TIN CUP TRAIL

CITY OF JOPLIN, MO

602 S. MAIN STREET
JOPLIN, MO 64801

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NOTICE TO CONTRACTORS

Notice is hereby given that the Director of Public Works of the City of Joplin, Missouri, will accept sealed bids for the following improvements in the City of Joplin, Missouri:

TIN CUP TRAIL

Project generally consists of construction of approximately 1.5 miles of new trail from the intersection of 32nd Street and McIntosh Circle to McIndoe Park. The Project includes but is not limited to, new trail, suspension bridge, box culvert, retaining wall, and pavement markings.

Copies of the plans and specifications are on file and may be examined on the City's website. **Sealed bids must be in the hands of said Director of Public Works before 10:00 a.m. on the 23rd day of July, 2024**. Bids will be opened and read aloud by the Director of Public Works in the 4th floor Engineering Conference Room at that time. **A mandatory pre-bid meeting will take place on July 9th, 2024, starting at 10:00 a.m. in the 4th floor Engineering Conference Room at City Hall.**

Specifications will follow current City Standards. These standards can be downloaded online by clicking on the link at the bottom of the page at: https://www.joplinmo.org/898/Engineering-Division or a copy may be viewed in person at 602 S. Main Street, 4th floor.

Wage rates for this project shall be in accordance with the most current wage rate determination made by the Industrial Commission of Missouri on file in the Department of Public Works.

Missouri Law, 292.675 RSMO, requires the awarded contractor and its subcontractor(s) to provide a ten-hour occupational safety and health administration (OSHA) construction safety program (or a similar program approved by the Missouri Department of Labor and industrial relations as a qualified substitute) for their on-site employees (Laborers, workmen, drivers, equipment operators, and craftsmen) who have not previously completed such a program and are directly engaged in actual construction of the improvement (or working at a nearby or adjacent facility used for construction of the improvement), The awarded contractors and its subcontractor(s) shall require all such employees to complete this ten-hour program, pursuant to 292.675 RSMO, unless they hold documentation on their prior completion of said program. Penalties for non-compliance include contractor forfeiture to the City of Joplin in the amount of $2,500, plus $100 per contractor and subcontractor employee for each calendar day such employee is employed beyond the elapsed time period for required program completion under 292.675 RSMO

The successful bidder will have to sign an agreement that they are enrolled and participating in a Federal Work Authorization Program ("FWAP") that ensures that all of its employees or agents or subcontractors have the legal right to work in the United States, as defined in 8 U.S.C. 1324a(h)(3) and RSMo § 285.525-285.555, and that it will maintain this compliance for the entire duration of its contract with the City of Joplin, and will provide an Affidavit of Compliance to the City stating the same.

Payment for this project will be made to the contractor in cash.

A bid bond for five percent of the total bid amount must accompany each bid. The successful bidder will be required to furnish an indemnity bond in the amount of his bid and shall before entering on the work of said contract be licensed as a contractor of the City of Joplin, Missouri. The Director of Public Works reserves the right to reject any or all bids.

The City of Joplin hereby notifies all bidders that it will affirmatively insure that in any contract entered into pursuant to this advertisement Disadvantaged Business Enterprises will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, sex, or national origin in consideration

for an award. Also, the contractor will be required to have an approved Affirmative Action Program. Attention of bidders is particularly called to the requirement that an Affirmative Action Program must be adopted by the contractor and approved by the Affirmative Action Committee of the City of Joplin before the contract may be executed.

BIDDER CHECKLIST

FINAL CHECKLIST BEFORE SUBMITTING BID

1. If submitting the bid by mail, it is to be completed, executed, and submitted in a sealed envelope addressed to City of Joplin, MO. **Provide the Bidder name, address, number, county, route and project name and number on the outside of the envelope.**

2. Please read all items in the bidding document carefully. For paper bids, complete all items in ink or by typing in the information.

3. Acknowledge the receipt of addenda on Bid Form (Note: The "BID FORM" and "ITEMIZED BID FORM" are one document and shall be submitted together). The addenda should be stapled to the inside of the back cover of the bid and returned. The bidder should retain a duplicate copy.

4. For paper bids submit the provided bid bond executed by bidder and surety, or attach cashier's check to the bid bond form.

5. For paper bids, staple addenda to the bid in the appropriate part of the bid. The letter accompanying the addenda should be stapled to the inside of the back cover of the bid and returned. The bidder should retain a duplicate copy. (if applicable)

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Below is a list of common mistakes made by bidders leading to non-responsive bids. Please refer to the Standard Specifications for the appropriate procedures for completing and submitting a bid.

1. Not signing the bid
2. Not incorporating the addendum into the bidding documents, including attaching the letter to the bid
3. Not providing a bid bond
4. Using pencil to fill out the bid
5. Using white out to make corrections to the itemized bid sheets
6. Not initialing changes made

****

All questions concerning the bid document preparation can be directed to Dakota Rusk at drusk@joplinmo.org.

Special Needs: If you have special needs addressed by the Americans with Disabilities Act, please notify the City of Joplin, MO at (417) 624-0820 or through Missouri Relay System, TDD 1-800-735-2966, **at least five (5) working days prior to the bid opening**.

INFORMATION FOR BIDDERS

1. Receipt and Opening of Bids:

   The City of Joplin (herein called the "Owner"), invites bids on the form attached hereto, all blanks of which must be appropriately filled in. The envelopes containing the bids must be sealed, addressed to the City of Joplin, 602 S. Main Street, Joplin, Missouri and designated as bid for **Tin Cup Trail.**

   The Owner may consider informal any bid not prepared and submitted in accordance with the provisions hereof and may waive any informalities 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 **ninety (90)** days after the actual date of the opening thereof.

2. Preparation of Bid: Each bid must be submitted on the required BID form, included as part of these specifications, and accompanied by:

   A. Acknowledgement of receipt of all addenda issued (if any).

   B. a bid bond payable to the Owner for five percent (5%) of the total amount of the bid.

   C. A copy of the signed Anti-Collusion form.

   All blank spaces for bid prices must be filled in, in ink or typewritten, in figures, and the foregoing Certifications must be fully completed and executed when submitted.

3. Pre-Bid Meeting: **See Notice to Contractors for any pertinent information**.

4. Subcontracts: The bidder is specifically advised that any person, or other party, to whom it is proposed to award a subcontract under this contract must be acceptable to the procurer.

5. Telegraphic Modification: Any bidder may modify his bid by telegraphic communication at any time prior to the scheduled closing time for receipt of bids, provided such telegraphic communication is received by the Owner prior to the closing time, and, provided further, the Owner is satisfied that a written confirmation of the telegraphic modification over the signature of the bidder was mailed prior to the closing time. The telegraphic communication should not reveal the bid price, but should provide the addition or subtraction or other modification so that the final prices or terms will not be known by the Owner until the sealed bid is opened. If written confirmation is not received within two days from the closing time, no consideration will be given to the telegraphic modification.

6. Method of Bidding: The Owner invites the following bid(s): Unit Price submission for the project in compliance with project drawings, specifications and contract documents. The OWNER reserves the right to add or subtract quantities from the Project Contract at the Unit Prices submitted, as necessary.

7. Qualifications of Bidder: The Owner may make such investigations as he deems 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 contract and to complete the work contemplated therein. Conditional bids will not be accepted.

8. Bid Security: 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 all of the bonds except the three lowest responsible bidders. When the agreement is executed the bonds of the two remaining unsuccessful bidders will be returned. 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.

9. Liquidated Damages for Failure to Enter into Contract: The successful bidder, upon his failure or refusal to execute and deliver the contract and bonds required within 10 days after he received notice of the acceptance of his bid, shall forfeit to the Owner, as liquidated damages for such failure or refusal, the security deposited with his bid.

10. Time of Completion and Liquidated Damages: Bidder must agree to commence work on or before a date to be specified in a written "Notice to Proceed" of the Owner and to fully complete the project within ONE HUNDRED TWENTY (120) consecutive calendar days thereafter. Bidder must agree also to pay as liquidated damages, the sum of $1,000.00 for each consecutive calendar day thereafter as hereinafter provided in the General Conditions.

11. Conditions of Work: Each bidder must inform himself fully of the conditions relating to the construction of the project and the employment of labor thereon. Failure to do so will not relieve a successful bidder of his obligation to furnish all material and labor necessary to carry out the provisions of his contract. Insofar as possible the contractor, in carrying out the work, must employ such methods or means as will not cause any interruption of or interference with the work of any other contractor.

12. Addenda and Interpretations: No interpretation of the meaning to the plans, specifications, or other pre-bid documents will be made to any bidder orally.

    Every request for such interpretation should be emailed to Project Engineer and to be given consideration must be received **at least five (5) days prior** to the date fixed for the opening of bids. Interpretations, supplemental instructions or clarifications considered necessary by the Engineer in response to such questions will be issued in the form of written addenda to the contract documents and specifications which, if issued, will be posted to the City of Joplin Website on the www.Joplinmo.org webpage, not later than three days prior to the date fixed for the opening of bids. Questions received less than (5) days prior to the date for opening of bids may not be answered. Only answers issued by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect. Failure of any bidder to receive any such addendum or interpretation shall not relieve such bidder from any obligation under his bid as submitted. All addenda so issued shall become part of the contract documents.

13. Security for Faithful Performance: Simultaneously with the delivery of the executed contract, the Contractor shall furnish a surety bond or bonds as security for faithful performance of this contract and for the payment of all persons performing labor on the project under this contract and furnishing materials in connection with this contract, as specified in the General Conditions included herein. The surety on such bond or bonds shall be a duly authorized surety company satisfactory to the Owner.

14. Power of Attorney: Attorneys-in-fact who sign bid bonds or contract bonds must file with each bond a certified and effectively dated copy of their power of attorney.

15. Notice of Special Conditions: Attention is particularly called to those parts of the contract documents and specifications which deal with the following:

    A. Inspection and testing of materials.

    B. Insurance requirements.

    C. Wage rates.
    This contract requires payment of the prevailing hourly rate of wages for each craft or type of work required to execute the contract as determined by the Missouri Department of Labor and Industrial Relations. The applicable state wage rates for this contract are detailed in “Annual Wage Order 31”, that is attached to this bidding document. These supplemental bidding documents have important legal consequences. It shall be conclusively presumed that they are in the bidder's possession, and they have been reviewed and used by the bidder in the preparation of any bid submitted on this project.

    D. Stated allowances.

16. Laws and Regulations: The bidder's attention is directed to the fact that all applicable State laws, municipal ordinances, and the rules and regulations of 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.

17. Method of Award:
    A. Lowest Qualified Bidder
    The contract is typically awarded based on the lowest qualified bidder's Total Contract Bid Amount, provided that it does not exceed the amount of funds then estimated by the Owner as available to finance the contract. Award of the contract shall be in conformance with the City's Procurement Policy, which is typically based upon the lowest responsive, responsible bid submitted for the Total Contract Bid Amount.

