable cabinet including Hand-Off-Auto switches for each pole to allow local control for the lighting system. Fields should be proactively monitored to detect luminaire outages over a 10-year life cycle. All communication and monitoring costs for 10-year period shall be included in the bid. The owner shall also have such monitoring and be able to remotely control the lighting system.

1.02 LIGHTING PERFORMANCE

A. Performance Requirements: Playing surfaces shall be lit to an average target illumination level and uniformity as specified in the chart below. Lighting calculations shall be developed and field measurements taken on the grid spacing with the minimum number of grid points specified below. Average illumination level shall be measured in accordance with the IESNA LM-5-04 (IESNA Guide for Photometric Measurements of Area and Sports Lighting Installations). Illumination levels shall not to drop below desired target values in accordance to IES RP-6-15, Page 2, Maintained Average Illuminance and shall be guaranteed for the full warranty period.

Area of Lighting	Guaranteed Average Light Levels	Maximum to Minimum Uniformity Ratio	Grid Spacing
Pump Tract	26 FC	2.4:1	10’ x 10’ Min

B. Mounting Heights: To ensure proper aiming angles for reduced glare and to provide better playability, minimum mounting heights shall be 50 feet above finished grade. Higher mounting heights may be required based on photometric report and ability to ensure the top of the field angle is a minimum of 10 degrees below horizontal.

1.03 SHOP DRAWING SUBMITTALS

A. The shop drawing shall include at a minimum the following:

1. Computer generated photometric calculations of lighting plan indicating point to point foot-candle levels on playing surface, including Lamp Lumens, average foot-candle levels and uniformity ratio levels.
2. Catalog cut sheets and technical specifications of proposed fixture.
3. Power consumption in KW at each pole.
4. Voltage drop calculations for each pole.
5. Lighting control cabinet technical data and contactor specifications.
6. Local control station (Hand-Off-Auto) for each light pole in a padlockable NEMA 4X enclosure.
7. Foundation calculations and drawings sealed by a Licensed Structural Engineer registered in the State of Illinois.
8. Manufacturer’s warranty.

B. If due to meeting the required photometrics the power demands are increased compared to what is indicated on the plans the system components including the electrical service, feeder circuit breakers, lighting contactors, feeder conductors shall be increased to meet such demand and to provide a complete and operational lighting system.

PART 2 PRODUCT

2.01 SPORTS LIGHTING SYSTEM CONSTRUCTION

A. Manufacturers

1. Basebid: LED Light Source

a. Musco TLC LED Series

B. Manufacturing Requirements: All components shall be designed and manufactured as a system. All luminaires, wire harnesses, ballast (or driver) and other enclosures shall be factory assembled, aimed, wired and tested.

C. Durability: All exposed components shall be constructed of corrosion resistant material and/or coated to help prevent corrosion. All exposed carbon steel shall be hot dip galvanized per ASTM A123. All exposed aluminum shall be powder coated with high performance polyester or anodized. All exterior reflective inserts shall be anodized, coated, and protected from direct environmental exposure to prevent reflective degradation or corrosion. All exposed hardware and fasteners shall be stainless steel of 18-8 grade or better, passivated and coated with aluminum-based thermosetting epoxy resin for protection against corrosion and stress corrosion cracking. Structural fasteners may be carbon steel and galvanized meeting ASTM A153 and ISO/EN 1461 (for hot dipped galvanizing), or ASTM B695 (for mechanical galvanizing). All wiring shall be enclosed within the cross-arms, pole, or electrical components enclosure.

D. System Description: Lighting system shall consist of the following:
1. Galvanized steel poles and cross-arm assemblies.
2. Foundations may consist of Pre-stressed concrete stub, direct bury steel, or poured in place anchor bolt type. Curing time for the concrete shall be as indicated by the foundation design.
3. All luminaires shall be constructed with a die-cast aluminum housing or external hail shroud to protect the luminaire reflector system.
4. Manufacturer will remote all drivers and supporting electrical equipment in aluminum enclosures mounted approximately 10 feet above grade. The enclosures shall be touch-safe and include ballast, capacitor and fusing with indicator lights on fuses to notify when a fuse is to be replaced for each luminaire. Disconnect per circuit for each pole structure will be located in the enclosure.
5. Wire harness complete with an abrasion protection sleeve, strain relief and plug-in connections for fast, trouble-free installation.
6. All luminaires, visors, and cross-arm assemblies shall withstand 150 mph winds and maintain luminaire aiming alignment.
7. Control cabinet to provide remote on-off control and monitoring of the lighting system. Cabinet shall be rated NEMA Type 4. Communication method shall be provided by manufacturer. Cabinet shall contain custom configured contactor modules for 30, 60, and 100 amps, labeled to match field diagrams and electrical design. Manual off-on-auto selector switches shall be provided to allow local individual control of each light tower either integrated in the Lighting control cabinet without opening or in an additional enclosure as indicated in the plans.
8. Lightning Protection: Manufacturer shall provide meeting NFPA 780 standards and be UL Listed per UL 96 and UL 96A. If grounding is not

integrated into the structure, the manufacturer shall supply grounding electrodes, copper down conductors, and exothermic weld kits. Electrodes and conductors shall be sized as required by NFPA 780. The grounding electrode shall be minimum size of 5/8-inch diameter and 8 feet long, with a minimum of 10 feet embedment. Grounding electrode shall be connected to the structure by a grounding electrode conductor with a minimum size of 2 AWG for poles.

E. Safety: All system components shall be UL listed for the appropriate application.

2.02 ELECTRICAL

A. Electric Power Requirements for the Sports Lighting Equipment:
   1. Electric power: 240VAC, 1 phase
   2. Maximum total voltage drop: Voltage drop to the disconnect switch located on the poles shall not exceed three (3) percent of the rated voltage. Provide power demands at each pole and voltage drop calculations with Shop Drawing Submittal.

2.03 STRUCTURAL PARAMETERS

A. Support Structure Wind Load Strength: Poles and other support structures, brackets, arms, bases, anchorages and foundations shall be determined based on the 2012 IBC Building Code, wind speed of 120mph, exposure category C and an importance factor of 1.0. Luminaire, visor, and crossarm shall withstand 150 mph winds and maintain luminaire aiming.

B. Pole Structural Design: The stress analysis and safety factor of the poles shall conform to 2013 AASHTO Standard Specification for Structural Supports for Highway Signs, Luminaires, and Traffic Signals (LTS-6).

C. The contractor is responsible for determining the soil conditions and design parameters. A preliminary geotechnical investigation was performed and is included, for information only, in Specification Section 00 31 32 – Geotechnical Data.

D. Foundation Drawings: Project specific foundation drawings stamped by a registered engineer in the state of Illinois. The foundation drawings must list the moment, shear (horizontal) force, and axial (vertical) force at ground level for each pole. **These drawings must be submitted at time of bid to allow for accurate pricing.**

2.04 CONTROL AND MONITORING

A. Remote Lighting Control System: System shall allow owner and users with a security code to schedule on/off system operation via a web site, phone, fax or email up to ten years in advance. Manufacturer shall provide and maintain a two-way TCP/IP

communication link. Trained staff shall be available 24/7 to provide scheduling support and assist with reporting needs.

1. The owner may assign various security levels to schedulers by function and/or fields. This function must be flexible to allow a range of privileges such as full scheduling capabilities for all fields to only having permission to execute “early off” commands by phone. Scheduling tool shall be capable of setting curfew limits.
2. Controller shall accept and store 7-day schedules, be protected against memory loss during power outages, and shall reboot once power is regained and execute any commands that would have occurred during outage.

B. Remote Monitoring System: System shall monitor lighting performance and notify manufacturer if individual luminaire outage is detected so that appropriate maintenance can be scheduled. The controller shall determine switch position (manual or auto) and contactor status (open or closed).

C. Management Tools: Manufacturer shall provide a web-based database and dashboard tool of actual field usage and provide reports by facility and user group. Dashboard shall also show current status of LED outages, control operation and service scheduling including fixture operations completed and scheduled. Mobile application will be provided suitable for IOS and Android devices.

Hours of Usage: Manufacturer shall provide a means of tracking actual hours of usage for the field lighting system that is readily accessible to the owner.

1. Cumulative hours: shall be tracked to show the total hours used by the facility
2. Current lamp hours: shall be tracked separately to reflect the number of hours on the current set of lamps being used, so replacement can be scheduled accurately.
3. Report hours saved by using early off and push buttons by users.

D. Communication Costs: Manufacturer shall include communication costs for operating the controls and monitoring system for a period of 10 years.

PART 3 EXECUTION

3.01 FIELD QUALITY CONTROL

A. Illumination Measurements: Upon substantial completion of the project and in the presence of the Contractor, Project Engineer, Owner's Representative, and Manufacturer's Representative, illumination measurements shall be taken and verified. The illumination measurements shall be conducted in accordance with IESNA LM-5-04 or IESNA RP-6-01, Appendix B.

B. Correcting Non-Conformance: If, in the opinion of the Owner or his appointed Representative, the actual performance levels including footcandles and uniformity ratios are not in conformance with the requirements of the performance specifications and submitted information, the Manufacturer shall be liable to any or all of the following:
   1. Manufacturer shall at his expense provide and install any necessary additional fixtures to meet the minimum lighting standards. The Manufacturer shall also either replace the existing poles to meet the new wind load (EPA) requirements or verify by certification by a licensed structural engineer that the existing poles will withstand the additional wind
   2. Manufacturer shall remove the entire unacceptable lighting system and install a new lighting system to meet the specification.

C. Field Light Level Accountability
   1. Light levels are guaranteed not to fall below the target maintained light levels for the entire warranty period of 10 years.
   2. The manufacturer will be held responsible for any and all changes needed to bring these fields back to compliance for light levels and uniformities. Manufacturer will be held responsible for any damage to the fields during these repairs.

D. Correcting Non-Conformance: If, in the opinion of the Owner or his appointed Representative, the actual performance levels including footcandles and uniformity ratios are not in conformance with the requirements of the performance specifications and submitted information, the Manufacturer shall be required to make adjustments to meet specifications and satisfy Owner.

3.02 10-YEAR WARRENTY

A. Each manufacturer shall supply a signed warranty covering the entire system for 10 for years. Warranty shall guarantee light levels will not fall below target maintained levels. A +/- 10% design/testing allowance will not be allowed. Warranty shall also cover: lamp replacements, system energy consumption, monitoring, maintenance and control services, spill light control, and structural integrity. Manufacturer shall maintain specifically-funded financial reserves to assure fulfillment of the warranty for the full term. Warranty may exclude fuses, storm damage, vandalism, abuse and unauthorized repairs or alterations.

B. Preventative and Spot Maintenance: Manufacturer shall provide all preventative and spot maintenance, including parts and labor for 10 years from the date of the equipment shipment. Individual lamp outages shall be repaired when the usage of any field is materially impacted. Owner agrees to check fuses in the event of a luminaire outage.

C. Coverage of parts and labor included.

   1. Sports lighting and ballast assemblies manufactured by system provider – repair or replacement.

2. Poles included in the system purchase – repair or replacement.
3. Electrical equipment and enclosures included in the system purchased.
4. Light levels and uniformity – anytime that light levels or uniformity fail to meet the specified levels, necessary corrections will be made at no cost to the owner.
5. Individual fixture replacements shall occur under any one of the following events after the customer has checked the fuses:
    a. When more than 10% of the LED are extinguished.
    b. When lamp outage materially impacts use of the field.

D. Warranty Response: Request for warranty work via toll free technical service number. Warranty provide must guarantee thirty-six (36) hour weekday and seventy-two-hour weekend response time. On-site service to be performed by personnel or a contractor at the sole discretion of the sports lighting manufacturer.

3.03 TRAINING AND OPERATIONAL AND MAINTENANCE MANUALS

A. The lighting manufacturer shall provide a minimum of four (4) hours of training of the lighting control system for the owner. Training shall include lighting operation from the local controls as well as remote access of the lighting system.

B. The lighting manufacturer shall provide 3 hard copies and one pdf file of the Operation and Maintenance manuals of each component of the lighting system including light fixtures, poles and lighting controller.

END OF SECTION 26 56 10

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Section 32 33 00 - Site Furnishings

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. Bench with Back.
2. ADA Picnic Tables.
3. Picnic Tables.
4. Bicycle racks.
5. Trash and Recycling receptacles.
6. Bike Repair Station.
7. Water Fountain – Free Standing.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples for Initial Selection: For units with factory-applied finishes.

1.4 INFORMATIONAL SUBMITTALS

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For site furnishings to include in maintenance manuals.

PART 2 - PRODUCTS

2.1 BENCH WITH BACK See Sheet L-501

A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product:

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1. Color: As selected by Architect from manufacturer's full range.

1. Benches, tables, and trash & recycling receptacles should be provided by the same manufacturer in order to be aesthetically similar as a family of furnishings.

2. Equals may be considered subject to approval by the Architect.

2.2 ADA PICNIC TABLES See Sheet L-501

A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product:

1. Color: As selected by Architect from manufacturer's full range .

2. Benches, tables, and trash & recycling receptacles should be provided by the same manufacturer in order to be aesthetically similar as a family of furnishings.

3. Equals may be considered subject to approval by the Architect.

4. Table must accommodate a wheelchair entry per ADA regulations on at least one end, and not have reduced bench seating compared to the standard picnic table provided.

2.3 PICNIC TABLES See Sheet L-501

A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product:

1. Color: As selected by Architect from manufacturer's full range .

2. Benches, tables, and trash & recycling receptacles should be provided by the same manufacturer in order to be aesthetically similar as a family of furnishings.

3. Equals may be considered subject to approval by the Architect.

2.4 TRASH & RECYCLING RECEPTACLES See Sheet L-501

A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product:

1. Color: As selected by Architect from manufacturer's full range .

2. Benches, tables, and trash & recycling receptacles should be provided by the same manufacturer in order to be aesthetically similar as a family of furnishings.

3. Equals may be considered subject to approval by the Architect

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2.5 BIKE REPAIR STATION See Sheet L-501

A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product:

1. Color: As selected by Architect from manufacturer's full range .

2. Equals may be considered subject to approval by the Architect.

2.6 WATER FOUNTAIN – FREE STANDING See Sheet L-501

A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product:

1. Color: As selected by Architect from manufacturer's full range .

2. Equals may be considered subject to approval by the Architect.

2.7 WOOD-PRESERVATIVE-TREATED MATERIALS

A. Preservative Treatment: Pressure-treat wood according to AWPA U1, Use Category UC3b, and the following:

1. Use preservative chemicals acceptable to authorities having jurisdiction and containing no arsenic or chromium. Use chemical formulations that do not bleed through or otherwise adversely affect finishes. Do not use colorants to distinguish treated materials from untreated materials.
2. Kiln-dry lumber and plywood after treatment to a maximum moisture content, respectively, of 19 and 15 percent. Do not use materials that are warped or do not comply with requirements for untreated materials.

2.8 FABRICATION

A. Metal Components: Form to required shapes and sizes with true, consistent curves, lines, and angles. Separate metals from dissimilar materials to prevent electrolytic action.

B. Welded Connections: Weld connections continuously. Weld solid members with full-length, full-penetration welds and hollow members with full-circumference welds. At exposed connections, finish surfaces smooth and blended, so no roughness or unevenness shows after finishing and welded surface matches contours of adjoining surfaces.

C. Pipes and Tubes: Form simple and compound curves by bending members in jigs to produce uniform curvature for each repetitive configuration required; maintain cylindrical cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of handrail and railing components.

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D. Preservative-Treated Wood Components: Complete fabrication of treated items before treatment if possible. If cut after treatment, apply field treatment complying with AWPA M4 to cut surfaces.

E. Exposed Surfaces: Polished, sanded, or otherwise finished; all surfaces smooth, free of burrs, barbs, splinters, and sharpness; all edges and ends rolled, rounded, or capped.

F. Factory Assembly: Factory assemble components to greatest extent possible to minimize field assembly. Clearly mark units for assembly in the field.

2.9 GENERAL FINISH REQUIREMENTS

A. Appearance of Finished Work: Noticeable variations in same piece are unacceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.10 STEEL AND GALVANIZED-STEEL FINISHES

A. Powder-Coat Finish: Manufacturer's standard polyester, powder-coat finish complying with finish manufacturer's written instructions for surface preparation, including pretreatment, application, baking, and minimum dry film thickness.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for correct and level finished grade, mounting surfaces, installation tolerances, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Comply with manufacturer's written installation instructions unless more stringent requirements are indicated. Complete field assembly of site furnishings where required.

B. Unless otherwise indicated, install site furnishings after landscaping and paving have been completed.

C. Install site furnishings level, plumb, true, and securely anchored positioned at locations indicated on Drawings.

END OF SECTION 32 33 00

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Section 32 91 13 - Soil Preparation

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 planting soils and layered soil assemblies specified by composition of the mixes.

B. Related Requirements:

1. Section 311000 "Site Clearing" for topsoil stripping and stockpiling.
2. Section 329200 "Turf and Grasses" for placing planting soil for turf and grasses.
3. Section 329300 "Plants" for placing planting soil for plantings.

1.3 DEFINITIONS

A. AAPFCO: Association of American Plant Food Control Officials.

B. Backfill: The earth used to replace or the act of replacing earth in an excavation. This can be amended or unamended soil as indicated.

C. CEC: Cation exchange capacity.

D. Compost: The product resulting from the controlled biological decomposition of organic material that has been sanitized through the generation of heat and stabilized to the point that it is beneficial to plant growth.

E. Duff Layer: A surface layer of soil, typical of forested areas, that is composed of mostly decayed leaves, twigs, and detritus.

F. Imported Soil: Soil that is transported to Project site for use.

G. Layered Soil Assembly: A designed series of planting soils, layered on each other, that together produce an environment for plant growth.

H. Manufactured Soil: Soil produced by blending soils, sand, stabilized organic soil amendments, and other materials to produce planting soil.

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I. NAPT: North American Proficiency Testing Program. An SSSA program to assist soil-, plant-, and water-testing laboratories through interlaboratory sample exchanges and statistical evaluation of analytical data.

J. Organic Matter: The total of organic materials in soil exclusive of undecayed plant and animal tissues, their partial decomposition products, and the soil biomass; also called "humus" or "soil organic matter."

K. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified as specified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.

L. RCRA Metals: Hazardous metals identified by the EPA under the Resource Conservation and Recovery Act.

M. SSSA: Soil Science Society of America.

N. 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.

O. Subsoil: Soil beneath the level of subgrade; soil beneath the topsoil layers of a naturally occurring soil profile, typified by less than 1 percent organic matter and few soil organisms.

P. Surface Soil: Soil that is present at the top layer of the existing soil profile. In undisturbed areas, surface soil is typically called "topsoil"; but in disturbed areas such as urban environments, the surface soil can be subsoil.

Q. USCC: U.S. Composting Council.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include recommendations for application and use.
2. Include test data substantiating that products comply with requirements.
3. Include sieve analyses for aggregate materials.
4. Material Certificates: For each type of imported soil and soil amendment and fertilizer before delivery to the site, according to the following:
    a. Manufacturer's qualified testing agency's certified analysis of standard products.
    b. Analysis of fertilizers, by a qualified testing agency, made according to AAPFCO methods for testing and labeling and according to AAPFCO's SUIP #25.
    c. Analysis of nonstandard materials, by a qualified testing agency, made according to SSSA methods, where applicable.

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B. Samples: For each bulk-supplied material, 1-quart volume of each in sealed containers labeled with content, source, and date obtained. Each Sample shall be typical of the lot of material to be furnished; provide an accurate representation of composition, color, and texture.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For each testing agency.

B. Preconstruction Test Reports: For preconstruction soil analyses specified in "Preconstruction Testing" Article.

C. Field quality-control reports.

1.6 QUALITY ASSURANCE

A. Testing Agency Qualifications: An independent, state-operated, or university-operated laboratory; experienced in soil science, soil testing, and plant nutrition; with the experience and capability to conduct the testing indicated; and that specializes in types of tests to be performed.

1. Multiple Laboratories: At Contractor's option, work may be divided among qualified testing laboratories specializing in physical testing, chemical testing, and fertility testing.

1.7 PRECONSTRUCTION TESTING

A. Preconstruction Testing Service: Engage a qualified testing agency to perform preconstruction soil analyses on existing, on-site soil imported soil .

B. Preconstruction Soil Analyses: For each unamended soil type, perform testing on soil samples and furnish soil analysis and a written report containing soil-amendment and fertilizer recommendations by a qualified testing agency performing the testing according to "Soil-Sampling Requirements" and "Testing Requirements" articles.

1. Have testing agency identify and label samples and test reports according to sample collection and labeling requirements.

1.8 SOIL-SAMPLING REQUIREMENTS

A. General: Extract soil samples according to requirements in this article.

B. Sample Collection and Labeling: Have samples taken and labeled by Contractor in presence of Architect , Contractor in presence of Owner, under the direction of the testing agency.

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1. Number and Location of Samples: Minimum of 6 representative soil samples from varied locations for each soil to be used or amended for landscaping purposes.
2. Procedures and Depth of Samples: According to USDA-NRCS's "Field Book for Describing and Sampling Soils."
3. Division of Samples: Split each sample into two, equal parts. Send half to the testing agency and half to Owner for its records.
4. Labeling: Label each sample with the date, location keyed to a site plan or other location system, visible soil condition, and sampling depth.

1.9 TESTING REQUIREMENTS

A. General: Perform tests on soil samples according to requirements in this article.

B. Physical Testing:

1. Soil Texture: Soil-particle, size-distribution analysis by one of the following methods according to SSSA's "Methods of Soil Analysis - Part 1-Physical and Mineralogical Methods":
   a. Sieving Method: Report sand-gradation percentages for very coarse, coarse, medium, fine, and very fine sand; and fragment-gradation (gravel) percentages for fine, medium, and coarse fragments; according to USDA sand and fragment sizes.
   b. Hydrometer Method: Report percentages of sand, silt, and clay.
2. Total Porosity: Calculate using particle density and bulk density according to SSSA's "Methods of Soil Analysis - Part 1-Physical and Mineralogical Methods."
3. Water Retention: According to SSSA's "Methods of Soil Analysis - Part 1-Physical and Mineralogical Methods."
4. Saturated Hydraulic Conductivity: According to SSSA's "Methods of Soil Analysis - Part 1-Physical and Mineralogical Methods"; at 85% compaction according to ASTM D 698 (Standard Proctor).

C. Chemical Testing:

1. CEC: Analysis by sodium saturation at pH 7 according to SSSA's "Methods of Soil Analysis - Part 3- Chemical Methods."
2. Clay Mineralogy: Analysis and estimated percentage of expandable clay minerals using CEC by ammonium saturation at pH 7 according to SSSA's "Methods of Soil Analysis - Part 1- Physical and Mineralogical Methods."
3. Metals Hazardous to Human Health: Test for presence and quantities of RCRA metals including aluminum, arsenic, barium, copper, cadmium, chromium, cobalt, lead, lithium, and vanadium. If RCRA metals are present, include recommendations for corrective action.
4. Phytotoxicity: Test for plant-available concentrations of phytotoxic minerals including aluminum, arsenic, barium, cadmium, chlorides, chromium, cobalt, copper, lead, lithium, mercury, nickel, selenium, silver, sodium, strontium, tin, titanium, vanadium, and zinc.

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D. Fertility Testing: Soil-fertility analysis according to standard laboratory protocol of SSSA NAPT NCR-13 , including the following:

1. Percentage of organic matter.
2. CEC, calcium percent of CEC, and magnesium percent of CEC.
3. Soil reaction (acidity/alkalinity pH value).
4. Buffered acidity or alkalinity.
5. Nitrogen ppm.
6. Phosphorous ppm.
7. Potassium ppm.
8. Manganese ppm.
9. Manganese-availability ppm.
10. Zinc ppm.
11. Zinc availability ppm.
12. Copper ppm.
13. Sodium ppm.
14. Soluble-salts ppm.
15. Presence and quantities of problem materials including salts and metals cited in the Standard protocol. If such problem materials are present, provide additional recommendations for corrective action.
16. Other deleterious materials, including their characteristics and content of each.

E. Organic-Matter Content: Analysis using loss-by-ignition method according to SSSA's "Methods of Soil Analysis - Part 3- Chemical Methods."

F. Recommendations: Based on the test results, state recommendations for soil treatments and soil amendments to be incorporated to produce satisfactory planting soil suitable for healthy, viable plants indicated. Include, at a minimum, recommendations for nitrogen, phosphorous, and potassium fertilization, and for micronutrients.

1. Fertilizers and Soil Amendment Rates: State recommendations in weight per 1000 sq. ft. for 6-inch depth of soil .
2. Soil Reaction: State the recommended liming rates for raising pH or sulfur for lowering pH according to the buffered acidity or buffered alkalinity in weight per 1000 sq. ft. for 6-inch depth of soil .

1.10 DELIVERY, STORAGE, AND HANDLING

A. Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and compliance with state and Federal laws if applicable.

B. Bulk Materials:

1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.

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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. Do not move or handle materials when they are wet or frozen.
4. Accompany each delivery of bulk fertilizers and soil amendments with appropriate certificates.

PART 2 - PRODUCTS

2.1 PLANTING SOILS SPECIFIED BY COMPOSITION

A. General: Soil amendments, fertilizers, and rates of application specified in this article are guidelines that may need revision based on testing laboratory's recommendations after preconstruction soil analyses are performed.

B. Planting-Soil Type : Imported, naturally formed soil from off-site sources and consisting of sandy loam soil according to USDA textures; and modified to produce viable planting soil.

1. Sources: Take imported, unamended soil from sources that are naturally well-drained sites where topsoil occurs at least 4 inches deep, not from agricultural land, bogs, or marshes; and that do not contain undesirable organisms; disease-causing plant pathogens; or obnoxious weeds and invasive plants including, but not limited to, quackgrass, Johnsongrass, poison ivy, nutsedge, nimblewill, Canada thistle, bindweed, bentgrass, wild garlic, ground ivy, perennial sorrel, and bromegrass.
2. Unacceptable Properties: Clean soil of the following:
    a. Unacceptable Materials: Concrete slurry, concrete layers or chunks, cement, plaster, building debris, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, acid, and other extraneous materials that are harmful to plant growth.
    b. Unsuitable Materials: Stones, roots, plants, sod, clay lumps, and pockets of coarse sand that exceed a combined maximum of 8 percent by dry weight of the imported soil.
    c. Large Materials: Stones, clods, roots, clay lumps, and pockets of coarse sand exceeding 2 inches in any dimension.

2.2 ORGANIC SOIL AMENDMENTS

A. Compost: Well-composted, stable, and weed-free organic matter produced by composting feedstock, and bearing USCC's "Seal of Testing Assurance," and as follows:

1. Reaction: pH of 5.5 to 8 .
2. Soluble-Salt Concentration: Less than 4 dS/m.
3. Moisture Content: 35 to 55 percent by weight.
4. Organic-Matter Content: 50 to 60 percent of dry weight.
5. Particle Size: Minimum of 98 percent passing through a 2-inch sieve.

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2.3 FERTILIZERS

A. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:

1. Composition: 20 percent nitrogen, 10 percent phosphorous, and 10 percent potassium, by weight.
2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified testing agency.

PART 3 - EXECUTION

3.1 GENERAL

A. Place planting soil and fertilizers according to requirements in other Specification Sections.

B. 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 planting soil.

C. Proceed with placement only after unsatisfactory conditions have been corrected.

3.2 PREPARATION OF UNAMENDED, ON-SITE SOIL BEFORE AMENDING

A. Excavation: Excavate soil from designated area(s) to a depth of 6 inches and stockpile until amended.

B. Unacceptable Materials: Clean soil of concrete slurry, concrete layers or chunks, cement, plaster, building debris, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, acid, and other extraneous materials that are harmful to plant growth.

C. Unsuitable Materials: Clean soil to contain a maximum of 8 percent by dry weight of stones, roots, plants, sod, clay lumps, and pockets of coarse sand.

3.3 PLACING AND MIXING PLANTING SOIL OVER EXPOSED SUBGRADE

A. General: Apply and mix unamended soil with amendments on-site to produce required planting soil. Do not apply materials or till if existing soil or subgrade is frozen, muddy, or excessively wet.

B. Subgrade Preparation: Till subgrade to a minimum depth of 6 inches . Remove stones larger than 2 inches in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.

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1. Apply, add soil amendments, and mix approximately half the thickness of unamended soil over prepared, loosened subgrade according to "Mixing" Paragraph below. Mix thoroughly into top 4 inches of subgrade. Spread remainder of planting soil.

C. Mixing: Spread unamended soil to total depth indicated on Drawings , but not less than required to meet finish grades after mixing with amendments and natural settlement. Do not spread if soil or subgrade is frozen, muddy, or excessively wet.

1. Amendments: Apply soil amendments and fertilizer, if required, evenly on surface, and thoroughly blend them with unamended soil to produce planting soil.
   a. Mix fertilizer with planting soil no more than seven days before planting.
2. Lifts: Apply and mix unamended soil and amendments in lifts not exceeding 8 inches in loose depth for material compacted by compaction equipment, and not more than 6 inches in loose depth for material compacted by hand-operated tampers.

D. Compaction: Compact each blended lift of planting soil to 75 to 82 percent of maximum Standard Proctor density according to ASTM D 698 and tested in-place except where a different compaction value is indicated on Drawings.

E. Finish Grading: Grade planting soil to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.

3.4 BLENDING PLANTING SOIL IN PLACE

A. General: Mix amendments with in-place, unamended soil to produce required planting soil. Do not apply materials or till if existing soil or subgrade is frozen, muddy, or excessively wet.

B. Preparation: Till unamended, existing soil in planting areas to a minimum depth of indicated on Drawings . Remove stones larger than 2 inches in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.

C. Mixing: Apply soil amendments and fertilizer, if required, evenly on surface, and thoroughly blend them into full depth of unamended, in-place soil to produce planting soil.

D. Compaction: Compact blended planting soil to 75 to 82 percent of maximum Standard Proctor density according to ASTM D 698 except where a different compaction value is indicated on Drawings.

E. Finish Grading: Grade planting soil to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.

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3.5 FIELD QUALITY CONTROL

A. Testing Agency: a qualified testing agency to perform tests and inspections.

B. Perform the following tests:

1. Compaction: Test planting-soil compaction after placing each lift and at completion using a densitometer or soil-compaction meter calibrated to a reference test value based on laboratory testing according to ASTM D 698. Space tests at no less than one for each 1000 sq. ft. 2000 sq. ft. of in-place soil or part thereof.