18. Obligation of Bidder: At the time of the opening of bids, each bidder will be presumed to have inspected the site and to have read and to be thoroughly familiar with the plans and contract documents (including all addenda). The failure or omission of any bidder to examine any form, instrument, or document shall in no way relieve any bidder from any obligation in respect or his bid.

    A. Bidders are informed that pursuant to Section 285.530, RSMo, as a condition of the award of any contract in excess of five thousand dollars ($5,000), the successful bidder shall, by sworn affidavit and provision of documentation, affirm its enrollment and participation if a federal work authorization program with respect to the employees working in connection to the contracted services. Successful bidders shall also sign an affidavit affirming that it does not knowingly employ any person who is an unauthorized alien in connection to the contracted services.

19. Safety Standards and Accident Prevention: With respect to all work performed under this contract, the contractor shall:

    A. Comply with the safety standards provisions of applicable laws, building and construction codes, and the "Manual of Accident Prevention in Construction" published by the Associated General Contractors of America, the requirements of the Occupational Safety and Health Act of 1970 (Public Law 91-596), and the requirements of Title 29 of the Code of Federal Regulations, Section 1518 as published in the "Federal Register", Volume 36, No. 75, Saturday, April 17, 1971.
    B. Exercise every precaution at all times for the prevention of accidents and the protection of persons (including employees) and property.
    C. Maintain at his office or other well-known place at the job site, all articles necessary for giving first aid to the injured and shall make arrangements for the immediate removal to a hospital or a doctor's care of persons (including employees), who may be injured on the job site. In no case shall employees be permitted to work at a job site before the employer has made a standing arrangement for removal of injured persons to a hospital or a doctor's care.

20. Bidders are informed that the Project is subject to the requirements of Section 292.675, RSMo, which requires all contractors or subcontractors doing work on the Project to provide, and require its on-site employees to complete, a ten (l 0) hour course in construction safety and health approved by the Occupational Safety and Health Administration ("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. The training must be completed within sixty (60) days of the date of work on the Project commences. On-site employees found on the worksite without documentation of the required training shall have twenty (20) days to procure documentation or be subject to removal from the project.

21. Contractor's Responsibility for Subcontractors:

    A. 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.

B. 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.

C. Nothing contained in this contract shall create any contractual relation between the subcontractor and the City or between any subcontractors.

22. Antidiscrimination: The Contracting Authority hereby notifies all bidders that it will affirmatively ensure that in any contract entered in pursuant to this advertisement, business owned and controlled by socially and economically disadvantaged individuals will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, religion, creed sex, age, ancestry, or national origin in consideration for an award.

23. Lead Contaminated Materials: As of January 1, 2023, the City no longer pays for contaminated materials to be hauled to specific repository sites. If a contractor requests the City to test excavated materials for heavy metals concentrations, City staff will provide that testing free of charge, based on availability of the City's XRF gun. (The City will endeavor to respond immediately to the job site, so as not to cause delays to the contractor's work.) If such testing yields a determination that the concentration levels of heavy metals (lead, zinc, cadmium, etc.) exceeds acceptable limits, then the contractor shall be responsible for properly disposing of said materials at a site chosen by the contractor. Proper disposal of such materials means to either cap the material with clay, or to blend it with non-contaminated soils such that the resultant concentration is lower than acceptable limits. If the contractor elects to cap contaminated soils on another site, the thickness of the clay cap is dependent upon the likely use of the site.

BID FORM

CITY OF JOPLIN: TIN CUP TRAIL

TO: DIRECTOR OF PUBLIC WORKS

We, the undersigned BIDDER, do hereby agree, if this Bid is accepted, to enter into an agreement with City of Joplin, MO in the form included in the Contract Documents to perform and furnish all Work as specified or indicated in the Contract Documents and Specifications for the Bid Price and within the Period of Performance indicated in this Bid and in accordance with the other terms and conditions of the Contract Documents.

BIDDER accepts all of the terms and conditions of the Advertisement or Invitation to Bid and Bid Form, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for sixty days after the day of Bid opening. BIDDER will sign and deliver the required number of counterparts of the Agreement with the Bonds and other documents required by the Bidding Requirements within fifteen (15) days after the date of City of Joplin, MO Notice of Award.

In submitting this Bid, BIDDER represents, as more fully set forth in the Agreement, that:

1. BIDDER has examined and carefully studied the Bidding Documents and any addenda, as acknowledged below.
2. BIDDER has visited the site and become familiar with and is satisfied as to the general, local and site conditions that may affect cost, progress, performance and furnishing of the Work;
3. BIDDER is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress, performance and furnishing of the Work.
4. BIDDER is aware of the general nature of Work to be performed by City of Joplin, MO and others at the site that relates to Work for which this Bid is submitted as indicated in the Contract Documents.
5. BIDDER has correlated the information known to BIDDER, information and observations obtained from visits to the site, reports and drawings identified in the Contract Documents and all additional examinations, investigations, explorations, tests, studies and data with the Contract Documents.
6. BIDDER has given CITY OF JOPLIN written notice of all conflicts, errors, ambiguities or discrepancies that BIDDER has discovered in the Contract Documents and the written resolution thereof by CITY OF JOPLIN is acceptable to BIDDER, and the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work for which this Bid is submitted.
7. This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; BIDDER has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; BIDDER has not solicited or induced any person, firm or corporation to refrain from bidding; and BIDDER has not sought by collusion to obtain for itself any advantage over any other Bidder or over City of Joplin, MO.

BIDDER will complete all work on the described project for the City of Joplin, MO in accordance with the Contract Documents for the price(s) stated below.

The Bidder agrees to include the items listed in the Itemized Bid Sheet(s) attached to this Bid Form in the Base Bid.

Note 1 Bidder agrees and understands that by this submission that items required to construct and complete the project in accordance with the accompanying plans, but not shown on this proposal, shall be included in the bid price for other related items of construction so as to not cause an unbalanced bid.

Note 2 The undersigned submits the following Itemized Bid Sheet(s) and hereby authorizes the City of Joplin, MO to correct any multiplication of "Unit Price" by "Quantity" as shown under "Amount" when copying the Itemized Bid Sheet(s) into any Contract.

Note 3 It is understood that this bid becomes a part of the specifications upon the signing of the contract and that failing to comply with any part of this bid will be taken as a failure to comply with said specifications and will be just cause for rejection of work.

Note 4 In submitting this bid, it is understood that the right is reserved by the City of Joplin, MO to reject any and all bids, to waive any irregularities in the bidding, and to increase or decrease the amount of any class or portion of the work.

Note 5 In submitting this proposal, contractor certifies that no employee, member, or officer of the firm or corporation is a salaried officer or employee of the City of Joplin, MO or any of its boards or agencies, and that no salaried officer or employee of the City of Joplin, MO has any financial interest, direct or indirect, in this Contract. The City of Joplin, MO will award the bid to the lowest, responsive, responsible bidder.

Note 6 The scope of the work to be performed under the various unit price items of the contract proposal (where linear or volumetric measurement of quantities is involved) and the method of measurement and basis of payment for quantities in connection with such items, together with the scope of various lump sum items of the contract proposal is in general, defined and described under the respective applicable specification sections. It is the intent of the Bid Form and the Job Special Provisions that the total bid as submitted shall cover all work shown by the Contract Drawings and as required by the attached specifications and other Contract Documents. All costs, in connection with the work, and payment therefore, shall be included in and based on the unit and lump sum prices named in the Bid Form. No item of work that is required by the Contract documents for the proper and successful completion of the Contract shall be paid for outside of or in addition to the prices submitted in the Bid Form, as all work not specifically set forth in the Bid Form as a pay item shall be considered a subsidiary obligation of the Contractor and all cost in connection therewith shall be included in the unit or lump sum prices named in the Bid Form.

Note 7 It is understood by the bidder that the quantities given in the following itemized bid form are not guaranteed by the owner and are used solely for the purpose of comparing bids and awarding the contract, and may or may not represent the actual quantities encountered on the job; and that the sum of the products of the quantities listed in the following itemized bid form, multiplied by the unit price bid shall constitute the gross sum bid.

Tin Cup Trail Phase 1

ITEM NO.	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	TOTAL PRICE
1	Concrete Removals	SY	79		
2	Curb and Gutter Removals	LF	86		
3	Curb and Gutter Installation	LF	61		
4	2" ASPHALT BP-2 (For Trail)	SY	3,900		
5	4" Bituminous Base (For Trail)	SY	3,900		
6	6" Concrete Sidewalk	SY	135		
7	6" Concrete Trail	SY	67		
8	18" RCP (Includes Bedding)	LF	66		
9	Flared Concrete 6' End Sections for 18" RCP	EA	6		
10	19" x 30" RCP (Incudes Bedding)	LF	19		
11	Flared Concrete 6' End Sections for 19" x 30" RCP	EA	2		
12	Post and Cable Fence	LF	740		
13	12" x 18" "Do Not Climb Wall" Sign with sign post installed	EA	13		
14	Mobilization	LS	1		
15	Type 1 aggregate for base (4" thick)	SY	3,900		
16	Handrail w/ curb	LF	125		
17	Black Dirt Seed and Mulch	AC	2		
18	Unclassified Excavation	CY	75		
19	Embankment in place with compaction	CY	1,400		
20	Conc. Retaining Wall average 2.5' Tall	LF	57		
21	Tree Removal	LS	1		
22	Clearing and Grubbing	LS	1		
23	Erosion and Sediment Control	LF	2,900		

ITEM NO.	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	TOTAL PRICE
24	Traffic Control Per MUTCD	LS	1		
25	Thermo 6" Crosswalk Markings	LF	334		
26	Thermo 2'-0" Stop Bar	LF	104		
27	Concrete ADA Curb Ramps	SY	52		
28	Removal of Unsuitable Material	CY	50		
29	Backfill of Unsuitable Material	CY	50		
30	4" Yellow Acrylic Copolymer Fast Dry Pavement Marking Paint	LF	2,904		
31	Bench Pad	EA	1		
32	Bollard	EA	1		
33	Raise Manhole to Grade	EA	2		