C. Soil will be considered defective if it does not pass tests.

D. Prepare test reports.

E. Label each sample and test report with the date, location keyed to a site plan or other location system, visible conditions when and where sample was taken, and sampling depth.

3.6 PROTECTION

A. Protection Zone: Identify protection zones according to Section 015639 "Temporary Tree and Plant Protection."

B. Protect areas of in-place soil from additional compaction, disturbance, and contamination. Prohibit the following practices within these areas except as required to perform planting operations:

1. Storage of construction materials, debris, or excavated material.
2. Parking vehicles or equipment.
3. Vehicle traffic.
4. Foot traffic.
5. Erection of sheds or structures.
6. Impoundment of water.
7. Excavation or other digging unless otherwise indicated.

C. If planting soil or subgrade is overcompacted, disturbed, or contaminated by foreign or deleterious materials or liquids, remove the planting soil and contamination; restore the subgrade as directed by Architect and replace contaminated planting soil with new planting soil.

3.7 CLEANING

A. Protect areas adjacent to planting-soil preparation and placement areas from contamination. Keep adjacent paving and construction clean and work area in an orderly condition.

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B. Remove surplus soil and waste material including excess subsoil, unsuitable materials, trash, and debris and legally dispose of them off Owner's property unless otherwise indicated.

1. Dispose of excess subsoil and unsuitable materials on-site where directed by Owner.

END OF SECTION 32 91 13

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Section 32 92 00 - Turf and Grasses

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. Seeding.
2. Hydroseeding.
3. Meadow and Native grasses and wildflowers.
4. Turf renovation.
5. Erosion-control materials.

B. Related Requirements:

1. Section 329300 "Plants" for trees, shrubs, ground covers, and other plants as well as border edgings and mow strips.

1.3 DEFINITIONS

A. Finish Grade: Elevation of finished surface of planting soil.

B. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth. See Section 329113 "Soil Preparation" and drawing designations for planting soils.

C. Subgrade: The surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For landscape Installer.

B. Certification of Native Seed: From seed vendor for each native seed mix, stating the botanical and common name, percentage by weight of each species and variety, and per-

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centage of purity, germination, and weed seed. Include the year of production and date of packaging.

C. Certification of Grass Seed: From seed vendor for each grass-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.

D. Product Certificates: For fertilizers, from manufacturer.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: Recommended procedures to be established by Owner for maintenance of turf and meadows during a calendar year. Submit before expiration of required maintenance periods.

1.6 QUALITY ASSURANCE

A. Turf Seed Installer Qualifications: A qualified landscape installer whose work has resulted in successful turf establishment.

1. Experience: Five years' experience in turf installation in addition to requirements in Section 014000 "Quality Requirements."
2. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
3. Pesticide Applicator: State licensed, commercial.

B. Native Seeding Qualifications Data: A qualified installer whose work has resulted in successful establishment of native seeding / meadow areas of similar size and scope to this project.

1. Experience: Five years' experience in native seed installation in addition to requirements in Section 014000 "Quality Requirements."
2. Seeding Method: Native Seeding Installer to provide a detailed statement describing how the seed bed will be prepared, what equipment will be used for bed preparation and seed sowing, and the timing of seeding operations. Seeding method is subject to approval by the Landscape Architect.
3. Planting Schedule: Contractor to notify Landscape architect the anticipated seeding timeline for each type of planting.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Seed and Other Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of compliance with state and Federal laws, as applicable.

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B. 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. Accompany each delivery of bulk materials with appropriate certificates.

1.8 FIELD CONDITIONS

A. Native Seeding Restrictions: Native Seeding to be performed according to the Native Seeding Schedule, unless approved otherwise by the Landscape Architect.

B. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions.

PART 2 - PRODUCTS

2.1 SEED

2.1 TURFGRASS SEED

A. Grass Seed: Fresh, clean, dry, new-crop seed complying with AOSA's "Rules for Testing Seeds" for purity and germination tolerances.

B. Seed Species:

1. Quality: State-certified seed of grass species as listed below for solar exposure.
2. Quality: Seed of grass species as listed below for solar exposure, with not less than 85 percent germination, not less than 95percent pure seed, and not more than 0.5 percent weed seed:
3. Scottish links low grow turf mix: See Drawings

2.2 NATIVE GRASSES AND FORB MIXTURES

A. Seeds shall be fresh, clean, dry new-crop seed provided in original sealed packages bearing the seed vendor’s guaranteed analysis for purity, germination, hard seed, and maximum weed seed content. Labels shall be in compliance with the requirements of the Missouri Seed Law.

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B. The seeds shall be of a local or regional ecotype within approximately 200 miles of installation site, grown and processed in the United States and shall comply with the requirements of the Missouri Seed Law.

C. Seed mixtures shall be proportioned by weight in PLS (Pure Live Seed)

D. All leguminous seeds shall be inoculated or treated with the proper quantity of cultures approved for the particular legume to be sown. Leguminous seed will include alsike clover, Korean lespedeza, red clover, white clover, hairy vetch, partridge pea, and slender bush clover.

E. The inoculant for treating leguminous seed shall be a nitrogen-fixing bacteria culture. The inoculant containers shall be plainly marked with the expiration date for use. The manufacturer's recommendations for inoculating seed shall be followed.

F. Seed Carrier. If seed is broadcast it must be mixed with and equal amount at minimum of inert material such as, sharp clean sand, perlite, vermiculite, or ground corn cobs.

G. Native Wildflower and Grass Seed Schedules: Fresh, clean, and dry new seed, of mixed species. See drawings for SF per species.

BOTANICAL NAME	**COMMON NAME**	**Oz/Acre Pure Live Seed**
Regreen tm Cover Crop	**Use for all native seeding areas**	**480**
BRIDGE NATIVE MIX (SHADY)		
Chasmanthium latifolium	Northern Sea Oats	218
Diarrhena americana	American Beakgrain	218
Elymus hystrix	Bottlebrush Glass	290
Elymus macgregorii	Early Wild-rye	240
Packera obovata	Golden Groundsel	32
Solidago flexicaulis	Zigzag Goldenrod	32
MEADOW PLANTINGS		
Achillea millefolium	Common Yarrow	7
Amsonia ciliata	Fringed Bluestar	10
Andropogon virginicus	Broomsedge Bluestem	80
Asclepias syriaca	Common Milkweed	109
Asclepias tuberosa	Butterfly Milkweed	290
Aster novae-angliae	New England Aster	19
Aster oblongifolius	Fall Aster	29
Baptisia autralis	Blue Wild Indigo	435

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Bouteloua curtipendula	Side Oats Grama	132
Coreopsis lanceolata	Lanceleaf Tickseed	87
Echinacea pallida	Pale Purple Coneflower	8
Echinacea parodoxa	Bush's Coneflower	218
Liatris aspera	Rough Blazing Star	109
Liatris pycnostachya	Prairie Gayfeather	109
Monarda fistulosa	Bergamot	17
Pycnanthemum tenuifolium	Slender Mountain Mint	4
Ratibida pinnata	Yellow Coneflower	43
Rudbeckia hirta	Black-eyed Susan	16
Salvia azurea	Azure Sage	145
Schizachyrium scoparium	Little Bluestem	87
Silene regia	Royal Catchfly	112
Solidago rigida	Stiff Goldenrod	32
Solidago speciosa	Showy Goldenrod	15
Sorghastrum nutans	Indian Grass	145
Symphyotrichum oolentangiense	Sky Blue Aster	64
Tradscantia ohiensis	Ohio Spiderwort	145
Vernonia arkansana	Arkansas Ironweed	55
BMP PLANTINGS		
Amsonia illustris	Ozark Bluestar	622
Carex muskingumensis	Palm Sedge	11
Carex vulpinoidea	Fox Sedge	18
Iris virginica	Blue Flag Iris	580
LONE ELM NATIVE MIX (SUN)		
Bouteloua curtipendula	Side Oats Grama	132
Monarda fistulosa	Bergamot	17
Panicum virgatum	Switch Grass	87
Rudbeckia missouriensis	Missouri Coneflower	43
Schizachyrium scoparium	Little Bluestem	87
Sporobolus heterolepis	Prairie Dropseed	9

2.3 FERTILIZERS

A. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:

1. Composition:

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a. Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing laboratory.

2.4 MULCHES

A. Straw Mulch: Provide air-dry, clean, mildew- and seed-free, salt hay or threshed straw of wheat, rye, oats, or barley.

B. Fiber Mulch: Biodegradable, dyed-wood, cellulose-fiber mulch; nontoxic and free of plant-growth or germination inhibitors; with a maximum moisture content of 15 percent and a pH range of 4.5 to 6.5.

C. Nonasphaltic Tackifier: Colloidal tackifier recommended by fiber-mulch manufacturer for slurry application; nontoxic and free of plant-growth or germination inhibitors.

2.5 EROSION-CONTROL MATERIALS

A. Erosion-Control Blankets: Type 1D Erosion Control Blanket

B. Erosion-Control Mats: Type 1 Turf Reinforcement Mat

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas to be planted for compliance with requirements and other conditions affecting installation and performance of the Work.

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 a planting area.
2. Suspend planting operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
3. Uniformly moisten excessively dry soil that is not workable or which is dusty.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Architect and replace with new planting soil.

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3.2 PREPARATION

A. Protect structures; utilities; sidewalks; pavements; and other facilities, trees, shrubs, and plantings from damage caused by planting operations.

1. Protect adjacent and adjoining areas from hydroseeding and hydromulching overspray.
2. Protect grade stakes set by others until directed to remove them.

B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.3 TURF AREA PREPARATION

A. General: Prepare planting area for soil placement and mix planting soil according to Section 329113 "Soil Preparation."

B. Placing Planting Soil: Blend planting soil in place .

C. Moisten prepared area before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

D. Before planting, obtain Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

3.4 PREPARATION FOR EROSION-CONTROL MATERIALS

A. Prepare area as specified in "Turf Area Preparation" Article.

B. 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.

C. Moisten prepared area before planting if surface is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

3.5 NATIVE GRASSES AND FORB MIXTURE SEEDING

A. Native Seed Bed Preparation:

B. Removal of Existing Vegetation: Should undesirable existing vegetation be present on the site at the time of installation, the contractor shall prepare the site for planting by use of chemicals, when used as recommended by the manufacturer, and/or mechanical means acceptable to the owner. Care shall be exercised to avoid any misuse of chemicals that would create detrimental residual conditions. Care must also be used not to disturb the seedbed or cause damage to previously established seeding areas or landscape areas.

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C. Cover crop shall be installed prior to or at the same time as installation of native seeds, at 1 – 2” depth but needs to be installed first due to the deeper depth vs native seeds.

D. Sow seed with spreader or seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph.

1. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
2. Do not use wet seed or seed that is moldy or otherwise damaged.
3. Do not seed against existing trees. Limit extent of seed to outside edge of planting saucer.

E. Sow Native seeds at seed at a total rate per seeding schedule .

F. Rake Native seed lightly into top 1/8 inch of soil, roll lightly, and water with fine spray.

G. Protect seeded areas with slopes exceeding 1:2 with erosion-control mats, install and anchor according to manufacturer's written instructions.

H. Protect seeded areas with slopes exceeding 1:3 with Erosion Control Blanket, installed and stapled according to manufacturer's written instructions.

I. Protect seeded areas with slopes not exceeding 1:3 by spreading straw mulch. Spread uniformly at a minimum rate of 2 tons/acre to form a continuous blanket 1-1/2 inches in loose thickness over seeded areas. Spread by hand, blower, or other suitable equipment.

1. Anchor straw mulch by crimping into soil with suitable mechanical equipment.

J. Protect seeded areas from hot, dry weather or drying winds by applying within 24 hours after completing seeding operations. Soak areas, scatter mulch uniformly to a thickness of 3/16 inch , and roll surface smooth.

1.2 HYDROSEEDING

A. Hydroseeding: Mix specified seed, slow-release fertilizer , and fiber mulch in water, using equipment specifically designed for hydroseed application. Continue mixing until uniformly blended into homogeneous slurry suitable for hydraulic application.

1. Mix slurry with guar gum, plantago, startch or other organic substance tackifier at the manufacturers recommended rate for that substance and site condition.
2. Spray-apply slurry uniformly to all areas to be seeded in a one-step process. Apply slurry at a rate so that mulch component is deposited at not less than weight, and seed component is deposited at not less than the specified seed-sowing rate.

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1.3 TURF RENOVATION

A. Renovate turf damaged by Contractor's operations, such as storage of materials or equipment and movement of vehicles.

1. Reestablish turf where settlement or washouts occur or where minor regrading is required.
2. Install new planting soil as required.

B. Remove sod and vegetation from diseased or unsatisfactory turf areas; do not bury in soil.

C. Remove topsoil containing foreign materials, such as oil drippings, fuel spills, stones, gravel, and other construction materials resulting from Contractor's operations, and replace with new planting soil.

D. Mow, dethatch, core aerate, and rake existing turf.

E. Remove weeds before seeding. Where weeds are extensive, apply selective herbicides as required. Do not use pre-emergence herbicides.

F. Remove waste and foreign materials, including weeds, soil cores, grass, vegetation, and turf, and legally dispose of them off Owner's property.

G. Till stripped, bare, and compacted areas thoroughly to a soil depth of 6 inches.

H. Apply soil amendments and initial fertilizer required for establishing new turf and mix thoroughly into top 4 inches of existing soil. Install new planting soil to fill low spots and meet finish grades.

1. Soil Amendment(s): according to requirements of Section 329113 "Soil Preparation." .
2. Initial Fertilizer: Slow-release fertilizer applied according to manufacturer's recommendations.

I. Apply seed and protect with straw mulch as required for new turf.

J. Water newly planted areas and keep moist until new turf is established.

1.4 TURF MAINTENANCE

A. General: Maintain and establish turf by watering, fertilizing, weeding, mowing, trimming, replanting, and performing other operations as required to establish healthy, viable turf. Roll, regrade, and replant bare or eroded areas and remulch to produce a uniformly smooth turf. Provide materials and installation the same as those used in the original installation.

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1. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace materials and turf 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 keep turf and soil free of pests and pathogens or disease. Use integrated pest management practices whenever possible to minimize the use of pesticides and reduce hazards.

B. Watering: Install and maintain temporary piping, hoses, and turf-watering equipment to convey water from sources and to keep turf uniformly moist to a depth of 4 inches.

1. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch. Lay out temporary watering system to avoid walking over muddy or newly planted areas.
2. Water turf with fine spray at a minimum rate of 1 inch per week unless rainfall precipitation is adequate.

C. Mow turf as soon as top growth is tall enough to cut. Repeat mowing to maintain specified height without cutting more than one-third of grass height. Remove no more than one-third of grass-leaf growth in initial or subsequent mowings. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet. Schedule initial and subsequent mowings to maintain the following grass height:

1. Mow turf-type tall fescue to a height of 2 to 3 inches.

D. Turf Postfertilization: Apply slow-release fertilizer after initial mowing and when grass is dry.

1. Use fertilizer that provides actual nitrogen of at least 1 lb/1000 sq. ft. to turf area.

1.5 SATISFACTORY TURF

A. Turf installations shall meet the following criteria as determined by Architect:

1. Satisfactory Seeded Turf: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 90 percent over any 10 sq. ft. and bare spots not exceeding 5 by 5 inches .

B. Use specified materials to reestablish turf that does not comply with requirements, and continue maintenance until turf is satisfactory.