Subtotal Phase 1:_____

Tin Cup Trail Phase 2

ITEM NO.	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	TOTAL PRICE
202-20.10	Removal of Improvements	LS	1		
203-50.00	Unclassified Excavation	CY	1373		
203-55.00	Embankment in Place	CY	1242		
207-20.00	Linear Grading Class ll	STA	46.3		
304-01.23	Type 1 Aggregate for Base 4” Thick	SY	5784		
304-01.63	Type 1 Aggregate for Base 6” Thick	SY	737		
310-10.02	Gravel	TONS	48		
401-99.05A	2" Asphalt BP-2 (Trail)	SY	638		
401-99.05B	4" Bituminous Base (Trail)	SY	638		
401-99.06A	2" Asphalt BP-2 (Entrance)	SY	586		
401-99.06B	4" Bituminous Base (Entrance)	SY	586		
502-11.08	Concrete Pavement (8" Non-Reinforced)	SY	151		
503-10.11A	Bridge Approach Slab (Minor Road)	SY	82		
604-40.11	Concrete Collar for Pipe Extension	LS	1		
607-99.01	Permanent Fence (5-Strand Barbed Wire)	LF	190		
607-99.02	Type I Anchor Post	EA	3		
608-10.10	Concrete ADA Ramp	SY	29		
608-10.12	Truncated Domes	SF	80		
608-60.06A	Concrete Trail with Headwall @ Stream Maintenance Locations	SY	578		
608-99.05	Concrete Trail (6" Thick)	SY	5019		
611-30.10	Furnish Type I Rock Blanket, Grouted Trail Edge	CY	347		
611-30.20	Furnish Type II Rock Blanket	CY	97		
611-30.30	Placing Type I Rock Blanket, Grouted Trail Edge	CY	347		

ITEM NO.	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	TOTAL PRICE
611-30.40	Placing Type II Rock Blanket	CY	97		
611-70.00A	6" Gabion Stone	CY	31		
616-10.05	Construction Signs	SF	64		
616-10.25	Trim Line (Channelizer)	EA	25		
616-99.02	Permanent Signage (Including Sign, Post, Plaque, and Complete Installation)	EA	4		
618-10.00	Mobilization	LS	1		
620-00.36	Preformed Thermoplastic Pavement Marking, 30 in. White Midblock	EA	9		
620-61.51A	Pavement Marking on Culvert	LS	1		
620-61.51B	4" Yellow Acrylic Copolymer Fast Dry Pavement Marking Paint	LF	4570		
624-01.03A	Permanent Erosion Control Geotextile	SY	145		
703-99.01	Triple 8’ Span x 4’ Tall Reinforced Concrete Box Culvert	LS	1		
720-99.03	Concrete Base, Toe Protection and Concrete Foundation Curb	LF	200		
720-99.04	Retaining Wall	SF	688		
726-10.19	19" x 30" Horizontal Elliptical Reinforced Concrete Pipe	LF	128		
731-99.02	Raise Manhole to Grade	EA	1		
732-06.24	24" Class III Reinforced Concrete Pipe	LF	49		
732-06.24A	24" Concrete Flared End Section	EA	1		
732-06.30	30" Class III Reinforced Concrete Pipe	LF	46		
732-06.30A	30" Concrete Flared End Section	EA	1		
732-10.99	19" x 30" Horizontal Elliptical Reinforced Concrete Pipe Tapered End Section	EA	4		
805-99.01	Seeding and Mulching	AC	1.33		
806-99.28	Maintain SWPPP, Including Reporting Requirements	LS	1		
808-99.03	Bench Pad	EA	1		

Subtotal Phase 2:_____

Tin Cup Trail Phase 3

ITEM NO.	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	TOTAL PRICE
201-99.01	Clearing and Grubbing	LS	1		
202-20.10	Removal of Existing Improvements	LS	1		
203-55.00	Embankment in Place	CY	2225		
203-99.07	Excavation to Widen and Transition Creek Banks	CY	2947		
207-20.00	Linear Grading, Class II	STA	4.7		
214-99.01	Stacked Limestone Ledge Rock	SY	110		
304-01.23	Type 1 Aggregate Base (4” Thick)	SY	228		
503-99.05	Concrete Bridge Approach Slab (10” Thick)	SY	84		
503-99.06	Pedestrian Handrail (Approach)	LF	96		
608-99.05	Concrete Trail (6" Thick)	SY	210		
608-99.06	Concrete Pad (6" Thick)	SY	4.4		
611-40.10	Furnishing and Placing Type 2 Rock Blanket	CY	610		
618-10.00	Mobilization	LS	1		
620-61.51B	4 IN. Yellow Acrylic Copolymer Fast Dry Pavement Marking Paint	LF	470		
627-40.00	Contractor Furnished Surveying and Staking	LS	1		
703-99.01	Suspension Bridge (Foundation, Unclassified Excavation, Anchors, Columns, Cables, Connections, Deck and Handrail, Complete and In Place)	LS	1		
903-12.20	Bollard	EA	2		

Subtotal Phase 3:_____

Tin Cup Trail Phase 3 (Alternate) (Alternate will replace equivalent amount of quantity of Concrete Trail bid item if awarded and will not be awarded in addition to Concrete trail item.)

ITEM NO.	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	TOTAL PRICE
401-99.05A	2" Asphalt BP-2 (Trail)	SY	210		
401-99.05B	4" Bituminous Base (Trail)	SY	210		

Subtotal Phase 3 Alternate:_____

Total Base Bid (Phase 1+2+3):_____

Contractor:_____

Address: _____

_____

Phone: _____

Fax: _____

Email: _____

Total Base Bid: Proposal for the Construction of Joplin, MO TIN CUP TRAIL (to agree with the "ITEMIZED BID FORM")

$_____(in numbers)

$
_____(in words)

(In case of discrepancy, the amount shown in words will govern)

Contractors acknowledges receipt of Addenda No(s):_____

Signature: _____

Title: _____

Date: _____

BID BOND

PLACEHOLDER

ANTI-COLLUSION STATEMENT

STATE OF MISSOURI

CITY/COUNTY OF _____

_____

_____being first duly sworn, deposes and says that he is

_____

(Title of Person Signing)

Of _____

_____

Name of Bidder

That all statements made and facts set out in the proposal for the above project are true and correct: and the bidder (The person, firm, association or corporation make 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 the said bid or any contact 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 _____

AFFIDAVIT OF COMPLIANCE

Section 285.530.2

State of Missouri)
) ss
County of_____)

Now this_____day of _____, 20_____, the undersigned, being first duly sworn, deposes and says:

- I am more than 18 years of age.
- I make this affidavit from my personal knowledge of the facts stated herein or upon information and facts available to me as a duly authorized owner, partner, corporate or LLC officer or Human Relations

  Director of_____.
  (Name of Corporation, LLC, Sole Proprietorship, or Partnership)
- I am authorized to make this affidavit on behalf of_____.
  (Name of Business Entity, Same as Above)
- I state and affirm that_____is enrolled and is currently
  (Name of Business Entity, Same as Above)
  participating in E-Verify, a federal work authorization program or another equivalent electronic verification of work authorization program operated by the United States Department of Homeland Security under the Immigration Reform and Control Act of 1986.
- Further, _____does not knowingly employ any person
  (Name of Business Entity, Same as Above)
  who is unauthorized alien.
- Further, _____has performed an electronic verification
  (Name of Business Entity, Same as Above)
  check as described above on all workers hired since January 1, 2009, or obtained documents required for completion of a Federal I-9 Form before it began participating in E-Verify.
- Attached to this affidavit is a true and accurate copy of this company's Memorandum of Understanding with the United States concerning the use of E-Verify.

I certify under penalty of perjury that the statements above are complete, true, and accurate to the best of my knowledge and belief.

_____
(Authorized Agent, Partner, Owner, or Officer)

If business has a Human Relations Director or equivalent, that person must sign as an affiant as well.

I certify under penalty of perjury that the statements above are complete, true, and accurate to the best of my knowledge and belief.

_____

(Human Relations Director)

This form is promulgated pursuant to 15CSR 60-15-.020. Use of this form is not required but the Attorney General has deemed this affidavit sufficient in form to satisfy the requirements of section 285.540, RSMo, Supp. 2008.

FURTHER, THE AFFIANT SAYETH NOT

_____

(Signature)

On this_____day of_____in the year 20_____, before me,

a Notary Public in and for said State, personally appeared_____, known to me to be the person who executed the within affidavit, and acknowledged to me that he/she executed the same for the purposes therein stated.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal in the county and State aforesaid, the day and year first above written.

_____

(Notary Public)

My Commission Expires: _____

SUBCONTRACTOR DISCLOSURE FORM

SUBCONTRACTOR DISCLOSURE FORM: The bidder shall submit with this bid any subcontracts without limitation on the contract amount or subcontract amount in accordance with Sec 102 as follows:

List below the name of each subcontractor that will be furnishing labor or labor and materials, the category of work that the subcontractor will be performing (e.g. asphalt, concrete, earthwork, bridges…) and the dollar value of the subcontract. Enter "NONE" if there are no subcontractors that need to be disclosed.

If the information is not available at the time of bid the bidder shall submit the "Subcontractor Disclosure Form" pages with the Contracting Authority on or before 4:00 p.m. of the third business day after the bid opening date, directly to Director of Public Works, 602 S Main Street, Joplin, MO 64801. Telefax transmittal to Director of Public Works will be permitted at fax no.(417) 625-4738. The complete signed original documents do not need to be mailed to the City of Joplin, but the bidder shall have it available if requested by the City of Joplin.

(ATTACH ADDITIONAL SHEETS IF NEEDED.)

SUBCONTRACTOR NAME	DOLLAR VALUE of SUBCONTRACT	CATEGORY OF WORK

Company Date By (Signature) Title

By (Please Print name of person signing)

SUBCONTRACTOR CERTIFICATION REGARDING AFFIRMATIVE ACTION

Project: City of Joplin Tin Cup Trail
County: Newton

Certification Regarding Affirmative Action and Equal Opportunity: The bidder (prospective prime contractor) or proposed subcontractor certifies:

- Affirmative Action Program: That it has developed and has on file at each of its establishments affirmative action programs pursuant to 41 CFR Part 60-2.

- Equal Opportunity Clause: That it has participated in a previous contract or subcontract subject to the equal opportunity clause set forth in 41 CFR Part 69-1.4 and executive order no. 11246.

- Compliance Reports: That it has filed with the Joint Reporting Committee, the Director of the Office of Federal Contract Compliance Programs and his designate, or the Equal Employment Opportunity Commission, all reports due under the applicable filing requirements contained in 41 CFR Part 60-1.

If the text of the certification above is incorrect, the bidder or subcontractor making the certification shall correct it below:_____

NOTE: This certification applies to and must be executed by each bidder (prospective prime contractor) or proposed subcontractor if its proposed contract or subcontract on this project will equal or exceed
$10,000 or that contractor or subcontractor has contracts or subcontracts on federally assisted projects in any 12-month period which have or can reasonably be expected to have, an aggregate total value exceeding $10,000 41 CFR Part 60- 1.5(a)(1). It is a duty and contract obligation of the prime contractor to insure that each of its subcontractors, which meet this criterion, executes and submits to the commission this certification also.

Company: _____

By:_____

Date:_____

Title: _____

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:

Tin Cup Trail

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 120 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 $1,000.00 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. Special Conditions & Provisions
f. Proposal
g. Statement of Bidder's Qualifications
h. Acknowledgment
i. Performance Bond
h. Payment and Material Bond
k. Instructions to Bidders
l. Non-collusion Affidavit
m. Notice to Proceed

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 ORIGINAL CONTRACT AMOUNT WRITTEN OUT ($) 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

CONTRACTOR'S BOND NO.