1.6 MEADOW

A. Sow seed with spreader or seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph.

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1. Before sowing, mix seed with seed carrier at a ratio of not less than two parts seed carrier to one part seed.
2. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
3. Do not use wet seed or seed that is moldy or otherwise damaged.

B. Sow seed at a total rate of 5 oz./1000 sq. ft. .

C. Brush seed into top 1/16 inch of soil, roll lightly, and water with fine spray.

D. Protect seeded areas from hot, dry weather or drying winds by applying mulch within 24 hours after completing seeding operations. Soak areas, scatter mulch uniformly to a thickness of 3/16 inch, and roll surface smooth.

E. Water newly planted areas and keep moist until meadow is established.

1.7 MEADOW MAINTENANCE

A. Maintain and establish meadow by watering, weeding, mowing, trimming, replanting, and performing other operations as required to establish a healthy, viable meadow. Roll, regrade, and replant bare or eroded areas and remulch. 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 keep meadow and soil free of pests and pathogens or disease. Use integrated pest management practices whenever possible to minimize the use of pesticides and reduce hazards.

B. Watering: Install and maintain temporary piping, hoses, and meadow-watering equipment to convey water from sources and to keep meadow uniformly moist.

1. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch. Lay out temporary watering system to avoid walking over muddy or newly planted areas.
2. Water meadow with fine spray at a minimum rate of 1/2 inch per week for eight weeks after planting unless rainfall precipitation is adequate.

1.8 CLEANUP AND PROTECTION

A. Promptly remove soil and debris created by turf work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.

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B. Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of them off Owner's property.

C. 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.

D. Remove nondegradable erosion-control measures after grass establishment period.

END OF SECTION 32 92 00

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Section 32 93 00 - Plants

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Plant materials.
2. Fertilizers.
3. Mulches.
4. Herbicides and pesticides.
5. Tree-stabilization materials.
6. Landscape edgings.
7. Tree-watering devices.

B. Related Requirements:

1. Section 015639 "Temporary Tree and Plant Protection" for protecting, trimming, pruning, repairing, and replacing existing trees to remain that interfere with, or are affected by, execution of the Work.
2. Section 329200 "Turf and Grasses" for turf (lawn) and meadow planting, hydroseeding, and erosion-control materials.

1.2 COORDINATION

A. Coordination with Turf Areas (Lawns): Plant trees, shrubs, and other plants after finish grades are established and before planting turf areas unless otherwise indicated.

1. When planting trees, shrubs, and other plants after planting turf areas, protect turf areas, and promptly repair damage caused by planting operations.

1.3 ACTION SUBMITTALS

A. Product Data:

1. Plant materials.
2. Fertilizers.
3. Mulches.
4. Herbicides and pesticides.
5. Tree-stabilization materials.
6. Tree-watering devices.

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B. Product Data Submittals: For each product.

1. Plant Materials: Include quantities, sizes, quality, and verified sources for plant materials.
   a. Include a photograph of each species in its specified size at the nursery for all containerized or B&B plants. “Stock” or generic photos are not acceptable.
   b. Landscape Architect to select individual trees for project use in the field, unless this requirement is waived in writing by the Landscape Architect. Contractor to coordinate selection by the Landscape Architect at nurseries which may provide the required plant material per Drawings and Specifications.

C. Samples for Verification: Actual sample of finished products for each of the following:

1. Organic Mulch: 1-quart volume of each organic mulch required; typical of the lot of material to be furnished, in sealed plastic bags labeled with composition of materials by percentage of weight and source of mulch. Provide an accurate representation of color, texture, and organic makeup.
2. Slow-Release, Tree-Watering Device: One unit of each size required.

1.4 INFORMATIONAL SUBMITTALS

A. Product Certificates: For each type of manufactured product, from manufacturer, and complying with manufacturer's certified analysis of standard products.

B. Pesticides and Herbicides: Product label and manufacturer's written application instructions specific to Project.

C. Sample Warranty: For special warranty.

1.5 CLOSEOUT SUBMITTALS

1.6 QUALITY ASSURANCE

A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful establishment of plants.

1. Experience: Three years' experience in landscape installation in addition to requirements in Section 014000 "Quality Requirements."
2. Installer's Field Supervision: Maintain an experienced full-time supervisor on Project site when work is in progress.
3. Pesticide Applicator: State licensed, commercial.

B. Provide quality, size, genus, species, and variety of plants indicated, complying with applicable requirements in ANSI Z60.1.

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1. Selection of plants purchased under allowances is made by Architect, who tags plants at their place of growth before they are prepared for transplanting.

C. Measurements: Measure in accordance with ANSI Z60.1. Do not prune to obtain required sizes.

1. Trees and Shrubs: Measure with branches and trunks or canes in their normal position. Take height measurements from or near the top of the root flare for field-grown stock and container-grown stock. Measure main body of tree or shrub for height and spread; do not measure branches or roots tip to tip. Take caliper measurements 6 inches above the root flare for trees up to 4-inch caliper size, and 12 inches above the root flare for larger sizes.
2. Other Plants: Measure with stems, petioles, and foliage in their normal position.

D. Plant Material Observation: Architect may observe plant material either at place of growth or at site before planting for compliance with requirements for genus, species, variety, cultivar, size, and quality. Architect may also observe trees and shrubs further for size and condition of balls and root systems, pests, disease symptoms, injuries, and latent defects and may reject unsatisfactory or defective material at any time during progress of work. Remove rejected trees or shrubs immediately from Project site.

1. Notify Architect of sources of planting materials seven days in advance of delivery to site.

1.7 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 compliance with state and Federal laws if applicable.

B. Bulk Materials:

1. Do not dump or store bulk materials near structures, utilities, or 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. Accompany each delivery of bulk materials with appropriate certificates.

C. Do not prune trees and shrubs before delivery. Protect bark, branches, and root systems from sun scald, drying, wind burn, sweating, whipping, and other handling and tying damage. Do not bend or bind-tie trees or shrubs in such a manner as to destroy their natural shape. Provide protective covering of plants during shipping and delivery. Do not drop plants during delivery and handling.

D. Handle planting stock by root ball.

E. Store bulbs, corms, and tubers in a dry place at 60 to 65 deg F until planting.

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F. Apply antidesiccant to trees and shrubs using power spray to provide an adequate film over trunks (before wrapping), branches, stems, twigs, and foliage to protect during digging, handling, and transportation.

1. If deciduous trees or shrubs are moved in full leaf, spray with antidesiccant at nursery before moving and again two weeks after planting.

G. Wrap trees and shrubs with burlap fabric over trunks, branches, stems, twigs, and foliage to protect from wind and other damage during digging, handling, and transportation.

H. Deliver plants after preparations for planting have been completed, and install immediately. If planting is delayed more than six hours after delivery, set plants and trees in their appropriate aspect (sun, filtered sun, or shade), protect from weather and mechanical damage, and keep roots moist.

1. Set balled stock on ground and cover ball with soil, peat moss, sawdust, or other acceptable material.
2. Do not remove container-grown stock from containers before time of planting.
3. Water root systems of plants stored on-site deeply and thoroughly with a fine-mist spray. Water as often as necessary to maintain root systems in a moist, but not overly wet condition.

1.8 FIELD CONDITIONS

A. Field Measurements: Verify actual grade elevations, service and utility locations, irrigation system components, and dimensions of plantings and construction contiguous with new plantings by field measurements before proceeding with planting work.

B. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with maintenance periods to provide required maintenance from date of Substantial Completion.

1. Spring Planting: 2/15 to 5/31 .
2. Fall Planting: 9/15 to 10/31 .

C. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions in accordance with manufacturer's written instructions and warranty requirements.

1.9 WARRANTY

A. Special Warranty: Installer agrees to repair or replace plantings and accessories that fail in materials, workmanship, or growth within specified warranty period.

1. Failures include, but are not limited to, the following:

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a. Death and unsatisfactory growth, except for defects resulting from abuse, lack of adequate maintenance, or neglect by Owner.
b. Structural failures, including plantings falling or blowing over.
c. Faulty performance of tree stabilization edgings .
d. Deterioration of metals, metal finishes, and other materials beyond normal weathering.

2. Warranty Periods: From date of Substantial Completion .
   a. Trees, Shrubs, Vines, and Ornamental Grasses: 12 months.
   b. Ground Covers, Biennials, Perennials, and Other Plants: 12 months.
   c. Annuals: .
3. Include the following remedial actions as a minimum:
   a. Immediately remove dead plants and replace unless required to plant in the succeeding planting season.
   b. Replace plants that are more than 25 percent dead or in an unhealthy condition at end of warranty period.
   c. A limit of one replacement of each plant is required except for losses or replacements due to failure to comply with requirements.
   d. Provide extended warranty for period equal to original warranty period, for replaced plant material.

PART 2 - PRODUCTS

2.1 PLANT MATERIALS

A. General: Furnish nursery-grown plants true to genus, species, variety, cultivar, stem form, shearing, and other features indicated in Plant List, Plant Schedule, or Plant Legend indicated on Drawings and complying with ANSI Z60.1; and with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock, densely foliated when in leaf and free of disease, pests, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.

1. Trees with damaged, crooked, or multiple leaders; with tight vertical branches where bark is squeezed between two branches or between branch and trunk ("included bark"); with crossing trunks; with cut-off limbs more than 3/4 inch in diameter; or with stem girdling roots are unacceptable.
2. Collected Stock: Do not use plants harvested from the wild, from native stands, from an established landscape planting, or not grown in a nursery unless otherwise indicated.

B. Provide plants of sizes, grades, and ball or container sizes complying with ANSI Z60.1 for types and form of plants required. Plants of a larger size may be used if acceptable to Architect, with a proportionate increase in size of roots or balls.

C. Root-Ball Depth: Furnish trees and shrubs with root balls measured from top of root ball, which begins at root flare in accordance with ANSI Z60.1.

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D. Labeling: Label at least one plant of each variety, size, and caliper with a securely attached, waterproof tag bearing legible designation of common name and full scientific name, including genus and species. Include nomenclature for hybrid, variety, or cultivar, if applicable for plant.

E. If formal arrangements or consecutive order of plants is indicated on Drawings, select stock for uniform height and spread, and number the labels to ensure symmetry in planting.

2.2 FERTILIZERS

A. Granular Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:

1. Composition:
   a. Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing laboratory.

B. Mycorrhizal Fungi: Dry, granular inoculant containing at least 5300 spores per lb of vesicular-arbuscular mycorrhizal fungi and 95 million spores per lb of ectomycorrhizal fungi, 33 percent hydrogel, and maximum of 5.5 percent inert material.

2.3 MULCHES

A. Organic Mulch: Free from deleterious materials and suitable as a top dressing of trees and shrubs, consisting of one of the following:

1. Type: Shredded hardwood Ground or shredded bark .
2. Size Range: 3 inches maximum, 1/2 inch minimum .
3. Color: Natural.

B. sieve; soluble-salt content of

2.4 HERBICIDES AND PESTICIDES

A. Pre-Emergent Herbicide (Selective and Nonselective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.

B. Post-Emergent Herbicide (Selective and Nonselective): Effective for controlling weed growth that has already germinated.

C. Pesticides: Registered and approved by the EPA, acceptable to authorities having jurisdiction, and of type recommended in writing by manufacturer for each specific

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problem and as required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.

2.5 TREE-STABILIZATION MATERIALS

2.6 TREE-WATERING DEVICES

A. Slow-Release Watering Device: Standard product manufactured for drip irrigation of plants and emptying its water contents over an extended time period ; manufactured from UV-light-stabilized nylon-reinforced polyethylene sheet, PVC, or HDPE plastic.

1. Color: As selected by Architect from manufacturer's full range .

2.7 MISCELLANEOUS PRODUCTS

A. Antidesiccant: Water-insoluble emulsion, permeable moisture retarder, film forming, for trees and shrubs. Deliver in original, sealed, and fully labeled containers and mix in accordance with manufacturer's written instructions.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas to receive plants, with Installer present, for compliance with requirements and conditions affecting installation and performance of the Work.

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 a planting area.
2. Verify that plants and vehicles loaded with plants can travel to planting locations with adequate overhead clearance.
3. Suspend planting operations during periods of excessive soil moisture until moisture content reaches acceptable levels to attain required results.
4. Uniformly moisten excessively dry soil that is not workable or which is dusty.

B. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove soil and contamination as directed by Architect and replace with new planting soil.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

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3.2 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities and turf areas and existing plants from damage caused by planting operations.

B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.3 PLANTING AREA ESTABLISHMENT

A. General: Prepare planting area for soil placement and mix planting soil in accordance with Section 329113 "Soil Preparation."

B. Placing Planting Soil: Blend planting soil in place .

C. Before planting, obtain Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

D. Application of Mycorrhizal Fungi: At time directed by Architect, broadcast dry product uniformly over prepared soil at application rate in accordance with manufacturer's written instructions .

3.4 EXCAVATION FOR TREES AND SHRUBS

A. Planting Pits and Trenches: Excavate circular planting pits.

1. Excavate planting pits with sides sloping inward at a 45-degree angle. Excavations with vertical sides are unacceptable. Trim perimeter of bottom leaving center area of bottom raised slightly to support root ball and assist in drainage away from center. Do not further disturb base. Ensure that root ball will sit on undisturbed base soil to prevent settling. Scarify sides of planting pit smeared or smoothed during excavation.
2. Excavate approximately three times as wide as ball diameter for balled and burlapped container-grown stock.
3. Excavate at least 12 inches wider than root spread and deep enough to accommodate vertical roots for bare-root stock.
4. Do not excavate deeper than depth of root ball, measured from the root flare to the bottom of root ball.
5. If area under the plant was initially dug too deep, add soil to raise it to correct level and thoroughly tamp the added soil to prevent settling.
6. Maintain angles of repose of adjacent materials to ensure stability. Do not excavate subgrades of adjacent paving, structures, hardscapes, or other new or existing improvements.
7. Maintain supervision of excavations during working hours.
8. Keep excavations covered or otherwise protected after working hours when unattended by Installer's personnel.

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9. If drain tile is indicated on Drawings or required under planting areas, excavate to top of porous backfill over tile.

B. Backfill Soil: Subsoil and topsoil removed from excavations may be used as backfill soil unless otherwise indicated.

C. Obstructions: Notify Architect if unexpected rock or obstructions detrimental to trees or shrubs are encountered in excavations.

1. Hardpan Layer: Drill 6-inch- diameter holes, 24 inches apart, into free-draining strata or to depth of 10 ft., whichever is less, and backfill with free-draining material.

D. Drainage: Notify Architect if subsoil conditions evidence unexpected water seepage or retention in tree or shrub planting pits.

E. Fill excavations with water and allow to percolate away before positioning trees and shrubs.

3.5 TREE, SHRUB, AND VINE PLANTING

A. Inspection: At time of planting, verify that root flare is visible at top of root ball in accordance with ANSI Z60.1. If root flare is not visible, remove soil in a level manner from root ball to where the top-most root emerges from the trunk. After soil removal to expose root flare, verify that root ball still meets size requirements.

B. Roots: Remove stem girdling roots and kinked roots. Remove injured roots by cutting cleanly; do not break.

C. Balled and Burlapped Stock: Set each plant plumb and in center of planting pit or trench with root flare 1 inch above adjacent finish grades.