FOR CITY CONTRACTS
PERFORMANCE BOND

KNOW ALL PERSONS BY THESE PRESENTS: That Contractor:

a Corporation, hereinafter called Principal, and

_____
(Name of Surety)

_____
(Address of Surety)

hereinafter called Surety, are held and firmly bound unto

THE CITY OF JOPLIN, MISSOURI
620 S. MAIN STREET, JOPLIN, MO 64801

hereinafter called OWNER, in the total aggregate penal sum of XXXXXXXXXXXXXX and no/100 Dollars ($XXX,000.00) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

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:

Tin Cup Trail

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, or any extensions thereof, which may be granted by the OWNER, with or with-out notice to the SURETY and during the one year guaranty period and if the PRINCIPAL 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 same shall in any way

affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the WORK or to the SPECIFICATIONS.

PROVIDED, FURTHER, that it is expressly agreed that the BOND shall be deemed amended automatically and immediately, without formal and separate amendments hereto, upon amendment of the Contract not increasing the contract price more than 20 percent, so as to bind the PRINCIPAL and the SURETY to the full and faithful performance of the CONTRACT as so amended. The term "Amendment", wherever used in this BOND, and whether referring to this BOND, the Contract or the Loan Documents shall include any alteration, addition, extension, or modification of any character whatsoever.

IN WITNESS, whereof, this the _____ day of _____, 20____.

ATTEST: (SEAL)

_____ _____
Secretary Principal

Approved as to form this _____ day

of _____, 20____. By _____

_____ By _____
City Attorney

ATTEST: (SEAL)

_____ _____
Secretary Surety

Approved this _____ day of

_____, 20_____. By _____

_____ By _____
Director of Finance (Title)

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.

CONTRACTOR'S BOND NO.

FOR CITY CONTRACTS
PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: That Contractor

a Corporation, hereinafter called Principal, and

_____

(Name of Surety)

hereinafter called Surety, are held and firmly bound unto

THE CITY OF JOPLIN, MISSOURI
602 S. MAIN STREET, JOPLIN, MO 64801

hereinafter called OWNER, and unto all persons, firms, and corporations who or which may furnish labor, or who furnish materials to perform as described under the contract and to their successors and assigns in the total aggregate penal sum of XXXXXXXXXXXXXXXXXX and no/100 Dollars ($XXX,000.00)in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

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:

Tin Cup Trail

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 extensions or modification thereof, including all amounts due for materials, lubricants, oil, gasoline, coal or coke, repairs on machinery, equipment and tools, consumed or used in connection with the construction of such WORK, all insurance premiums on said work, and for all labor cost incurred in such WORK including the stipulation in said contract requiring the payment of not less than the prevailing hourly rate of wages as found by the Department of Labor and Industrial Relations of the State of Missouri or by final judicial determination of the Courts of the State of Missouri, including that by a SUBCONTRACTOR, and to any mechanic or material man lien holder whether it acquires its lien by operation of State or Federal law; then this obligation shall

be void, otherwise to remain in full force and effect.

PROVIDED, that beneficiaries or claimants hereunder shall be limited to the SUBCONTRACTORS, any persons, firms, and corporations having a direct contract with the PRINCIPAL or its SUBCONTRACTORS.

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 way affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of this contract or to the WORK or to the SPECIFICATIONS.

PROVIDED, FURTHER, that no suit or action shall be commended hereunder by any claimant: (a) Unless claimant, other than one having a direct contract with the PRINCIPAL, shall have given written notice to any two of the following: The PRINCIPAL, the OWNER, or the SURETY above named within ninety (90) days after such claimant did or performed the last of the work or labor, or furnished the last of the materials for which said claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were furnished, or for whom the work or labor was done or performed. Such notice shall be served by mailing the same by registered mail or certified mail, postage prepaid, in an envelope addressed to the PRINCIPAL, OWNER, or SURETY, at any place where an office is regularly maintained for the transaction of business, or served in any manner in which legal process may be served in the state in which the aforesaid project is located, save that such service need to be made by a public officer. (b) After the expiration of one (1) year following the date of which PRINCIPAL ceased work on said CONTRACT, it being understood, however, that if any limitation embodied in the BOND is prohibited by any law controlling the construction thereof, such limitation shall be deemed to be amended so as to be equal to the minimum period of limitation permitted by such law.

PROVIDED, FURTHER, that it is expressly agreed that this BOND shall be deemed amended automatically and immediately, without formal and separate amendments hereto, upon amendment to the Contract not increasing the contract price more than 20 percent, so as to bind the PRINCIPAL and the SURETY to the full and faithful performance of the Contract as so amended. The term "Amendment", wherever used in this BOND and whether referring to this BOND, the contract or the loan documents shall include any alteration, addition, extension or modification of any character whatsoever.
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 the _____ day of _____, 20____.

ATTEST: (SEAL)

_____ _____

Secretary Principal

Approved as to form this _____ day
of _____, 20____. By _____

_____ By _____

City Attorney

ATTEST: (SEAL)

_____ _____

Secretary Surety

Approved this _____ day of

_____, 20____. By_____

_____ By _____

Director of Finance (Title)

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.

Unauthorized Aliens Workers Act

The successful bidder will have to sign an agreement that they are enrolled and participating a Federal Work Authorization Program ("FWAP") that ensures that all of its employees or agents or subcontractors have the legal right to work in the United States, as defined in 8 U.S.C. 1324a(h)(3) and RSMo § 285.525-285.555, and that it will maintain this compliance for the entire duration of its contract with the City of Joplin and will provide an Affidavit of Compliance to the City stating the same.

AFFIDAVIT OF COMPLIANCE
(Missouri Unauthorized Alien Workers Act)

My name is _____(name) _____and I am the _____(Title)

_____of _____(Company Name) _____.
I hereby represent, affirm and certify to the City of Joplin that my company does not knowingly employ any person who is an unauthorized alien in connection with contracted services with the City. I further affirm that my company is actively enrolled and participating in a federal work authorization program with respect to all employees working in connection with the contract services provided to the City.

_____
Affiant

CERTIFICATION FOR PAYMENT

Project: Tin Cup Trail

CONTRACTOR

APPLICATION NO:
PERIOD FROM:
PERIOD TO:

CURRENT PAYMENT REQUESTED BY CONTRACTOR

AMOUNT CERTIFIED

In accordance with the Contract Documents, based on on-site observations and data comprising the above application, the Contractor certifies that the work has progressed as indicated and the quality of the Work is in accordance with the Contract Documents and is entitled to payment of the AMOUNT CERTIFIED.

CONTRACTOR

BY _____

CITY OF JOPLIN, MISSOURI

_____
INSPECTOR

_____
PROJECT MANAGER

_____
ASSISTANT PUBLIC WORKS DIRECTOR

_____
PUBLIC WORKS DIRECTOR

DETAILED REQUEST MUST ACCOMPANY THIS CERTIFICATION

DATE_____

1.	Original contract amount		$	
2.	Net Change Orders (+ or -)		$	
3.	Current Contract Price		$	
4.	Total Completed and stored to date:		$	
5.	Retainage (per agreement)			
5.1	5% of Line 4	$		
5.2	5% of stored material	$_____		
6.	Total completed and stored to date less retainage		$	
7.	Less Previous Payments		$	0.00
8.	**DUE THIS APPLICATION**		$	

Accounting Information Only:

_____Engineering Fee
_____Release Prior Retainage

Missouri

Division of Labor Standards

WAGE AND HOUR SECTION

MICHAEL L. PARSON, Governor

Annual Wage Order No. 31

Section 073

NEWTON 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	$32.40
Boilermaker	$28.93*
Bricklayer-Stone Mason	$28.93*
Carpenter	$48.96
Lather	
Linoleum Layer	
Millwright	
Pile Driver	
Cement Mason	$38.45
Plasterer	
Communication Technician	$28.93*
Electrician (Inside Wireman)	$48.15
Electrician Outside Lineman	$28.93*
Lineman Operator	
Lineman - Tree Trimmer	
Groundman	
Groundman - Tree Trimmer	
Elevator Constructor	$28.93*
Glazier	$28.93*
Ironworker	$28.93*
Laborer	$42.66
General Laborer	
First Semi-Skilled	
Second Semi-Skilled	
Mason	$28.93*
Marble Mason	
Marble Finisher	
Terrazzo Worker	
Terrazzo Finisher	
Tile Setter	
Tile Finisher	
Operating Engineer	$54.46
Group I	
Group II	
Group III	
Group III-A	
Group IV	
Group V	
Painter	$42.16
Plumber	$50.28
Pipe Fitter	
Roofer	$43.30
Sheet Metal Worker	$49.63
Sprinkler Fitter	$28.93*
Truck Driver	$28.93*
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.

Heavy Construction Rates for
NEWTON County

Section 073

OCCUPATIONAL TITLE	**Prevailing Hourly Rate
Carpenter	$28.93*
Millwright	
Pile Driver	
Electrician (Outside Lineman)	$28.93*
Lineman Operator	
Lineman - Tree Trimmer	
Groundman	
Groundman - Tree Trimmer	
Laborer	$47.65
General Laborer	
Skilled Laborer	
Operating Engineer	$28.93*
Group I	
Group II	
Group III	
Group IV	
Truck Driver	$28.93*
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.

DIVISION OF LABOR STANDARDS

MISSOURI DEPARTMENT OF LABOR AND INDUSTRIAL RELATIONS

AFFIDAVIT
COMPLIANCE WITH THE PREVAILING WAGE LAW

I, _____, upon being duly sworn upon my oath state that: (1) I am the
(Name)

_____ of _____; (2) all requirements of
(Title) *(Name of Company)*

§§ 290.210 to 290.340, RSMo, pertaining to the payment of wages to workers employed on public works projects have been fully satisfied with regard to this company's work on _____;
(Name of Project)

(3) I have reviewed and am familiar with the prevailing wage rules in 8 CSR 30-3.010 to 8 CSR 30-3.060; (4) based upon my knowledge of these rules, including the occupational titles set out in 8 CSR 30-3.060, I have completed full and accurate records clearly indicating (a) the names, occupations, and crafts of every worker employed by this company in connection with this project together with an accurate record of the number of hours worked by each worker and the actual wages paid for each class or type of work performed, (b) the payroll deductions that have been made for each worker, and (c) the amounts paid to provide fringe benefits, if any, for each worker; (5) the amounts paid to provide fringe benefits, if any, were irrevocably made to a fund, plan, or program on behalf of the workers; (6) these payroll records are kept and have been provided for inspection to the authorized representative of the contracting public body and will be available, as often as may be necessary, to such body and the Missouri Department of Labor and Industrial Relations; (7) such records shall not be destroyed or removed from the state for one year following the completion of this company's work on this project; and (8) there has been no exception to the full and complete compliance with the provisions and requirements of Annual Wage Order No. _____ Section _____ issued by the Missouri Division of Labor Standards and applicable to this project located in _____ County, Missouri, and completed on the ____ day of _____, _____.