1. Backfill: Planting soil .
2. After placing some backfill around root ball to stabilize plant, carefully cut and remove burlap, rope, and wire baskets from tops of root balls and from sides, but do not remove from under root balls. Remove pallets, if any, before setting. Do not use planting stock if root ball is cracked or broken before or during planting operation.
3. Backfill around root ball in layers, tamping to settle soil and eliminate voids and air pockets. When planting pit is approximately one-half filled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed.
4. Distribute granular fertilizer around each planting pit when pit is approximately one-half filled. Do not place in bottom of the hole.
   a. Quantity: Three for each caliper inch of plant .
5. Continue backfilling process. Water again after placing and tamping final layer of soil.

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D. Container-Grown Stock: Set each plant plumb and in center of planting pit or trench with root flare 1 inch above adjacent finish grades.

1. Backfill: Planting soil .
2. Carefully remove root ball from container without damaging root ball or plant.
3. Backfill around root ball in layers, tamping to settle soil and eliminate voids and air pockets. When planting pit is approximately one-half filled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed.
4. Distribute granular fertilizer around each planting pit when pit is approximately one-half filled. Do not place in bottom of the hole.
5. Continue backfilling process. Water again after placing and tamping final layer of soil.

E. Slopes: When planting on slopes, set the plant so the root flare on the uphill side is flush with the surrounding soil on the slope; the edge of root ball on the downhill side will be above the surrounding soil. Apply enough soil to cover the downhill side of root ball.

3.6 TREE, SHRUB, AND VINE PRUNING

A. Do not heavily prune the tree at planting. Prune only crossover limbs, co-dominant leaders, and broken or dead branches. Some interior twigs and lateral branches may be pruned; however do not remove the terminal buds or branches that extend to the edge of the crown.

B. Do not apply pruning paint to wounds.

3.7 INSTALLATION OF TREE-STABILIZATION MATERIALS

A. Trunk Stabilization by Staking and Guying: Install trunk stabilization as follows unless otherwise indicated on Drawings. Stake and guy trees more than 14 ft. in height and more than 3 inches in caliper unless otherwise indicated.

1. Site-Fabricated, Staking-and-Guying Method: Install no fewer than three guys spaced equally around tree.
   a. Securely attach guys to stakes 30 incheslong, driven to grade. Adjust spacing to avoid penetrating root balls or root masses. Twist wire to tighten securely.
   b. For trees more than 6 inches in caliper , anchor guys to wood deadmen buried at least 30 inches below grade. Provide turnbuckle for each guy wire and tighten securely.
   c. Support trees with guy cable or multiple strands of tie wire, connected to 12" rubber hose at contact points with tree trunk and reaching to turnbuckle . Allow enough slack to avoid rigid restraint of tree.
   d. Attach flags to each guy wire, 30 inches above finish grade.

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3.8 GROUND COVER AND PLANT PLANTING

A. Set out and space ground cover and plants other than trees, shrubs, and vines as indicated on Drawings in even rows with triangular spacing.

B. Use planting soil as per soils plan for backfill.

C. Dig holes large enough to allow spreading of roots.

D. For rooted cutting plants supplied in flats, plant each in a manner that minimally disturbs the root system but to depth not less than two nodes.

E. Work soil around roots to eliminate air pockets and leave slight saucer indentation around plants to hold water.

F. Water thoroughly after planting, taking care not to cover plant crowns with wet soil.

G. Protect plants from hot sun and wind; remove protection if plants show evidence of recovery from transplanting shock.

3.9 INSTALLATION OF MULCHES

A. Mulch backfilled surfaces of planting areas and other areas indicated.

1. Trees and Treelike Shrubs in Turf Areas: Apply organic mulch ring of 2-inch average thickness, with radius per detail around trunks or stems. Do not create a mulch cone or place mulch within 3 inches of trunks or stems.
2. Organic Mulch in Planting Areas: Apply 2-inch average thickness of organic mulch extending 12 inches beyond edge of individual planting pit or trench and over whole surface of planting area, and finish level with adjacent finish grades. Do not place mulch within 3 inches of trunks or stems.
3. Mineral Mulch in BMP Planting Areas: Apply 2-inch average thickness of mineral mulch extending 12 inches beyond edge of individual planting pit or trench and over whole surface of planting area, and finish at edge of bmp. Do not place mulch within 3 inches of trunks or stems.

3.10 INSTALLATION OF LANDSCAPE EDGINGS

A. Shovel-Cut Edging: Separate mulched areas from turf areas with 45-degree, 4- to 6-inch-deep, shovel-cut edge as indicated on Drawings.

3.11 INSTALLATION OF TREE-WATERING DEVICES

A. Provide one device for each tree.

B. Place device on top of the mulch at base of tree stem and fill with water in accordance with manufacturer's written instructions.

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3.12 APPLICATION OF HERBICIDES AND PESTICIDES

A. Pre-Emergent Herbicides (Selective and Nonselective): Apply to tree, shrub, and ground-cover areas in accordance with manufacturer's written instructions. Do not apply to seeded areas.

B. Post-Emergent Herbicides (Selective and Nonselective): Apply only as necessary to treat already-germinated weeds and in accordance with manufacturer's written instructions.

C. Apply pesticides and other chemical products and biological control agents according to authorities having jurisdiction and in accordance with manufacturer's written instructions. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner before each application is performed.

3.13 PLANT MAINTENANCE

A. Maintain plantings by pruning, cultivating, watering, weeding, fertilizing, mulching, restoring planting saucers, adjusting and repairing tree-stabilization devices, resetting to proper grades or vertical position, and performing other operations as required to establish healthy, viable plantings.

B. Fill in, as necessary, soil subsidence that may occur because of settling or other processes. Replace mulch materials damaged or lost in areas of subsidence.

C. Apply treatments as required to keep plant materials, planted areas, and soils free of pests and pathogens or disease. Use integrated pest management practices when possible to minimize use of pesticides and reduce hazards. Treatments include physical controls such as hosing off foliage, mechanical controls such as traps, and biological control agents.

3.14 REPAIR AND REPLACEMENT

A. Repair or replace existing or new trees and other plants that are damaged by construction operations, in a manner approved by Architect.

1. Submit details of proposed pruning and repairs.
2. Perform repairs of damaged trunks, branches, and roots within 24 hours, if approved.
3. Replace trees and other plants that cannot be repaired and restored to full-growth status, as determined by Architect.

B. Remove and replace trees that are more than 25 percent dead or in unhealthy condition before end of corrections period or are damaged during construction operations that Architect determines are incapable of restoring to normal growth pattern.

1. Provide new trees of same size as those being replaced for each tree of 6 inches or smaller in caliper size.

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2. Provide two new tree(s) of 6-inch caliper size for each tree being replaced that measures more than 6 inches in caliper size.
3. Species of Replacement Trees: Species selected by Architect .

3.15 CLEANING AND PROTECTION

A. During planting, keep adjacent paving and construction clean and work area in an orderly condition. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.

B. Remove surplus soil and waste material including excess subsoil, unsuitable soil, trash, and debris and legally dispose of them off Owner's property.

C. Protect plants from damage due to landscape operations and operations of other contractors and trades. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged plantings.

D. After installation and before Substantial Completion, remove nursery tags, nursery stakes, tie tape, labels, wire, burlap, and other debris from plant material, planting areas, and Project site.

E. At time of Substantial Completion, verify that tree-watering devices are in good working order and leave them in place. Replace improperly functioning devices.

END OF SECTION 32 93 00

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Section 32 94 00
Grounds Maintenance Services
Add Alternate No. 1

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. The following landscape maintenance specification and duration are noted below and begin immediately after Substantial Completion.

1. Year 1 – 5 (Add Alternate No. 1)

1.2 RELATED DOCUMENTS

A. See “Landscape Maintenance Task and Frequency Schedule Matrix” at the end of this document.

B. Refer to the following sections for more information:

1. Section 329200 “Turf and Grasses”
2. Section 329300 “Plants”

1.3 SUBMITTALS

A. Qualification Data.
   a. Contractor to submit qualifications and proven experience for maintaining projects of similar scale and scope for extended periods of time.

1.4 SUMMARY

A. The scope of maintenance work will include the following components:

1. All general conditions required Owner
2. Planting Bed Maintenance
3. Native Seed Areas
4. Fertilization
5. Mulching
6. Watering/Irrigation
7. Weed Control
8. Insect and Disease Control
9. Pruning
10. Storm Debris Removal
11. Leaf Removal
12. Replacement of Plants

13. Litter Control
14. Seasonal Soils Test for Planting Areas

B. The contractor shall perform all required work, and shall provide and furnish all labor, materials, necessary tools, equipment, and utility and transportation services to provide grounds maintenance service on property designated by Owner. It is understood and agreed that said labor, materials, tools, equipment and service will be furnished, and said work performed and completed under the direction and supervision of Owner's Representative. It is also understood and agreed that the labor, materials, tools equipment, services and performance of work will be subject to the approval of Owner's Representative.

C. The contractor shall be responsible for all supervision required to satisfactorily perform the requirements of the contract.

D. The contractor shall provide all equipment, labor and other materials necessary to perform the services indicated.

E. The agreement for the work to be performed may be terminated by the Owner/Owner's representative(s) should they determine the contractor has not satisfactorily completed the work assigned. Notice of contract termination must be made in writing. A minimum of 30 days notification is necessary to terminate contract.

F. It is understood that the contractor is an independent contractor and neither he/she nor his/her employees shall represent themselves as either employees or agents of the Owner.

G. Any person employed by the contractor who, in the opinion of the Owner or Owner's representative, does not perform satisfactorily or is intemperate or rude to patrons or employees of the Owner, shall at the written request of the Owner be removed from further employ in any portion of the contract.

H. Maintenance contractor is to obtain a list of special events from Owner's Representative to avoid any conflicts with maintenance operations and shall adjust schedule as necessary.

1.4 QUALITY ASSURANCE

A. Contractor shall specialize in landscape maintenance with a minimum of five years experience in the field. Contractor must have on staff the following individual(s): a horticulturist, botanist or like-trained individual able to demonstrate knowledge of best horticultural practices and best maintenance practices; a state certified chemical/pesticide applicator; a certified arborist.

B. The contractor shall not engage or use the services of subcontractors in performing the contract, unless noted and approved by and the Owner/Owner's representative(s).

C. Application of fertilizers and pesticides shall be performed by a licensed applicator. Contractor must provide services based on State and municipal requirements. The contractor shall not apply chemicals that would pose a risk to the public, wildlife, or vegetation.

D. The contractor shall be held responsible for any damage, breakage and/or loss of Owner's signage, buildings, irrigation or vegetation (i.e. trees), or any loss incurred to adjacent property, buildings, or vegetation through the negligence of the contractor or his/her employees while working on site.

E. Any and all accidents (both personal injury and private property damage) are to be reported to Owner/Owner's representative(s) as soon as possible.

F. The Owner assumes no liability for personal injury or property damage resulting from the performance of the contracted services.

G. To prevent disputes and litigation, it is mutually agreed that the Owner/Owner's Representative, in all cases, determines all questions that may arise relevant to the performance of the work and the adequacy of the personnel, equipment, vehicles and material covered under this agreement.

H. The contractor shall provide supervision of work crews at all times while performing work under this contract. Personnel supervision is not required, if equipment or other means are provided that enable the work crew to communicate with the contractor at all times.

I. Contractor will attend a mandatory pre-bid conference and site inspection. Adjustments to contract price shall NOT be made due to differences between Owner/Owner's representative and contractor site interpretations.

PART 2 - PRODUCTS

2.1 FERTILIZER

A. Turf areas:

1. Balanced, complete, slow-release fertilizer.

B. Shrubs

1. Balanced, complete, slow-release fertilizer.

2.2 MULCH

A. Per specifications, mulch shall be:

1. Shredded hardwood or double-ground, well decomposed, size range not greater than 2".

2.3 HERBICIDES

A. General: Pesticide 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 pesticides unless authorized in writing by authorities having jurisdiction.

B. Pre-Emergent Herbicide (Selective and Non-Selective): Effective controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.

C. Post-Emergent Herbicides (Selective & Non-Selective): Effective for controlling weed growth that has already germinated.

PART 3 – EXECUTION

3.1 GENERAL SERVICES

A. Contractor shall be responsible for appearance and conduct of his/her employees at all times. Contractor's employees shall wear uniform shirts while performing grounds maintenance duties for the Owner. Pants may not be cut-offs, hats worn forward.

B. All work being performed under this contract shall be done in accordance with Federal and State labor laws and will adhere to O.S.H.A. regulations.

C. Contractor employees shall wear orange safety vests at all times. Reasonable care shall be taken when working in the vicinity of people, vehicles, buildings and property.

3.2 SPRING AND FALL CLEAN-UP: Beds not including native plant areas

A. Spring Clean-Up: Complete a visual inspection of all existing plants and planting areas. Make note of necessary plant replacements and bare areas. Propose replacements as necessary. Remove trash and fallen branches. Trim back grasses, and dead plant growth and dispose of all materials properly. Beds shall be weed free. Loosen last season's mulch and add enough mulch to maintain a maximum of 3" deep layer of mulch. All beds without metal edger shall be edged with a spade cut edge. Any plants prone to disease or insect problems should be treated at this time.

B. Fall Clean-Up: Complete a visual inspection of all existing plants and planting areas. Make note of necessary plant replacements and bare areas. Propose replacements as necessary. Remove trash and fallen branches. Trim dead plant growth and dispose of all materials properly. DO NOT trim ornamental grasses until early spring. Loosen last season's mulch and add enough mulch to maintain a maximum of 3" deep layer of mulch. All beds without metal edge shall be edged with a spade cut edge.

3.3 SITE INSPECTION

A. A site inspection will be performed at intervals as identified on the Landscape Maintenance Matrix. Trash, debris (including tree limbs), and hazards shall be removed during each site visit. All leaves, trash and debris shall be removed from the site upon completion of each inspection, and disposal shall be the responsibility of the contractor.

B. At Owner's representative(s) request, the contractor shall provide inspection services and trash, debris and hazard clean-up services on a special basis. These clean-ups will be in addition to the pre-established inspection schedule and contracted fee.

3.4 SOILS TESTS

A. Soils samples shall be taken annually in the same locations. Tests shall be compared to original results and soils shall be amended until they reach ideal conditions. In addition, if plant materials are in declining state, anywhere on the site, and no insect or disease problems are evident the contractor shall take a soil sample from the affected planting bed or lawn area and obtain a soils test. A copy of the soils report with recommendations shall be given to the Owner's representative. The contractor shall amend the soils as necessary to ensure proper growing conditions for the affected plant material.

3.5 MULCHING

A. Contractor shall provide and maintain mulch around trees, shrubs and landscaped areas to a depth of 3" max. When replacing or adding to existing mulch, mulch shall be shredded hardwood or double-ground, well decomposed mulch. Dyed mulch is not acceptable. Mulch shall not touch the trunks of trees or be laid over the tops of existing plant material.

3.6 WEED CONTROL

A. Contractor shall provide weed control in all landscaped areas. Contractor shall hand pull weeds from mulched areas including annual plantings. Weed removal from mulch shall occur concurrently with mowing of the adjacent grass area during each cycle. Mulched areas not associated with mowed areas shall be weeded once every 7-calendar day cycle. If appropriate, Contractor may utilize "Round Up" herbicide or similar product approved by the Owner's representative and must ensure no damage to existing plant material will occur.

3.7 TREE CARE

A. All newly installed trees are to be watered in the spring and fall with BioPlex "Technical Transplant Concentrate and Plant Enhancer per manufacturer's specifications. BioPlex phone number: 1-800-441-3573.

B. Contractor shall monitor all newly planted trees for signs of stress, including insect or disease problems. Trees shall also be protected from animal damage and lawn care equipment injury. The staff arborist should be contacted if a problem exists with or injury occurs to any tree.

C. Contractor shall provide pest control on an as needed basis with prior notification to the Owner's representative. Always consider the least toxic method of pest control as a priority. Pest control shall include, but not be limited to web worms, fire blight, bag worms, bores and fungi, and will be applied by a licensed professional.

D. Pruning:

1. Trees should be pruned selectively when necessary. Pruning should occur only to remove dead, diseased, broken, dangerous or crossing branches.

2. Trimming shall occur at appropriate time to maximize tree productivity, maximize flower production, and minimize tree stress; before bud break for most species.

3. All sucker growth from trunks and at the bases of trees shall be removed to maintain a clean appearance.

4. Tree topping and/or heading back will not be permitted in any form. Contractor will be responsible for replacement trees, or cost of proper/corrective pruning, if trees are "Topped" or "Headed Back."

5. A licensed arborist shall be responsible for all tree pruning.

3.8 SHRUB CARE

A. Trim all shrubs selectively. Trimming shall occur at appropriate time to maximize shrub productivity; late winter or early spring, before bud break, for most species. Pruning should be delayed for most spring-blooming shrubs until immediately after flowering to avoid reducing the floral display.

B. Contractor shall provide pest control on an as needed basis with prior notification to the Owner's representative. Always consider the least toxic method of pest control as a priority. Pest control shall include, but not be limited to web worms, fire blight, bag worms, bores and fungi, and will be applied by a licensed professional.

C. Contractor shall fertilize all shrub planting bed areas. Fertilizer shall be of slow release variety. Make two applications of a balanced complete fertilizer, to be applied at the rate of ½ pound of nitrogen per 1000 square feet. One application to be made in the spring and the second application to be done in the early fall. The Contractor shall modify the fertilizer program to correct nutrient deficiencies as reported by soils testing.

D. Pruning

1. Shrub pruning shall occur at appropriate time to maximize shrub productivity.

2. All shrubs shall be pruned in accordance with generally accepted standards for proper pruning.

3. All shrubs shall receive either thinning or renewal pruning and shall not be "Headed Back" or "Sheared." Contractor will be responsible for replacement of shrubs, or cost of proper/corrective pruning if shrubs are "Headed back" or "Sheared."

3.9 NATIVE SEED AREAS

A. Year One
   1. Mow native seeded areas three times throughout course of the season. Mowing to be timed to provide control of annual weeds from producing seed. Timing of mowing should be at time of flower for seasonal annual weeds. In general mowings maybe 6-10 weeks apart. Mow no shorter than 6".
   2. Spot treatment with herbicides is also an acceptable method of weed control with mowing. Stewardship visits can be in conjunction with or independent of mowing events. Applications should target newly emerged annual and perennial weed species not desired in final planting matrix. Herbicide applications may be made with selective or non-selective herbicides as appropriate.
   3. Stewardship visits to native area to average every 4-6 weeks throughout initial growing season – April – October.

B. Year Two
   1. Overseed as necessary to ensure full coverage and germination.
   2. Area to be mowed as many as two times to aid in managing flowering weed species. Mow height to be not less than 6". Stewardship visits can be in conjunction with or independent of mowing events. Applications should target newly emerged annual and perennial weed species not desired in final planting matrix. Herbicide applications may be made with selective or non-selective herbicides as appropriate.
   3. Spot treatment with herbicides is also an acceptable method of weed control with mowing. Stewardship visits to native area to average every 6-8 weeks throughout initial growing season – April – October.

C. Year Three
   1. Early Spring Mowing of entire site (February- March).
   2. Area to be mowed as many as two times to aid in managing flowering weed species. Mow height to be not less than 6". Stewardship visits can be in conjunction with or independent of mowing events. Applications should target newly emerged annual and perennial weed species not desired in final planting matrix. Herbicide applications may be made with selective or non-selective herbicides as appropriate.
   3. Spot treatment with herbicides is also an acceptable method of weed control if a significant establishment or aggressive invasive is identified. Stewardship visits to native area to average every 6-8 weeks throughout initial growing season – April – October.

3.11 PLANT REPLACEMENT

A. The contractor shall provide plant replacement on an as needed basis with prior notification to the Owner's representative. The contractor shall identify any dead or damaged plant material during the maintenance visits to the site. A list of plant material identified as dead or severely damaged shall be provided to the Owner, along with costs for removal and proper disposal of the dead or damaged material. The contractor shall

also provide a list of time and materials necessary for plant replacement. Plant replacements shall be made per industry standards.

3.12 WATERING

A. Contractor shall keep all planted trees, shrubs, ornamental grasses, and seeded areas watered as necessary to ensure optimal plant growing conditions.
B. Contractor shall ensure all plants receive a minimum of 1 inch of water per week.

C. Contractor shall immediately notify the Owner's representative if there is water ponding or pooling in turf areas or planting beds. Contractor shall be responsible for plant material loss due to over or under watering.

C. One Hose bib will be available on the restroom wall and one at the drinking fountain and a quick coupler at the Lone Elm lot. Remote areas on the site will need to be watered by water truck.

3.13 DRAINAGE SYSTEMS

A. Area drains in landscape beds and area drains in lawn areas shall be checked on a weekly basis to ensure that are kept free and clear of debris and other impediments of proper water flow and drainage.

PART 4 – PAYMENT

4.1 - PAYMENT

A. Payment for work completed shall be conditional upon the approval of the Owner/Owner's representative(s). The contractor shall submit an invoice itemizing services provided to the Owner/Owner's representative(s) on a monthly basis. The sum of the monthly invoice shall be based upon an even distribution of the total contract amount. Contractor will receive payment within forty-five (45) days after approval of invoice.

PLANT SCHEDULE MAINTENANCE TASK MATRIX

Time	Dec	Jan	Feb	March	April	May	June	Jul	Aug	Sep	Oct	Nov	Total
Functions													
Planting Maintenance													
Tree and shrub fertilization				1							1		2
Tree pruning		1											1
Shrub pruning					1						1		2
Mulch application – standalone trees				1									1
Mulch application – planting beds				1								1	2
Weed control application					1	1	1	1	1	1	1		7
Fertilization				1						1			2
Bi-Weekly Bed Maintenance					2	2	2	2	2	2	2		14
Deadheading							1	1		1			3
Weekly site inspection and clean-up	0	0	2	5	4	4	5	4	5	4	4	5	42
Spring cleanup				1									1
Fall cleanup												1	1
Tree & shrub insecticide				1						1			2
Native Seeded Areas *													
Mowing (as noted per year)*													
Spot Treatment for Weeds* (as necessary)													
Watering													
This schedule is an estimate and a minimum for the first growing season. Water New Plantings as needed to provide a minimum of 1 inch of water per week. Schedule will vary in future years and based on weather conditions. Contractor is responsible for monitoring plants and adjust times according to conditions and weather.				4	4	4	5	8	8	4	2		39

Note: Month when work to be done is approximate. Some quantities per month will vary per year/weather conditions. Plan for total quantities shown per year.

END OF SECTION 32 94 00

Job Special Provisions

These Job Special Provisions supplement and amend the Technical Specifications and Standard Specifications.

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A: General

1. Contractor is responsible for all construction staking required to complete the project. The contractor must protect and preserve the established benchmarks, monuments, and survey markers. The contractor is solely responsible for the replacement of altered or destroyed survey references within the limits of construction. Existing property pins and offsets have been labeled on the drawings for re-establishment purposes.
2. Digital plan files will be provided prior to awarding to the successful bidder.
3. Contractor shall be licensed to work in the City of Joplin.
4. Clearing, Grubbing, Tree Removal and Brush Removal Shall be in accordance with section 1100 of the current approved City of Joplin, Standard Specifications except as modified hereafter.
5. Lead Remediation: Any excavation done on a City project is subject to Lead and Cadmium testing. No soil is to be hauled off site without first being tested. All contaminated excavated material will be the property of the contractor, and it will be the responsibility of the contractor to dispose of it in accordance with required regulations. Transportation and disposal of all contaminated soil shall be measured per cubic yard of deposited material. Payment shall be at the unit price stated in the Bid Schedule and shall constitute payment for the additional hauling and disposal necessary to complete this section. Since the quantity of contaminated soil is unknown, the Bid Schedule includes a unit price and quantity for the purpose of comparing bids. The unit price set forth in the Bid Schedule for the transportation and disposal of contaminated material shall not be adjusted based on the actual quantity. The final quantity and contract price shall be adjusted based upon the actual volume of contaminated material disposed. Measurement and payment will only be made if the material is found to be contaminated. If the material is not contaminated it shall be considered unclassified and shall be disposed of by the contractor at the contractor's expense. The disposal of unclassified material is subsidiary to other items of work. A city-owned site 1500 feet east of Schifferdecker Avenue on the north side of West Perkins Street will be used for the disposal of contaminated material.
6. The following are requirements for insurance to be on file in City Finance Dept.:
   a. Employer's Liability – Unlimited (as per RSMO 287.010 et seq.)
   b. Worker's Compensation – Statutory
   c. Public Liability Insurance to include premises operation, products and completed operations, Contractual Liability, Broad Form Property Damage, Independent Contractors, Explosion Collapse and Underground Property Damage – Limit of $3,258,368.00 for all claims arising out of a single accident or occurrence and $488,755.00 for any one person in a single accident or occurrence.
7. Wage rates for this project shall be in accordance with wage rate determination made by the Missouri Department of Labor and Industrial Relations on file in the Department of Public Works or Davis-Bacon U.S. Department of Labor wage rates, whichever is higher. The wage rates applicable to this project have been predetermined as required by law and are set forth in the building specifications and are to be considered as a part of this Notice to Contractors.

8. Contractors are cautioned that unbalanced bids can be rejected. The City reserves the right to reject or delete any part of the bid.
9. The City will issue a notice to proceed after the signing of the contract.
10. Contractors shall abide by the requirements set by the United States Access Board for ADA guidelines and standards (ADAAG) by following the ADAAG standards for Public Right of Ways (PROWAG). The contractor is required to familiarize themselves with the PROWAG guidelines, latest edition. Details provided on the plans are designed to the new requirements but due to lack of survey information the contractor needs to verify in the field that all slope requirements can be met. If the requirements cannot be met then it is the responsibility to notify the City Engineer immediately for redesign or an alternative slope requirement within the PROWAG guidelines.
11. Bidder hereby agrees to commence work under this contract on or before a date to be specified in the Notice to Proceed, and to fully complete the project awarded to them within Two Hundred Seventy (270) consecutive calendar days thereafter.
12. Sales Tax Exemption: Senate Bill 477 has expanded the provisions of Section 144.062 of the Revised Statutes of Missouri (RSMo) to allow contractors to make tax-free purchases of materials and equipment for projects owned by tax-exempt entities. This change in Section 144.062 RSMo became effective on August 28, 1994. Purchases of construction materials, by the Contractor, for this project are exempt from sales tax. Prior to being eligible for this exemption, the attached “Missouri Project Exemption Certificate” must be completed by the Owner and presented to the Contractor. For more information about this exemption, the bidder may contact the Missouri Department of Revenue, Technical Support Section, Jefferson City, Missouri (573-751-2836).

B: Contractor’s Work Schedule

1. In all cases, the contractor shall notify the City sufficiently in advance of operations. The Contractor will not be permitted to begin operations without prior approval by the City.
2. The contractor will only be allowed to perform construction activities Monday through Friday between 7:00 am and 5:00 pm excluding federally recognized holidays. Any work done at any other time must be scheduled with and approved by the Engineer at least two (2) working days prior to commencing such work.

C: Utility Coordination

The Contractor must coordinate all activities with all Utilities within the project limits prior to construction of the Work and while any Utility is on site and performing work. The Contractor remains responsible for work progress and the progress of those parties working on the construction site, including Utilities.

D: Utility Services

The Contractor must coordinate and bear all cost and permit responsibilities for utility connections shown on the Plans.

Utility services must be constructed in accordance with City and Utility Company standards.

E: Stormwater Pollution Prevention Plan

1.0 Description. The work in this JSP consists of furnishing all labor and materials necessary to design, permit, implement, maintain, and remove all components of the Stormwater Pollution Prevention Plan (SWPPP). Maintenance of the SWPPP includes adjustments to the SWPPP deemed necessary by the Engineer and any adjustments necessary to control and prevent stormwater pollution due to activities related to the Project.

2.0 Material.

2.1 Apply for and obtain a land disturbance permit from the City of Joplin.

2.2 All material must be in accordance with the Standard Specifications and the City of Joplin Stormwater Management Criteria (City Criteria).

3.0 Construction Requirements.

3.1 The SWPPP must meet all applicable requirements of the City Criteria.

3.2 Design, install, and maintain the SWPPP and BMPs during construction as necessary to prevent illicit discharges. Adjust the SWPPP as directed by the Engineer and as necessary to prevent stormwater pollution. At an appropriate time after project completion, and only after all disturbed areas are fully vegetated or otherwise permanently protected from erosion, remove SWPPP BMPs. Contractor must maintain all BMPs until removal.

3.3 Contractor must submit the SWPPP to the Engineer for approval no later than seven days prior to mobilization.

3.4 Contractor must inspect all BMPs weekly and after rainfall events of more than ½". Inspections must be performed by a City-qualified individual and reports must be provided to the Engineer, with copies kept in a binder on-site available to the Engineer and City personnel.

3.5 Temporary seeding shall be applied inl areas left open and undisturbed for more than five (5) days.

3.6 Permanent seeding with mulch, erosion control blankets, or turf reinforcement mats as shown on the Plans must be installed within five days of completion.

4.0 Basis of Payment. Payment for the SWPPP will be made in partial progress payments which will be considered full compensation for all expenses required to:

a) design a stormwater pollution prevention plan;
b) obtain all necessary land disturbance, erosion control, grading, and other permits;
c) implement and maintain the SWPPP as described in this Job Special Provision; and
d) remove the stormwater BMPs at the appropriate time.

F: Pedestrian Bridge

1.0 General

1.1 Scope. The Work in this JSP includes a fully engineered two-span half through truss (no overhead bracing) bridge of steel construction along with foundations and shall be regarded as minimum standards for design and fabrication. The work included in this JSP consists of design, permitting, fabrication, finishing, transporting, and installation of the steel truss bridge, including bearings, and design, permitting, and construction of foundations (abutments and piers). This JSP is based on products designed and manufactured by Contech Engineered Solutions LLC.

The Bridge crosses Turkey Creek, and Floodplain Development, Section 401, and Section 404 permits were obtained or applied for based on the Bridge envelope and configuration shown on the Plans. The contractor bears responsibility for permit modifications resulting from Bridge configurations outside of envelope shown on the Plans.

1.2 Definitions

- *Owner*: City of Joplin, Missouri
- *Engineer*: Civil & Survey, LLC
- *Contractor*: Entity who will be designing, installing, and/or purchasing, the bridge and its foundations.
- *Contractor's Foundation Engineer*. Engineering Entity or Firm retained by the Contractor to design and detail the foundation system.
- *Geotechnical Engineer*. Engineering Entity or Firm who is responsible for providing the Geotechnical information necessary to design the foundation system. The geotechnical report included in the Project Manual contains foundation recommendations, however the Contractor's Foundation Engineer must determine if they are suitable for use as a basis for foundation design.
- *Bridge Manufacturer*: Firm who will design and supply the bridge in accordance with this JSP.