The matters stated herein are true to the best of my information, knowledge, and belief. I acknowledge that the falsification of any information set out above may subject me to criminal prosecution pursuant to §§290.340, 570.090, 575.040, 575.050, or 575.060, RSMo.

_____
Signature

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

My commission expires _____, _____.

_____
Notary Public

_____
Receipt by Authorized Public Representative

Missouri Department of Labor and Industrial Relations is an equal opportunity employer/program.

FINAL WAIVER OF LIEN

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 he is (8)_____of the

(10)_____who is the contractor for the (11)_____

work on (12)_____owned by

(13)_____That the total amount of the contract including extras is

(14) $_____ on which he has 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)_____

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 sub-contractor 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. Amt. Paid prior to this draw

16. If material delivered to site by a material supplier, 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.

Job Special Provisions

1. All job special provisions for Phase 2 and 3 of project shown below shall apply to Phase 1 of project unless otherwise stated.

2. Bollards shall be a 30” tall (Maximum height) low profile collapsible bollard model SKU 290 as manufactured by Markstaar or an approved equal.

Supplemental Specifications for

City of Joplin
Tin Cup Trail, Phase 2
Tin Cup Trail Bridge, Phase 3

May 17, 2024

PREPARED BY
ALLGEIER, MARTIN AND ASSOCIATES, INC.
Consulting Engineers
Joplin, Missouri

SECTION 00 01 05 - CERTIFICATIONS

It is hereby specified, pursuant to RSMo. 327.411 that the documents intended to be authenticated by the Civil Engineer, Allgeier Martin & Associates, and by the undersigned's seal are limited to:

01 00 00 General Requirements

01 11 00	Summary of Work
01 12 00	Multiple Contract Summary
01 35 00	Special Procedures
01 20 00	Price and Payment Procedures
01 25 00	Substitution Procedures
01 41 00	Regulatory Requirements
01 70 23.16	Construction Surveying
01 50 00	Temporary Facilities and Controls

02 00 00 Existing Conditions

02 30 00	Subsurface Investigation

03 00 00 Concrete

03 11 13	Structural Concrete Forming
03 15 16	Concrete Construction Joints
03 15 19	Cast-In Concrete Anchors
03 20 00	Concrete Reinforcing
03 31 00	Structural Concrete
03 31 10	Concrete Admixtures
03 39 01	Cold Weather Concrete Curing
03 39 02	Hot Weather Concrete Curing
03 60 00	Grouting

04 00 00 Masonry

04 22 00	Precast Retaining Wall Blocks

05 00 00 Metals

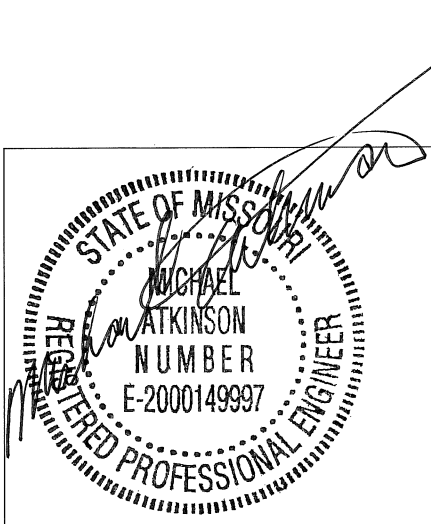
05 05 19	Post-Installed Concrete Anchors
05 05 23	Metal Fastenings
05 12 00	Structural Steel Framing
05 15 00	Wire Rope

09 00 00 Finishes

09 97 13.23	Exterior Steel Fluoropolymer Coating

31 00 00 Earthwork

31 41 00	Shoring
31 51 16	Rock Anchors



Date: 5/17/2024

Allgeier, Martin and Associates
7231 East 24th Street
Joplin, MO 64804
Certificate of Authority: 000427
Consultant Phone: (417) 680-7200

TIN CUP TRAIL, PHASE 2
TIN CUP TRAIL BRIDGE, PHASE 3

DATE PREPARED: 5/17/2024

END OF SECTION 00 01 05

SECTION 00 01 10 – TABLE OF CONTENTS

01 00 00 General Requirements
- 01 11 00 Summary of Work
- 01 12 00 Multiple Contract Summary
- 01 35 00 Special Procedures
- 01 20 00 Price and Payment Procedures
- 01 25 00 Substitution Procedures
- 01 41 00 Regulatory Requirements
- 01 70 23.16 Construction Surveying
- 01 50 00 Temporary Facilities and Controls

02 00 00 Existing Conditions
- 02 30 00 Subsurface Investigation

03 00 00 Concrete
- 03 11 13 Structural Concrete Forming
- 03 15 16 Concrete Construction Joints
- 03 15 19 Cast-In Concrete Anchors
- 03 20 00 Concrete Reinforcing
- 03 31 00 Structural Concrete
- 03 31 10 Concrete Admixtures
- 03 39 01 Cold Weather Concrete Curing
- 03 39 02 Hot Weather Concrete Curing
- 03 60 00 Grouting

04 00 00 Masonry
- 04 22 00 Precast Retaining Wall Blocks

05 00 00 Metals
- 05 05 19 Post-Installed Concrete Anchors
- 05 05 23 Metal Fastenings
- 05 12 00 Structural Steel Framing
- 05 15 00 Wire Rope

09 00 00 Finishes
- 09 97 13.23 Exterior Steel Fluoropolymer Coating

31 00 00 Earthwork
- 31 41 00 Shoring
- 31 51 16 Rock Anchors

END OF SECTION 00 01 10

SECTION 01 11 00 – SUMMARY OF WORK

1. GENERAL

1.1 The work consists of furnishing all labor, materials, equipment, tools, supervision and testing to complete the project as described in these specifications and as shown on the drawings. The work shall include the construction of a suspension bridge, foundations, embankments and associated work.

1.2 Location: The project site is located as shown on the drawings.

1.3 Access: Access by the Contractor and/or his employees to the site and other areas of construction is available via public roads, streets, and easements.

1.4 Safety: Precautions shall be exercised at all times by the Contractor for the protection of persons, employees, and property. The safety provisions of applicable laws and 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.

1.5 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.

2. PERMITS

2.1 Secure all necessary permits from respective authorities necessary to complete construction.

2.1.1 Contractor and subcontractors shall have an Occupational License on file with the City of Joplin as required by Section 00 52 00, paragraph 30.

2.1.2 In addition to the Occupational License, the Contractor shall obtain a Commercial Improvements Permit from the City of Joplin. Cost for said permit is 0.006 times the bid total plus $75 for each trade performing work on the project (mechanical, electrical, plumbing, etc.).

3. RELATED DOCUMENTS

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

3.2 Locate all existing underground installations in advance of excavating or trenching, by contacting the owners thereof, prospecting, and the use of the Company 1-800-DIG-RITE (344-7483), and other appropriate locating services.

3.3 All damage to existing private and/or municipal utilities or improvements 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.

4. SCHEDULING OF WORK

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

5. REGULATORY REQUIREMENTS

5.1 Obtain all necessary permits and licenses and comply with all codes of construction as required by the City of Joplin.

5.2 Pay for any bond or other charges associated with obtaining the necessary permits or licenses.

5.3 Contractor shall request City inspections as required by the City via emailing building-inspector@joplinmo.org.

6. CONSTRUCTION STANDARDS

6.1 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.

7. REFERENCES AND ABBREVIATIONS

7.1 The latest edition of the following specifications cover certain specified materials and methods to be utilized. Abbreviations as used in the specifications shall mean the following:

7.1.1 AWWA: American Water Works Association.

7.1.2 AGA: American Gas Association

7.1.3 ASTM: American Society for Testing Materials

7.1.4 AASHTO: American Association of State Highway & Transportation Officials

7.1.5 ANSI: American National Standards Institute

7.1.6 API: American Petroleum Institute

7.1.7 ASA: American Standards Association

7.1.8 DOT: Federal Department of Transportation

7.1.9 AWS: American Welding Society

7.1.10 AREA: American Railway Engineering Association

7.1.11 ACI: American Concrete Institute

7.1.12 BOCA: Building Officials and Code Administrators

8. QUALITY CONTROL

8.1 Establish a quality control system to insure 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 shall be subject to approval by the Engineer.

9. ENVIRONMENTAL

9.1 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.

9.2 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©).

END OF SECTION 01 11 00

SECTION 01 12 00 – MULTIPLE CONTRACT SUMMARY

1. GENERAL

1.1 Project Coordination: The Contractor shall be responsible for coordinating the efforts of the various trades involved in the project (including mechanical, electrical, etc.) to ensure completion of the construction in the time allowed by these specifications and in a manner specified herein. Delays in delivery and placement of equipment shall not, of themselves, be sufficient grounds for a time extension to the project.

END OF SECTION 01 12 00

PRICE AND PAYMENT PROCEDURES 01 20 00

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 25 00 – SUBSTITUTION PROCEDURES

1. GENERAL

1.1 Description: This section specifies the manufacturers and suppliers of, and standards for, equipment and material to be provided in the construction of structural facilities described in these specifications and shown on the drawings. Equipment and materials by manufacturers and suppliers other than those named herein will be considered by the Engineer under procedures set forth hereinafter.

1.2 Sole Manufacturer and Suppliers:

1.2.1 The provisions contained within the General Conditions and the Supplemental General Conditions concerning "Sole Manufacturer" and "Letters of Certification" shall apply to equipment and materials designated hereinafter, unless specified otherwise.

1.2.2 The "Sole Manufacturer" shall be named where listed in the Bid Schedule, and where set forth by manufacturer in the specifications.

1.2.3 The materials and equipment listed hereinafter are approved for use in the project, in addition to items noted on drawings or specified elsewhere herein. Any modifications to structures shall require the approval of the Engineer, and shall be the sole responsibility of the Contractor. No payment in addition to the contract bid price shall be made to the Contractor for any work required by such modifications.

2. MATERIAL AND EQUIPMENT

2.1 Cable: Lexco Cable Manufacturers or approved equal.

2.2 Rock Anchors: Williams Form Engineering Corporation or approved equal.

2.3 Form Deck: Verco Decking or approved equal.

3. ALTERNATE MANUFACTURERS OF EQUIPMENT AND MATERIALS

3.1 Submittal: Suppliers and manufacturers other than those listed within these specifications wishing to have their equipment and materials considered may submit literature and data completely describing their products to the Engineer for review up to fourteen (14) calendar days prior to the date of bid opening. Documentation received after the date fourteen (14) days prior to the bid opening date will not be considered.

3.2 The Engineer will review submittal of alternate equipment and material. Those items determined by the Engineer to conform to the specifications and receiving approval may be utilized in the Project. Written approval will be provided to prospective bidders.