1.3 Qualified Bridge Manufacturer

Each Contractor is required to identify their intended supplier as part of the bid submittal. Qualified Bridge Manufacturers must have at least 5 years of experience fabricating these types of structures and shall have an up to date quality certification by AISC per Section 14.1 of these specifications. All suppliers shall fabricate their product utilizing a modern fabrication facility owned and operated by the Bridge Manufacturer that includes the use of CNC beam drilling machines, no brokers are allowed.

Pre-Approved Bridge Manufacturer:
Contech Engineered Solutions LLC
1-800-338-1122
E-mail: info@conteches.com

Bridge Manufacturers, other than those listed above, may be used provided the Engineer receives a written request at least 10 days prior to the bid. The written request shall accompany the following information:

- Bridge Manufacturer's Product Literature,

- Name and resume of Bridge Manufacturer's design professional who will be signing and sealing the engineering submittals,
- Copy of current AISC certification,
- Representative copies of detailed drawings, field procedures, calculations, quality control manual, welder's certifications, proof of in-house C.W.I.,
- Listing of projects including owner, location, size, year of fabrication, contact person,
- Certification by the Bridge Manufacturer's Design Professional that the bridge proposed will be in accordance with all project development done up to the date of these specifications.

The above will be evaluated by the Engineer for accuracy and ability to provide the bridge in accordance with these specifications. Bridge Manufacturers other than those listed above may only be used if the Engineer provides written approval via addendum 5 days prior to the bid. The Engineer's ruling shall be final.

1.4 Bridge Manufacturer's Design Professional and Submittals

The Bridge Manufacturer shall have as a direct employee, an engineer who is experienced in bridge design to be in responsible charge of all engineering related task and design. The engineer shall have a minimum of 10 years of experience in bridge design and be a currently licensed civil or structural Professional Engineer in the State of Missouri and shall be the engineer who will seal and sign the plans.

Engineering drawings, 11x17 format, shall be prepared and submitted to the Contractor or Owner for their review after receipt of the order. Submittal drawings shall be unique drawings, prepared to illustrate the specific portion of the bridge being fabricated. All relative design information such as member size, ASTM/AASHTO material specification, dimensions necessary to fabricate and required welding shall be clearly shown on the drawings. Drawings shall have referenced details and sheet numbers. All drawings shall be stamped, signed and dated by the Bridge Manufacturer's Design Professional.

Structural calculations for the design of the bridge superstructure shall be prepared by the Bridge Manufacturer and submitted for review after receipt of the order. Calculations shall include complete design, analysis and code checks for the controlling members, connectivity and support conditions, truss stability checks, deck design, deflection checks, bearings and all splices.

1.5 Foundation Design and Submittals

The Contractor must provide foundation plans prepared by or under the direction of and sealed by a qualified and licensed engineer having a minimum of 10 years of experience in bridge design.

2.0 Applicable Codes and Standards

2.1 Governing Specifications

Bridge shall be designed in compliance with the AASHTO LRFD Guide Specifications for the Design of Pedestrian Bridges, 2009 (*AASHTO Ped*). Calculations shall be in accordance with this document, and formulas shall reference the appropriate sections.

Codes and standards enumerated in this section are not inclusive.

2.2 Other Reference Codes, Specifications and Standards

- AASHTO LRFD Bridge Design Specifications, 9th Edition, 2020 (*AASHTO LRFD*)
- AASHTO LRFD Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, First Edition, 2005 (*AASHTO Signs*)
- AISC Steel Construction Manual, 15th Edition, 2017 (*AISC*)
- ANSI/AISC 360-16 Specification for Structural Steel Buildings, 2016 *(AISC 360)*
- American Welding Society, Structural Welding Code, D1.1, 2015 (*AWS D1.1*)
- ASCE/SEI 7-10 Minimum Design Loads for Buildings and Other Structures, 2010 (*ASCE 7*)
- Setra Technical Guide for Footbridges, 2006 (Setra)
- ANSI/AWC NDC-2015 National Design Specification for Wood Construction, 2015 (*NDS*)
- Tropical Timbers of the World, US Forest Products Laboratory

The AASHTO LRFD Guide Specifications for the Design of Pedestrian Bridges shall control if any conflicting requirements occur with the Other Reference Documents and/or other local Codes.

1.1 Bridge System Type

3.1 Truss Style. The truss style shall be a Connector®. The vertical trusses shall be designed such that the top and bottom chord members are parallel for the entire length of bridge. The interior verticals of the trusses shall be perpendicular to the top face of the bottom chord and the end verticals of the trusses shall be plumb. Trusses shall be laid out such that diagonals shall be at an angle of 30-degrees or more with respect to the bottom chord.

3.2 Diagonal Style. The vertical truss shall use a single-diagonal, Pratt configuration, where all the diagonals are in tension for gravity loads.

3.3 Floor Beam Location. The bridge shall utilize an H-Section configuration where the ends of the floor beams are welded only to the interior face of the verticals. The distance from the top of deck to the bottom of the bottom chord shall be determined by the Bridge Manufacturer during final design.

4.0 Bridge Geometry

4.1 Span Length. The bridge span lengths shall be 60'-0" and 30’-0” (horizontal straight-line dimension) and measured from end to end of the bridge truss, not including the end dam, any deck extension or bearing that extends beyond the end of the truss.

4.2 Width. The bridge width shall be 10'-0" and shall be as measured from the inside face of structural truss elements at the deck level.

4.3 Top of Truss Height Above Deck. The top of the top chord shall not be less than 48" above the deck (measured from the high point of the deck). Note that this dimension may be exceeded due to truss height requirements for structural, deflection and vibration requirements.

4.4 Lower Steel Clearance.

The Bridge Manufacturer shall determine the distance from the top of the deck (measured from the

highest point of the deck) to the bottom of any steel member.

Beyond the face of the abutments or piers, no part of the bridge may extend below elevation 922.90.

4.5 Truss Bay Spacing. The number of bays and the dimensions of the panel points shall be determined by the Bridge Manufacturer.

4.6 Camber. A single simple-span bridge shall have a vertical camber dimension at the mid-span determined by the Bridge Manufacturer such that the deck slopes at any point on the bridge do not exceed the ADA requirements of 8.33%.

4.7 Elevation Difference.
The top of the decks shall be at the same elevation at each end of the bridge.

The slope grade at the ends of the bridge due to the combination of camber and elevation difference shall not be more than 4.8%.

5.0 Structural Design Loads

5.1 Dead Load. The bridge structure shall be designed for the total bridge weight including the final deck system.

5.2 Pedestrian Loading (PL). The bridge structure shall be designed for a uniform pedestrian loading of 90 psf. This loading shall be patterned to produce the maximum load effects. Consideration of dynamic load allowance is not required with this loading.

5.3 Vehicle Load (VL)
The superstructure and deck system shall be designed for each of the following concentrated/vehicular loads:

- A concentrated load of 1,000 pounds placed on any area 2.5' by 2.5' square.
- A single truck shall be placed to produce the maximum load effects and shall not be placed in combination with the pedestrian load. The dynamic load allowance need not be considered for this loading. The truck shall be the following: H5 vehicle (10,000 pound two-axle vehicle with 80% to rear axle).

5.4 Wind Load (WS)
Pedestrian bridges shall be designed for wind loads as specified in *AASHTO Signs*, Articles 3.8 and 3.9. The loading shall be based on a wind speed of 115 mph and applied over the exposed area in front elevations of both trusses including all enclosures.

In addition to the wind load specified above, a vertical uplift line load as specified in *AASHTO LRFD* Article 3.8.2 and determined as the force caused by a pressure of 20 psf over the full deck width, shall be applied concurrently. This loading shall be applied at the windward quarter point of the deck width.

5.5 Seismic (EQ). Seismic loads shall not be considered or included in the design.

5.6 Fatigue Load (FL). The fatigue loading shall be as specified in Section 11 of *AASHTO Signs*. The Natural Wind Gust specified in Article 11.7.1.2 need only be considered. The Truck-Induced Gust specified in Article 11.7.1.3 of *AASHTO Signs* shall not be considered.

5.7 Combination of Loads. The load combinations and load factors to be used shall be as specified in *AASHTO LRFD* Table 3.4.1-1.

6.0 Structural Design Criteria

6.1 Modeling. The bridge shall be modeled and analyzed utilizing a three-dimensional computer software which shall account for moments induced in members due to joint fixity where applicable. Moments due to both truss deflection and joint eccentricity must be considered. All loads listed in Section 5 of these specifications shall be applied to the model and analyzed appropriately.

6.2 Lateral Frame and Member Design.
The bridge shall be designed and proportioned such that appropriate lateral stiffness is provided locally and globally, to ensure that the structure is stable.

For bridges without any overhead members (Half-Through Trusses), the vertical truss members, the floor beams and their connections shall be proportioned to resist a lateral force applied at the top of the truss verticals at the center of the top chord. This lateral force shall be applied as an additional load to the top of the vertical at the center of the top chord, creating a cantilever moment, which is then added to the forces obtained from the three-dimensional model. The magnitude of this lateral force shall not be less than 0.01/K times the average factored design compressive force in the two adjacent top chord members increased by a factor of safety of 1.33.

The top chord shall be analyzed as a column with elastic lateral supports at the panel points, considering all moments due to in-plane and out-of-plane bending, along with moments due to eccentricities of the members.

The U-Frame Stiffness of the verticals and floor beams shall be as specified in *AASHTO Ped* Article 7.1.2, assuming that the vertical and floor beam connection is rigid. This means that the following must be met:

- On H-Section floor beam connections, the floor beam width shall be at least 80% of the vertical face width in order to prevent any deformation due to tube wall plastification of the vertical member faces under service loads. The connection design will be checked at Strength I & Strength III load combinations.
- On Underhung floor beam connections, the vertical width shall match the bottom chord width in order to transfer vertical moments through the walls of the bottom chord to the verticals with no deformation of the chord side walls due to sidewall yielding or crippling under service loads. The connection design will be checked at Strength I & Strength III load combinations.
- The vertical and floor beam members shall not be connected to faces of the bottom chord at a

90-degrees to one another.
- All fixed end moments in the floor beams and verticals due to floor beam rotations, in addition to the loads derived from a U-Frame analysis have been accounted for in the strength design of the connections.

The vertical and floor beam members shall be proportioned such that the effective length factor, K, used in the design of the top chord shall not be greater than 2.0.

The end verticals shall be designed as a simple cantilever to carry the loads obtained from the three-dimensional model, plus the cantilever moment due to a lateral load of 0.01 times the axial force in the end vertical, applied laterally at the top end of the end vertical at the center of the top chord.

The floor beams shall be sized for the forces obtained from a simple span, pinned end analysis, or from the forces obtained from the three-dimensional model, whichever controls.

The diagonals and brace diagonals shall be analyzed as pinned-end connection members.

Interior verticals shall be analyzed as pinned-end connections unless longitudinal forces are applied to the verticals such as when the brace diagonals are connected to floor beams on an H-Section floor beam configuration. When longitudinal forces are applied to the verticals they shall be analyzed as fixed-end connections.

All other members shall be analyzed as fixed-end connections.

HSS member connections shall be evaluated per the requirements of *AISC 360* Chapters J & K.

6.3 Deflections
The vertical deflection of the bridge due to the unfactored pedestrian live loading shall not exceed 1/360 of the span length.

The horizontal deflection of the bridge under unfactored wind loading shall not exceed 1/360 of the span length.

6.4 Fracture. The fracture toughness requirements and designation of Fracture Critical Member and Main Member designation are hereby waived for these structures.

6.5 Vibrations. Vibration of the structure shall not cause discomfort or concern to the users of the bridges. To assure this, the fundamental frequency (f) of the pedestrian bridge in the vertical direction, without live load, shall be greater than 3.0 hertz (Hz) to avoid the first harmonic. The fundamental frequency of the pedestrian bridge in the lateral direction, shall be greater than 1.3 Hz. If the fundamental frequency cannot satisfy these limitations, then the bridge should be proportioned such that either of the following criteria are satisfied:

$$f \geq 2.86 * \ln(180/W)$$

or

$$W \geq 180 * e^{(-0.35 * f)}$$

Where W is the weight of the bridge in kips and f is the fundamental frequency in the vertical direction in Hz.

7.0 Deck System

Deck to be comprised of Reinforced Concrete designed to span from floor beam to floor beam.

Reinforced concrete shall be normal weight concrete (145 pounds per cubic foot maximum) and shall have a minimum compressive strength of 4,500 psi at 28 days, with an air content of 6% +/- 1.5%.

Concrete mix design, materials, quality, mixing, placement, finishing and testing shall be in accordance with the requirements of Section 552 of Federal Highway Administration Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects (FP-14). FP-14 can be viewed or downloaded at: http://flh.fhwa.dot.gov/resources/specs

The surface of deck concrete shall be finished with a sidewalk finish per Section 552.14(c) of FP-14.

Stay-in-place galvanized (G90 coating) metal form deck shall be used and shall be designed to support the weight of the wet concrete plus a 20 pounds per square foot construction load. Form deck shall be shop attached to floor beams via self-drilling fasteners, welding or power actuated fasteners. Welding shall not be used on painted or galvanized bridges. The longitudinal sheet laps shall be attached with self-drilling self-tapping fasteners at 36-inch maximum spacing. The attachment of the form deck to the floor beams is only necessary to keep the form deck in place during transportation and during the concrete placement. The form deck is not to be used for diaphragm action or composite action and provides no structural benefit to the truss or the deck after the concrete is set. Metal form deck panels shall be of a length to span a minimum of two bays of the truss supports. The top of deck to bottom of form deck shall be as required to support the anticipated loads but shall not be less than 5".

The concrete deck shall be designed to span longitudinally from floor beam to floor beam and to support the loads specified in Section 5.0 of these specifications.

A distribution width of deck is allowed, to support the anticipated vehicle wheel loads. This distribution width (E in feet) shall be the narrower of the following:

E = 4 + .06S
Where S is the floor beam spacing minus one-half of the floor beam width.
One-half of the total driving width of the bridge deck.
0.75 times the lateral wheel spacing of the vehicle.
0.6S + Wheel Width
Where S is the floor beam spacing minus one-half of the floor beam width.
The Wheel Width (in inches) is $2.5*\sqrt{((0.01*P)/2.5)}$, where P is the wheel load in pounds

Reinforcing steel shall be ASTM A615 Grade 60 epoxy coated bars. All bar bends, anchorage and splices shall be in accordance with AASHTO Specifications. Top reinforcing shall have a minimum

clearance of 2" to the top of deck.

Bridge Manufacturer shall designate the estimated slab thickness and reinforcing requirements at time of quotation. These estimates are to be used for quoting purposes only. Actual quantities may vary during the final design process, with costs variances due to any changes to the quantities being the sole responsibility of the contractor. Contractor shall supply all concrete and reinforcing materials.

8.0 Materials of Construction

8.1 Structural Steel
All members of the truss and deck support system shall be fabricated from square or rectangular hollow structural shapes (HSS), with the exception that floor beams may be wide flange shapes. All open ends of end posts and floor support beams shall be capped. Drain holes shall be provided for all sections at the low point of the member that may become filled with water.