END OF SECTION 01 25 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 70 23.16 – CONSTRUCTION SURVEYING

1. GENERAL

1.1 The drawings provide T.B.M. information for vertical and horizontal control. From the references, the Contractor shall be responsible for all construction layout as required for the timely prosecution and completion of the work.

1.2 The Contractor shall protect and preserve the established benchmarks, monuments, and survey markers. The Contractor shall carry sole responsibility for replacement of altered or destroyed survey references.

1.3 The Contractor shall check the accuracy and sufficiency of all construction surveys produced by his subcontractors and his employees.

1.4 The Contractor shall provide all labor, equipment, supplies, and supervision to perform construction survey requested to perform the construction.

END OF SECTION 01 70 23.16

SECTION 02 30 00 – SUBSURFACE INVESTIGATION

1. GENERAL

1.1 Description: Subsurface investigations were conducted at the site as a part of the original plant construction. One copy of the reports will be provided at no charge to planholding contractors upon request.

1.2 Contractor may undertake additional soil exploration work prior to bidding the project, however, the extent and timing of such field work shall receive prior approval of the Engineer and the Owner. As a part of any such testing, contractor shall be responsible for locating and appropriately protecting all existing buried utilities located at the site.

1.3 Data presented in the reports is for information purposes only and indicates conditions found at the boring locations at the time borings were made. Any interpolation of data between the boring locations shown shall be at the Contractor's risk.

END OF SECTION 02 30 00

SECTION 03 11 13 – STRUCTURAL CONCRETE FORMING

1. GENERAL

1.1 Description: The work of this section consists of furnishing all materials, labor, tools, and equipment necessary to construct all required concrete formwork to the lines and grades shown on the drawings.

2. MATERIALS

2.1 Exposed Surfaces: All forms for exposed surfaces shall be built of sound plywood or other materials approved by the Engineer, closely fitted to provide the best surface possible without special lining.

2.2 Unexposed Surfaces: Forms for surfaces not exposed may be built of sound lumber free from loose knots.

2.3 Accessories: Form accessories to be partially or wholly embedded in the concrete, such as ties and hangers, shall be commercially manufactured type. The portion remaining within the concrete shall leave no metal within 1-1/2 inch of any surface which will be exposed to view. After the forms are removed, the void left from the form ties shall be cone shaped, at least one inch in diameter and 1-1/2 inches deep to allow proper patching.

2.4 Form Liner: When form liner is specified, the contractor shall provide a sample of the resulting appearance if requested by the engineer.

3. EXECUTION

3.1 General: Forms shall conform to the shape, lines, and dimensions of the concrete as shown on the plans. Forms shall be provided for all vertical surfaces. The materials, design, and construction of formwork shall conform to the applicable portions of the American Concrete Institute Standard "Recommended Practice for Concrete Formwork", (ACI-347) and to these specifications. Individual sections of a tank wall shall be placed continuously to produce a monolithic unit, with a waiting period of 48 hours before casting the adjacent wall. There shall be integral waterstops at each joint. Spacing of joints, shall not exceed fifty (50) feet unless noted otherwise on the drawings.

3.2 Design: The design of the formwork shall be the sole responsibility of the Contractor.

3.3 Construction: Forms shall be built true to line and shall be mortar-tight and sufficiently rigid to prevent displacement or bulging between supports. Bends, chamfers, and other offsets shall be provided when the forms are built. Joints shall be kept to a minimum, and all joints shall be solidly backed by framing.

3.4 Preparation of Surfaces: Before forms are placed, material to form exposed surfaces shall be oiled thoroughly, and for unexposed concrete, forms may be oiled at the Contractor's option. All forms not oiled shall be wetted immediately before placing concrete. All formwork shall be cleaned free of dirt and construction debris before placing concrete and points at which water has gathered within the forms due to wetting shall be drained.

3.5 Embedded Items, Openings, and Recesses:

3.5.1 General: All sleeves, inserts, grooves, anchors, recesses, wall pipes, and other items required for adjoining work or for its support shall be placed or formed prior to placing the concrete.

3.5.2 Related Trades: All of the various trades shall be given ample opportunity to furnish for installation all hangers, anchors, inserts, sleeves, frames, and other items to be built into the concrete as shown on the drawings or the various manufacturer's drawings or specified herein.

3.5.3 Placing Embedded Items: Expansion joint material, waterstops, and all other embedded items shall be positioned accurately and supported securely against displacement before placing concrete.

3.5.4 Formed Holes: Formed holes shall be formed with non-ferrous material which shall be removed after the concrete has hardened.

3.6 Removal of Forms:

3.6.1 Formwork for walls, side of slabs, and other parts not supporting the weight of the concrete may be removed as soon as the concrete has hardened sufficiently to resist damage from removal operations.

3.6.2 Formwork for beam soffits and slabs, and other parts that support the weight of concrete and construction live loads shall remain in place until the concrete has reached its specified 28-day strength. Formwork that supports the weight of concrete only, and no construction live loads or other loads, shall remain in place for not less than seven (7) days or until the concrete has reached 75 percent of its specified 28-day strength. The concrete shall be presumed to have reached its strength when either of the following conditions have been met:

3.6.2.1 When test cylinders, field cured under the most unfavorable conditions prevailing for any portion of the concrete represented, have reached the required strength. Except for field curing and age at test, the test cylinders shall be taken and tested as specified under Section 03 31 00 - STRUCTURAL CONCRETE, Paragraph 10.

3.6.2.2 When the concrete has been cured as specified under Section 03 31 00 - STRUCTURAL CONCRETE, Paragraph 9 for the same length of time as the age at test of laboratory-cured cylinders which reached the required strength specified in Section 03 31 00 - STRUCTURAL CONCRETE. The length of time the concrete has been cured in the field shall be determined by the cumulative number of days or fractions thereof, not necessarily consecutive, during which the temperature of air in contact with the concrete is above 50 degrees F, and the concrete has been damp or thoroughly sealed from evaporation and loss of moisture.

END OF SECTION 03 11 13

SECTION 03 15 16 – CONCRETE CONSTRUCTION JOINTS

1. GENERAL

1.1 Description: The work of this section consists of furnishing and installing expansion joint filler and all tools, labor, equipment, and incidentals necessary to complete this section.

1.2 Expansion joints shall be of the size and at the locations shown on the drawings. Depending upon location, each expansion joint shall be one of the following types:

1.2.1 Fiber Type: Shall be utilized at joints between interior floor slabs on grade and foundation walls, and for all other joints not exposed to view or subject to foot traffic.

1.2.2 Premolded Non-Bituminous Type: Shall be utilized for all horizontal and vertical exterior expansion joints between concrete structures and concrete sidewalks or walkways, and all interior expansion joints exposed to view or subject to foot traffic.

1.3 Crack control joints shall be either tooled or saw-cut to a depth equal to 25 percent of the slab thickness. Clean and primed joint shall be sealed with two-part cold-applied urethane joint sealant as specified in paragraph 2.2.1. To insure a continuous joint, crack control joints in slabs adjacent to buildings or other obstructions shall be tooled in at the time of concrete placement.

2. MATERIALS

2.1 Fiber Type: Shall be composed of cellular fibers securely bonded together and uniformly saturated with asphalt to insure longevity. Fibre type expansion joints shall conform to ASTM D1751 latest revision.

2.2 Premolded Non-Bituminous Type: Shall consist of an expansion joint filler of Type III self-expanding cork, conforming to ASTM D1752, latest revision, and AASHTO M153, latest revision. Joints shall be sealed as specified below.

2.2.1 Horizontal joints shall be sealed with a two-part, cold-applied urethane joint sealant. Sealant shall be self-leveling and shall conform to Federal Specification TT-S-00227E, Type I, Class A. Joint sealant shall be SEALTIGHT POURTHANE as manufactured by W.R. Meadows, Inc., or approved equal.

2.2.2 Vertical joints shall be sealed with a two-component gun-grade, non-sag urethane joint sealant. Sealant shall conform to Federal Specification TT-S-00227E, Type II, Class A. Joint sealant shall be SEALTIGHT Dualthane, as manufactured by W.R. Meadows, Inc., or approved equal.

3. EXECUTION

3.1 Installation: Reinforcement or other embedded metal items bonded to the concrete shall not be permitted to extend through any expansion joint. Sealant shall be applied in strict accordance with manufacturer's recommendations.

END OF SECTION 03 15 16

SECTION 03 15 19 – CAST-IN CONCRETE ANCHORS

1. GENERAL

1.1 Description: The work of this section consists of furnishing and installing concrete anchors and all tools, labor, equipment, and incidentals necessary to complete this section.

2. MATERIALS

2.1 Standard Anchors: All anchors shall use pre-engineered metal building manufacturers (PEBM) recommended anchor bolt and material specifications. The anchors shall meet embedment lengths specified by the PEMB or minimum allowable as noted in the plans.

3. EXECUTION

3.1 Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

3.1.1 Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC 303.

3.1.2 Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.

3.1.3 Install dovetail anchor slots in concrete structures as indicated.

3.2 Equipment Bases and Foundations:

3.2.1 Coordinate sizes and locations of concrete bases with actual equipment provided.

3.2.2 Construct concrete bases high unless otherwise indicated, and extend base not less than 6 inches (150 mm) in each direction beyond the maximum dimensions of supported equipment unless otherwise indicated or unless required for seismic anchor support.

3.2.3 Minimum Compressive Strength: 4500 psi (31 MPa) at 28 days.

3.2.4 Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch (450-mm) centers around the full perimeter of concrete base.

3.2.5 For supported equipment, install epoxy-coated anchor bolts that extend through concrete base and anchor into structural concrete substrate.

3.2.6 Prior to pouring concrete, place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

3.2.7 Cast anchor-bolt insert into bases. Install anchor bolts to elevations required for proper attachment to supported equipment.

END OF SECTION 03 15 19

SECTION 03 20 00 – CONCRETE REINFORCING

1. GENERAL

1.1 Description: The work of this section consists of furnishing, hauling, and placing all reinforcement materials and all tools, labor, equipment, and incidentals necessary to complete this section.

2. MATERIALS

2.1 Steel Reinforcing Bars: Steel reinforcing bars shall conform to ASTM A615, latest revision, "Specification for Deformed Billet-Steel Bars"; ASTM A617, latest revision, "Specification for Axle-Steel Deformed Bars"; or ASTM A616, latest revision, Specification for Deformed Rail-Steel Bars", and shall be Grade 60.

2.2 Steel Reinforcing Wire: Steel reinforcing wire shall meet ASTM A82 requirements for cold drawn steel.

2.3 Welded Wire Fabric: Welded wire fabric shall conform to requirements of ASTM A185, "Specification for Welded Steel Wire Fabric" or ASTM A497, "Specification for Welded Deformed Steel Wire Fabric".

2.4 Dowel Bar Inserts: Dowel bar splice assemblies may be utilized at the Contractor's option, where required, to eliminate cutting of forms at cantilevered concrete pours, corbels, etc. The inserts shall be of a threaded design, which creates a position locking splice that exceeds the ACI318, latest revision, splice strength requirement of 125 percent of specified yield. Insert shall be Lenton Form Saver by ERICO Products, Richmond DB-SAE system, or approved equal.

2.5 Mechanical Butt Splices: Mechanical butt splicing of reinforcing steel may be utilized at the Contractor's option, where reinforcing steel congestion may restrict the flow of concrete aggregate around the steel. The butt splices shall be of a threaded design, which creates a position locking splice that exceeds ACI318, latest revision, splice strength requirement of 125 percent of the specified yield strength of the bar.

3. EXECUTION

3.1 General: Unless otherwise indicated on the drawings or specified herein, all cutting and bending of reinforcement bars shall be done at the mill or shop prior to shipment. Cutting and bending in the field will be permitted only where shown on the Plans or to correct errors, damage by handling and shipping, and minor omissions in shop bending when authorized by the Resident Project Representative.

3.2 Storing and Cleaning: All reinforcement shall be stored above ground on skids, pallets, or other supports and shall be protected from mechanical injury and from deterioration by exposure. When placed in the work, reinforcement shall be free from dirt, detrimental scale, concrete, paint, oil, or other foreign materials. Tight, thin rust is not considered detrimental and will not require cleaning.

3.3 Placing: Except as shown on the drawings or specified herein, all placement of reinforcing bars, welded wire fabric and bar supports shall conform to the latest edition of "Placing Reinforcing Bars, CRSI-WCRSI Recommended Practices", published by the Concrete Reinforcing Steel Institute. Bars may be moved as necessary to avoid interference with other reinforcing steel, pipes, or other embedded items. If bars are moved more than the specified placing tolerances, the resulting arrangement shall be subject to approval by the Resident Project Representative.

3.4 Splices: When splices other than those shown on the Plans become necessary, they shall be located at areas of low stress and shall be subject to approval by the Resident Project Representative.

3.5 Fabrication Drawings: The Contractor shall furnish for Engineer's reference three sets of complete fabrication drawings and details for placing all reinforcing steel. These drawings shall be made in accordance with the accompanying drawings, the applicable portions of the "Building Code Requirements for Reinforced Concrete", (ACI 318-83), the latest edition of the "Manual of Standard Practice for Detailing Reinforced Concrete Structures", (ACI 315), and these specifications. Drawings shall show the clearances, size of members, all dimensions and other details necessary for accurate construction of the concrete work.

END OF SECTION 03 20 00

SECTION 03 31 00 – STRUCTURAL CONCRETE

1. GENERAL

1.1 Description: The work of this section shall include the furnishing, hauling, placing, curing and testing of all Portland cement concrete required by the construction drawings and herein specified.

2. MATERIALS

2.1 Portland Cement: Portland cement shall conform to "Standard Specification for Portland Cement" ASTM C150 Type 1 or Type 1L. One sack of cement shall be considered as one cubic foot of volume or 94 pounds by weight.

2.2 Aggregates: Fine and coarse aggregates shall conform to "Standard Specification for Concrete Aggregate", ASTM C33. The nominal maximum size of the coarse aggregate shall be 1-1/2".

2.2.1 Deleterious Materials: Coarse aggregate shall not contain more than 1.0% shale, 2.0% chert, or 0.5% clay, by weight. Fine aggregate shall not contain more than 0.1% lignite and coal, 0.25% clay, or 0.25% shale, by weight.

2.3 Admixtures:

2.3.1 Air-entrainment Admixtures: Shall be as specified in Section 03 31 10 - CONCRETE ADMIXTURES.

2.3.2 Water Reducing Retarding and Accelerating Admixtures: If permitted by the Engineer according to procedures set forth in Section 03 31 10 - CONCRETE ADMIXTURES, water reducing, retarding and accelerating admixtures shall conform to requirements of ASTM C494, latest revision.

2.4 Mixing Water: Mixing water for concrete shall be fresh, clean, and potable. Non-potable water may be used only if it produces mortar cubes having 7- and 28-day strengths equal to the strength of similar specimens made with distilled water, when tested in accordance with "Method of Test for Compressive Strength of Hydraulic Cement Mortars", ASTM C109.

2.5 Water Stops: Shall be as specified in Section 03 15 13 - WATERSTOPS.

2.6 Curing Compounds: All curing compounds shall conform to specifications for liquid membrane forming compounds for curing concrete ASTM 309, applied in accordance with manufacturer's recommendations.

3. PROPORTIONING CONCRETE

3.1 General: Proportions of aggregate to cement and water shall be such as to provide a concrete mix which will work readily into corners and angles of forms and around reinforcement and other embedded items without causing segregation of materials.

3.2 Concrete Strengths

3.2.1 Structural Concrete: Shall be provided to develop a compressive strength of not less than 4000 psi at 28 days for field-cured cylinders. All structural concrete shall contain entrained air from 3½ to 6½ percent by volume. Concrete shall have a maximum water-cement ratio of 0.45 by weight. Moisture in the aggregate shall be measured and the quantity included in the water-cement ratio specified. The minimum cement content of the mix shall be 6 sacks per cubic yard of concrete.

3.2.2 Fill Concrete: Shall be provided to develop a compressive strength of not less than 2500 psi at 28 days for field-cured cylinders. All fill concrete shall contain entrained air from 3½ to 6½ percent by volume. Concrete shall have a maximum water-cement ratio of 0.55 by weight. Moisture in the aggregate shall be measured and the quantity included in the water-cement ratio specified.

3.3 Concrete Proportions: Portland cement concrete shall be proportioned and so placed as to provide an average

compressive strength sufficiently high to minimize the number of compressive strength tests falling below the specified concrete strength. The proportions of the concrete shall produce a mixture that will work readily, with the placement method used, into corners and angles of forms and around reinforcement. Segregation of materials in the concrete shall not be permitted nor collection of excess free water on the surface. Slump of concrete shall be the minimum that is practicable, and shall conform with the following:

4" max., 2" min. - footings, heavy walls, piers, buttresses

5" max., 3" min. - light walls, slabs, beams, columns, stairs

3" max., 2" min. - concrete floors with monolithic finish

In no case shall the amount of fine aggregate be more than the amount of coarse aggregate (measured by weight) nor shall the amount of coarse aggregate be such as to produce honeycombing.

3.4 Trial Batches: Proportions of concrete ingredients shall be established on the basis of laboratory trial batches, using the aggregates selected for the job, to provide conformance with strength, workability, and consistency requirements at the water-cement ratio specified. When different materials are used on different portions of the project, each combination shall be evaluated separately. Test specimens shall be made in accordance with ASTM C192, latest revision, and shall be tested in accordance with ASTM C39, latest revision. The combination of fine and coarse aggregates shall be adjusted until the mix meets the approval of the engineer. The mix design and certified test results shall be provided to the Engineer prior to placement of the concrete on the job site.

4. MIXING CONCRETE

4.1 Ready-Mixed Concrete: Ready-mixed concrete will be permitted provided it conforms to the "Standard Specification for Ready-Mixed Concrete: ASTM C94 and to the applicable portions of these Specifications.

4.2 Batch Mixing at Site:

4.2.1 The concrete shall be mixed in a batch mixer, conforming to the requirements of the Mixer Manufacturer's Bureau of the Associated General Contractors of America. The mixer shall bear a manufacturer's rating and shall be operated in accordance with these recommendations. It shall be equipped with a suitable charging hopper, water storage tank, and a water-measuring device, and shall be capable of thoroughly mixing aggregates, cement, and water into a uniform mass within the specified mixing time, and of discharging the mix without segregation.

4.2.2 The batch shall be so charged into the mixer that some water will enter in advance of the cement and aggregates. Water shall continue to flow for a period which may extend to the end of the first 25 percent of the specified mixing time. Controls shall be provided to insure that the batch cannot be discharged until the required mixing time has elapsed. Controls shall be provided to insure that no additional water may be added during mixing. The entire batch shall be discharged before the mixer is recharged.

4.2.3 Each batch of two cubic yards or less shall be mixed for not less than 1½ minutes. The minimum mixing time shall be increased 15 seconds for each additional cubic yard or fraction thereof.

4.3 The mixer shall be clean, and the pickup and throw-over blades shall be replaced when they have lost 10 percent of their original depth.

4.4 Admixtures: Shall be as specified in Section 03 31 10 - CONCRETE ADMIXTURES.

4.5 Retempering: Concrete shall be mixed only in quantities for immediate use. Concrete which has set shall not be retempered, but shall be discarded.

4.6 Indiscriminate addition of water to increase slump or workability shall be prohibited. When concrete arrives at the project with slump below that suitable for placing, water may be added only by authorized representatives of the concrete supplier, and then only if neither the maximum permissible water-cement ratio nor the maximum slump is exceeded. The

water must be incorporated by additional mixing equal to at least half of the total mixing required. Any addition of water above that permitted by the limitation on water-cement ratio must be accompanied by a quantity of cement sufficient to maintain the proper water-cement ratio. Such addition must be approved by the Resident Project Representative.

4.7 Weather Conditions:

4.7.1 Cold Weather: Shall be as specified in Section 03 39 01 - COLD WEATHER CONCRETE CURING.

4.7.2 Hot Weather: Shall be as specified in Section 03 39 02 - HOT WEATHER CONCRETING CURING.

5. CONCRETE PLACEMENT

5.1 Preparation Before Placing: Hardened concrete and foreign materials shall be removed from the inner surfaces of the conveying equipment.

5.2 Formwork shall be completed; reinforcement shall be secured in place; expansion joint material, waterstops, anchors, pipe sleeves, and other embedded items shall be positioned. Subgrades shall be sprinkled sufficiently to eliminate absorption of water from the concrete before any concrete is placed.

5.3 Before placing concrete slabs on grade, where required, a polyethylene vapor barrier of 6 mil. thickness, or approved equal, shall be installed in accordance with the manufacturer's recommendations. A layer of sand shall be placed on the granular fill to protect the vapor barrier during placement of concrete.

5.4 Conveying: Concrete shall be handled from the mixer to the place of final deposit as rapidly as practicable by methods which will prevent separation or loss of ingredients and in a manner which will assure that the required quality of the concrete is obtained. Conveying equipment shall be of size and design to insure a continuous flow of concrete at the delivery end and shall be approved by the Engineer. Conveying equipment and operations shall conform to the following requirements.

5.4.1 Unless noted otherwise, truck mixers, agitators, and non-agitating units and their manner of operation shall conform to the applicable requirements of "Specifications for Ready-Mixed Concrete", ASTM C94. All conveying equipment shall be adequately sized to insure that discharge of the concrete from each truck to the point of its final placement shall be accomplished within 45 minutes after the truck arrives at the site. Any truckload of concrete not discharged within the 45 minute time limit may be rejected by the Resident Project Representative and shall not be placed on the project.