All bridges shall be fabricated using A847 for HSS sections and A588 for structural shapes and plates.

Minimum nominal thickness of primary hollow structural shapes shall be 1/4". Rolled shapes shall have a minimum thickness of 1/4"

8.2 Fasteners
Structural bolts used to field splice or connect all main members shall be ASTM F3125 Grade A325 Type 3 (Weathering). The nuts for these structural bolts shall be ASTM A563 Type 3 (Weathering).

Bolts used for the connection of a wood rub rail shall be 18-8 or 316 Stainless Steel, ¼” diameter carriage bolts.

Screws for the attachment of wood deck shall be steel, 5/16” diameter, six lobe drive, self-tapping screws. The screws shall have flat heads for the screws in the wood and round heads for the screws on the edge cover. The screws shall have a protective coating that will prevent corrosion due to contact with treated wood and environmental exposure.

Self-drilling fasteners for attachment of the form decking shall be #14 x 1” zinc plated hex washer head Tek screws.

Power Actuated fasteners shall be Hilti sheet metal nail X-ENP-19 fastener.

9.0 Finish. For corrosion resistant high-strength low-alloy (weathering) steel no surface finish treatment is necessary. All exposed surfaces of structural steel to be cleaned in accordance with Steel Structures Painting Council Surface Preparation Specifications No. 7, SSPC -SP7 brush-off

blast cleaning. Exposed surfaces of steel shall be defined as those surfaces seen from the deck or from the outside and bottom of the structure. All other surfaces to have standard mill finish. The steel will be allowed to form a protective weathering patina over time.

10.0 Attachments

10.1 Safety Rails

Safety rail system shall be placed on the inside of the structure, spaced so as to prevent a 4-inch sphere from passing through the side truss for the full height of the side truss, or 48 inches, whichever is less. The top of the top chord may be considered the top of the rail system.

Rail system shall consist of vertical pickets in between horizontal top and bottom rails. The top and bottom horizontal rail shall be HSS 1 x 1 x 1/8 welded directly to the truss verticals. In between these rails, vertical pickets shall be ½" round bar welded to the top and bottom rail. The maximum unsupported length shall be 7'-0" if placed on the inside of the structure and 8'-0" if placed on the outside of the structure. If the vertical spacing is greater than the maximum unsupported length, mid-bay supports will be required. When the rail system is placed on the inside of the structure and not covered by the end vertical, the ends of the horizontal rails near the end of the bridge shall be capped and ground smooth. If a toe plate is also specified, then the bottom horizontal rail may be modified to be used as a steel toe plate as specified. If a rub rail is also specified, then the top horizontal rail may be modified to be used as a steel rub rail as specified.

Each element of the pedestrian rail system shall be designed to support a uniformly applied load of 50 pounds per lineal foot, both transversely and vertically, acting simultaneously. In addition, each longitudinal element shall be designed to support a concentrated load of 200 pounds, which will act simultaneously with the above uniform loads at any point and in any direction at the top of the longitudinal element.

The posts of the pedestrian rail system shall be designed for a concentrated load applied at either the center of gravity of the upper longitudinal element or 60" above the top of the walkway, whichever is less. This concentrated load shall be equal to 200 pounds plus 0.05 times the post spacing in feet

Toe Plate. Toe Plates shall be steel channel shape section, 4" high by 1" wide minimum with the end of the channel legs welded directly to the inside face of the truss verticals. The maximum unsupported length shall be 7'-0". If the vertical spacing is greater than the maximum unsupported length, mid-bay supports will be required. When the ends of the toe plates near the end of the bridge are not covered by the end verticals, they shall be capped and ground smooth. The bottom of the toe plate shall be placed 2" above the finished height of the deck. All seams of the toe plates shall be fully welded to give the appearance of a continuous member (welding should be located at a support member). If toe plates are incorporated into a safety rail system, they may be modified as needed but shall be a minimum of 4" high.

Rub Rail. Rub Rails shall be provided at a height of 3'-6" from top of the deck to the top of rub rail. Rub rails shall be steel channel shape section, 4" high by 1" wide minimum with the end of the channel legs welded directly to the inside face of the truss verticals. The maximum unsupported length shall be 7'-0". If the vertical spacing is greater than the maximum unsupported length, mid-bay supports will be required. When the ends of the rub rails near the end of the bridge are not covered by the end verticals, they shall be capped and ground smooth. All seams of the rub rails shall be fully welded to give the appearance of a continuous member (welding should be located at a support member). If rub rails are incorporated into a safety rail system, they may be modified as needed but shall be a minimum of 4" high.

10.4 Expansion Joint. The gap between the end of the bridge deck and the back wall of the foundation system be sized to accommodate bridge movements due to thermal expansion of the bridge over the design temperature range. The gaps shall be covered with a steel cover which attaches to the bridge and extends over the gap and onto the top of the foundation system back wall. The steel cover shall have its edges rounded or beveled at a 45-degree angle. A compression seal sized for movement and rated for pedestrian traffic may be used in place of the steel cover.

11.0 Bearings

11.1 Bearing Type. Bearing type and size shall be designed by the Bridge Manufacturer based on anticipated loads and movements.

11.2 Design Temperature Range. The Design Temperature Range will be site specific and will be determined per *AASHTO LRFD* Article 3.12.2.

11.3 Non-Shrink Grouting. The bridge will be supplied with a lower setting plate. This setting plate shall be leveled and shimmed to the proper elevation. The space between the lower surface of the setting plate and the foundation surface shall be filled with a non-shrink grout capable of achieving a minimum compressive strength equal to or greater than the strength of the foundation concrete. The cost of the leveling, shimming, and non-shrink grout shall be the responsibility of the Contractor.

12.0 Foundations

12.1 Foundation System

Foundation system shall utilize abutments designed by the Contractor's Foundation Engineer in conjunction with the bridge bearing requirements and dimensions provided by the Bridge Manufacturer and the site-specific geotechnical information.

The geotechnical report included in the Project Manual contains foundation recommendations, however the Contractor's Foundation Engineer must determine if they are suitable for use as a basis for foundation design.

The foundation must be designed in accordance with all applicable codes and regulations.

12.2 Anchor Bolts. Bridge Manufacturer shall design the diameter and grade of anchor bolts, based on the shear and tensile strength of the anchor bolt material only. All design considerations regarding concrete breakout strength in shear and tension, pullout strength, concrete side-face blowout strength, concrete pry out strength, embedment depth, type of anchorage or any other concrete failure modes are the responsibility of the Foundation Engineer and shall be shown on the final contract plans. All anchor bolts shall be galvanized. The Contractor's Foundation Engineer shall determine if the anchor bolts shall be cast-in-place, drilled/epoxy, or expansion anchors. Anchor bolts shall be provided and installed by the Contractor.

13.0 Fabrication

13.1 Welding. Welding procedures and weld qualification test procedures shall conform to the provisions of *AWS D1.1*. Filler metal shall be in accordance with the applicable AWS Filler Metal Specification and shall match the corrosion properties of the base metal.

13.2 Welders. Welders shall be qualified for each process and position used while fabricating the bridge. Qualification tests shall be in accordance with AWS D1.1. All weld qualifications and records shall be kept in accordance with the Fabricator's Quality Assurance Manual which has been approved and audited by AISC as the basis for certification.

13.3 Shop Splices

Shop splices for main truss members shall be full penetration welds all around the perimeter of the member. These shop splices shall be performed using a full perimeter backing plate. After welding of the shop splices, the weld shall be ground smooth to match the perimeter of the member. Grinding these welds smooth is required and will be grounds for rejection of the bridge upon delivery if not completed.

Shop splices for all horizontal rail components to be located at the centerline of the truss verticals, each end welded to the truss vertical and seal welded together. Exposed surface of the seal welds as seen from the deck shall be ground smooth.

Shop spliced for all horizontal stringers to be located at the centerline of the floor beams, each end welded to the floor beam and seal welded together.

13.4 Bolted Splices

For shipping purposes, the bridge may be fabricated in sections. Sections shall be field assembled using bolted connections. No field welding of members shall be allowed.

The chord members of the bridge shall be bolted such that at least two faces of the member are

bolted. This is to provide reasonable force distribution around the perimeter of the member. Bolted splices shall be designed and fabricated such that the head of the bolt and washer are the only item exposed. No through-bolting of the member is allowed. The nuts of the fastener cannot be welded to the internal splice plate and shall be held in plate with a nut capture system per Patent US 10,267,345 B2 or equal.

The diagonals and brace diagonals shall be bolted utilizing a through-bolt system with plates on the exterior faces of the members. An internal stiffening plate is required to keep the member from crushing during the bolt tightening process.

All bolted connections are considered to be pretensioned or slip-critical connections. All bolts are to be pretensioned per the requirements of section 8.2 of the Specification for Structural Joints Using High-Strength Bolts. Recommended tightening method of all structural bolts shall be Turn-of-the-Nut Pretensioning.

14.0 Quality Control

14.1 AISC Certification. The bridge shall be fabricated in a shop owned by the Bridge Manufacturer. This facility shall have up to date quality certification by AISC as Certified Bridge Fabricator - Advanced (Major) with Fracture Critical Endorsement and Complex Coating Endorsement (P1-Enclosed or P2-Covered).

14.2 Certified Weld Inspector. The Bridge Manufacturer shall employ at least two Certified Weld Inspectors (CWI), with endorsement by AWS QC1. At least one CWI shall be present during the complete fabrication of the bridge. The CWI shall provide written documentation that the bridge has been fabricated in accordance with these specifications and the approved design drawings.

14.3 Documentation

Material Certifications shall be available for review for all materials within the bridge. Traceability of heat numbers is required for all structural steel.

Documentation showing the performance of all critical quality checks shall also be made available for review by the Engineer or Owner.

14.4 Non-Destructive Testing

All welds within the structure, shall be visually inspected for conformance to size, under cut, profile and finish.

All shop splices of main truss members shall be magnetic particle tested.

15.0 Delivery and Erection

15.1 Delivery. Delivery shall be made via truck to a location nearest the site which is accessible to normal over-the-road equipment. All trucks delivering bridge materials will need to be unloaded at the time of arrival. If the erection Contractor needs special delivery or delivery is restricted, they shall notify the Bridge Manufacturer prior to bid date. This includes site issues which may prevent over-the-road equipment from accessing the site. Steerable dollies are not used in the cost provided by the Bridge Manufacturer. Determining the length of bridge section which can be delivered is the responsibility of the Contractor and shall be communicated to the Bridge Manufacturer prior to the bid date.

15.2 Installation & Lifting Procedures. The Bridge Manufacturer will provide standard typical written procedures for lifting and splicing the bridge. All actual means, methods, equipment and sequence of erection used are the responsibility of the Contractor.

16.0 Warranty

The Bridge Manufacturer shall warrant, at the time of delivery, that it has conveyed good title to its steel structure, free of liens and encumbrances created by the Bridge Manufacturer, and that its steel structure is free of defects in design, material and workmanship. This warranty shall be valid for a period of one (1) year from the earlier date of delivery or 60 days after final fabrication is complete. Durable tropical hardwood decking and hardwood attachments shall carry a one (1) year warranty against rot, termite damage, or fungal decay. This warranty shall specifically exclude all softwood and decking material such as Treated Southern Yellow Pine, Douglas Fir and Wood thermoplastic composite lumber (e.g. Trex). Paint, galvanizing and other special coatings, if warranted, shall be warranted by the coating manufacturer in accordance with their warranty provisions and are not covered under the Bridge Manufacturer’s warranty.

This warranty shall not cover defects in the steel structure caused by abuse, misuse, overloading, accident, improper installation, maintenance, alteration, or any other cause not expressly warranted. This warranty shall not cover damage resulting from or relating to the use of any kind of de-icing material. This warranty shall be void unless owner's records are supplied that show compliance with the minimum guidelines specified in the in the Bridge Manufacturer’s inspection and maintenance procedures.

Repair, replacement, or adjustment, in Bridge Manufacturer’s sole discretion, shall be the exclusive remedy for any defects under this warranty. This warranty shall exclude liability for any indirect, consequential, or incidental damages.

G: Dry Stack Boulder Wall

1.0 Description. This work consists of designing and installing dry stacked boulder walls at locations shown on the Plans.

2.0 Materials

Provide regional, weathered natural carbonate stone in thickness and general dimensions as shown on the Plans and described in this JSP. Provide stone blocks with the following characteristics:

a. Stone type: Oolitic Limestone, Quarried.
b. Color: Tan, buff, cream; consistent throughout each site.
c. Size: As indicated on drawings.
d. Shape: Rectangular and angular block
e. Finish: Natural face.
f. Properties of Stone:
  i. Class II – Medium Density
  ii. Compressive strength ASTM C 170, 4,000 psi.
  iii. Modulus of Rupture: ASTM C 99, 700 psi minimum.
  iv. Absorption: ASTM C 97 7-1/2% maximum.
  v. Abrasive hardness: ASTM C 241, 10 minimum

2.1 Boulders shall be free of calcite intrusions.

2.2 The color of the Boulders shall be consistent on the entire Project.

2.3 Contractor msut provide representative photographs of boulders to the Engineer. On visual approval of the boulder material, the Contractor shall arrange for the Engineer to visually inspect the boulder material at the site of the material source.

2.4 Engineer must approve boulders after delivery to site and prior to placement.

3.0 Construction Requirements. Boulders must be installed in accordance with details and locations shown on the Plans.

3.1 Contractor must provide plans for dry stacked boulder walls prepared and sealed by a qualified engineer licensed in the State of Missouri.

3.2 Wall plans must be prepared in accordance with all applicable codes and regulations.

3.3 Subgrade

3.3.1 The subgrade to receive each boulder shall be excavated and any unstable material shall be removed.

3.3.2 If unsuitable materials are encountered, they shall be removed and replaced.

3.4 When subgrade is built up with embankment material it shall be compacted to ninety five percent (95%) maximum density as determined by ASTM D698 (Standard Proctor).

3.6 Placement of Boulders. Following excavation and acceptance of subgrade by Engineer, and not until such acceptance, boulder placement shall commence.

3.6.1 Boulders shall be placed in a manner which will minimize voids and maximize wall stability.

3.6.1.1 The boulders shall be carefully picked and arranged so that adjacent rock surfaces matching within two inches in top elevation and two inches along the vertical exposed face or channel side of boulder.

3.6.1.2 Boulders shall be placed such that adjacent boulders touch and voids do not exceed six inches (6”). It is the intent of construction to minimize voids and chinking.

3.6.2 Smaller stone shall be used to fill (chink) voids behind the boulders and voids between boulders in excess of four inches (4”).

3.6.3 Boulders must be placed and rotated into final position to form a pleasing aesthetic.

3.7 Rejection of work and materials.

3.7.1 Engineer will reject placed boulders and bedding that do not conform to this Job Special Provision, including Section 3.6.3. Contractor must immediately remove and re-lay the boulders to conform to this Job Special Provision and the Contract Documents.

3.7.3 Rejected boulders and bedding shall be removed from the Project site by the Contractor at the Contractor’s expense.

H: Site Restoration

Contractor must furnish all materials and labor necessary to restore all disturbed areas of the site to preconstruction conditions. This includes the miscellaneous minor work not covered by other specifications such as minor grading to assure positive drainage throughout the site, removal of ruts from turfed areas, and repairing damage due to construction.