5.4.2 Belt conveyors shall be horizontal or at a slope which will not cause segregation or loss. An approved arrangement shall be used at the discharge end to prevent separation. Long runs shall be discharged without separation into a hopper.

5.4.3 Chutes shall be metal or metal-lined and shall have a slope not exceeding 1 vertical to 2 horizontal and not less than 1 vertical to 3 horizontal. Chutes more than 20 feet long and chutes not meeting the slope requirements may be used provided they discharge into a hopper before distribution.

5.4.4 Pumping or pneumatic conveying equipment shall be without "Y" sections, and with adequate pumping capacity. The equipment shall be cleaned at the end of each operation. Pneumatic placement shall be controlled so that separation is not apparent in the discharged concrete. The maximum loss of slump in pumping or pneumatic conveying equipment shall be 1½ inches.

5.5 Depositing: Concrete shall be deposited continuously, or in layers of such thickness that no concrete will be deposited on concrete which has hardened sufficiently to cause the formation of seams or planes of weakness within the section. If a section cannot be placed continuously, construction joints and waterstops shall be located at points as provided for in the drawings or as approved by the Engineer. Placing shall be carried on at such a rate that the concrete which is being integrated with fresh concrete is still plastic. Concrete which has partially hardened or has been contaminated by foreign materials shall not be deposited. Temporary spreaders in forms shall be removed when the concrete placing has reached an elevation rendering their service unnecessary. They may remain embedded in the concrete only if made of

metal or concrete and if prior approval has been obtained.

5.5.1 Placing of concrete in supported elements shall not be started until the concrete previously placed in columns and walls is no longer plastic.

5.5.2 Concrete shall be deposited as nearly as practicable to its final position to avoid segregation due to flowing or rehandling and shall drop vertically into the center of the forms. In no case shall concrete be allowed to fall more than five feet or at other times when required by the Resident Project Representative drop chutes or other approved devices shall be used.

5.6 Where surface mortar is to be the basis of the finish, the coarse aggregate shall be worked back from the forms with a suitable tool so as to bring a full surface of mortar against the form, without the formation of excessive surface voids. All concrete shall be consolidated by vibration, spading, rodding, or forking, so that the concrete is thoroughly worked around the reinforcement, around embedded items, and into corners of forms, eliminating all air or stone pockets, which may cause honeycombing, pitting, or planes of weakness. Mechanical vibrators shall have a minimum frequency of 7,000 revolutions per minute and shall be operated by competent workmen. Overvibrating and use of vibrators to transport concrete within forms shall not be allowed. Vibrators shall be inserted and withdrawn at many points, from 18 to 30 inches apart. At each insertion, the duration shall be sufficient to consolidate the concrete but not sufficient to cause segregation, generally from 5 to 15 seconds duration. A spare vibrator shall be kept on the job site during all concrete placing operations.

5.7 Weather Conditions:

5.7.1 Unless adequate protection is provided and approved by the Resident Project Representative, concrete shall not be placed in rain, sleet, or snow. Rain water shall not be allowed to increase the mixing water nor to damage the surface finish.

5.7.2 Cold Weather: Shall be as specified in Section 03 39 01 - COLD WEATHER CONCRETING CURING.

5.7.3 Hot Weather: Shall be specified in Section 03 39 02 - HOT WEATHER CONCRETING CURING.

5.8 Concreting Under Water: No concrete shall be placed under water without the written approval of the Engineer.

6. JOINTS

6.1 Construction Joints: Construction joints shown on the plans are recommended and any deviation from these shall be approved by the Engineer. When joints not shown on the plans are required, they shall be placed so as to least impair the strength of the structure. Waterstops shall be required at all construction joints unless deviations are specifically requested by the Contractor and approved by the Engineer.

6.1.1 All reinforcing bars and welded wire fabric shall continue across construction joints. Construction joints shall conform to the details shown on the plans and shall be keyed as shown. Construction joints shall be thoroughly wetted and coated with a mixture of 1:2 mortar immediately before the new concrete is placed.

6.1.2 The surface of the concrete at all joints shall be thoroughly cleaned and all laitance shall be removed. Immediately before placing fresh concrete, the surface of the existing concrete at the joint shall be dampened, but not saturated. The edges of all joints which are exposed to view shall be carefully finished true to line and elevation.

6.2 Expansion Joints: Shall be as specified in Section 03 15 16 CONCRETE CONSTRUCTION JOINTS. Crack control joints shall be either tooled or saw-cut to a depth equal to 25 percent of the slab thickness. Crack control joints in slabs adjacent to obstructions that inhibit operation of a concrete saw shall be tooled in at the time of concrete placement.

7. FINISHES

7.1 General: After removal of forms the concrete shall be given one or more of the finishes specified herein.

7.2 Formed Surfaces: All formed surfaces which are to be exposed to view, and which are not to receive a cementitious coating, shall be given a smooth rubbed finish. Formed surfaces which are exposed to view and are to receive a cementitious coating, shall receive only a general patching and smoothing to remove any rough projections. The inside walls of structures, even though the structure will retain liquid, will be considered as exposed to view. All concrete surfaces not exposed to view shall be left with a rough or board form finish. All necessary patching shall be done immediately after forms have been removed, and rubbing shall be completed not later than the following day. Surfaces shall be wetted and rubbed with Carborundum brick or other abrasive until a uniform color and texture are produced. No cement grout or slush shall be used other than the cement paste drawn from the green concrete itself during the rubbing process.

7.3 Related Unformed Surfaces: Tops of walls and similar unformed surfaces occurring adjacent to formed surfaces shall be struck smooth after concrete is placed and shall be floated to a texture reasonably consistent with that of the formed surfaces. Final treatment on formed surfaces shall continue uniformly across the unformed surfaces.

7.4 Floor Finishes: Except as specified herein, all concrete floors shall be given a floated finish. After the concrete has been placed, struck off, consolidated, and leveled, the concrete shall not be worked further until ready for floating. Floating shall begin when the water sheen has disappeared, and/or when the mix has stiffened sufficiently to permit the proper operation of a power-driven float. The surface shall then be consolidated with power-driven floats. Hand floating with wood or cork-faced floats shall be used in locations inaccessible to the power-driven machine. Trueness of surface shall be rechecked at this stage with a 10-foot straightedge applied at not less than two different angles. All high spots shall be cut down and all low spots filled during this procedure to a tolerance of one-quarter inch in 10 feet as determined by a 10-foot straightedge placed anywhere on the slab in any direction. Floors shall uniformly slope toward floor drains where shown on the drawings.

7.5 Sidewalk slabs and other exterior slabs established for walking surfaces shall be given a coarse transverse scored texture by drawing a broom or burlap belt across the surface. This operation shall follow immediately after floating. Floating shall be performed as specified above.

7.6 Sidewalk slabs shall be provided with crack control joints located at five-foot spacings. Other exterior concrete surfaces, such as driveways, walkway areas, etc., shall be provided with crack control joints located at intervals not to exceed ten-feet, each way. Crack control joints shall be either sawed or hand-tooled, with a maximum width of 1/4-inch and a depth equal to 1/4 of the slab thickness. Crack control joints shall be sealed with self-leveling urethane joint sealant per Section 03 15 16 CONCRETE CONSTRUCTION JOINTS.

7.7 Interior floor slabs of buildings shall be given a steel troweled finish. The surface shall be finished first with power floats, as specified above where applicable, then with power trowels, and finally with hand trowels. The first troweling after power floating shall be done by a power trowel and shall produce a smooth surface which is relatively free of defects but which may still contain some trowel marks. Additional troweling shall be done by hand after the surface has hardened sufficiently. The final troweling shall be done when a ringing sound is produced as the trowel is moved over the surface. The surface shall be thoroughly consolidated by the hand troweling operations. The finished surface shall be free of any trowel marks, uniform in texture and appearance and shall be finished to a tolerance of one-eighth inch in 10 feet as determined by a 10-foot straightedge placed anywhere on the slab in any direction.

7.8 Interior floor slabs of buildings shall be sealed as specified in Section 09 93 00 – STAINING AND TRANSPARENT FINISHING.

8. PATCHING

8.1 General: All tie holes and all repairable defective areas shall be patched immediately after form removal. After being cleaned and thoroughly dampened, the holes shall be filled with patching mortar and finished. Patching shall insure watertightness of the hole.

8.2 Defective Areas: All honeycombed and other defective concrete shall be removed down to sound concrete. The area to be patched and an area at least six inches wide surrounding it shall be dampened to prevent absorption of water from the patching mortar. A bonding grout shall be prepared using a mix of approximately one part cement to one part fine sand passing a No. 30 mesh sieve, shall be mixed to the consistency of thick cream, and shall then be well brushed into

the surface.

8.3 The patching mixture shall be made of the same material and of approximately the same proportions as used for the concrete, except that the coarse aggregate shall be omitted and the mortar shall consist of not more than 1 part cement to 1½ parts sand by damp loose volume. White Portland cement shall be substituted for a part of the gray Portland cement on exposed concrete in order to produce a color matching the color of the surrounding concrete, as determined by a trial patch.

8.4 The quantity of mixing water shall be no more than necessary for handling and placing. The patching mortar shall be mixed in advance and allowed to stand with frequent manipulation with a trowel, without addition of water, until it has reached the stiffest consistency that will permit placing.

8.5 After surface water has evaporated from the area to be patched, the bond coat shall be well brushed into the surface. When the bond coat begins to lose the water sheen, the premixed patching mortar shall be applied. The mortar shall be thoroughly consolidated into place and struck off so as to leave the patch slightly higher than the surrounding surface. To permit initial shrinkage, it shall be left undisturbed for at least one hour before being finally finished. The patched area shall be kept damp for seven days. Metal tools shall not be used in finishing a patch in a formed wall which will be exposed.

8.6 Proprietary Materials: If desired by the Contractor, proprietary compounds for adhesion or as patching ingredients may be used in lieu of or in addition to the foregoing patching procedures. Such compounds shall be used in accordance with the manufacturer's recommendations and shall be Standard Dry Wall Products or approved equal.

9. CURING AND PROTECTION

9.1 General: Exposed surfaces of concrete shall be protected from premature drying and excessively hot or cold temperatures for the period of time necessary for the hydration of the cement and proper hardening of the concrete.

9.2 Curing: Initial curing shall immediately follow the finishing operation. Concrete shall be kept continuously moist at least for 72 hours by either ponding or continuously sprinkling, under plastic sheeting, absorptive mat or fabric kept continuously wet. Whichever material or method is chosen shall be approved by the Resident Project Representative.

9.3 Immediately following the initial curing for a period of at least four days, final curing shall be accomplished by either continuation of the method used for initial curing, waterproof paper conforming to "Specifications for Waterproof Paper for Curing Concrete", ASTM C171, or other moisture retaining coverings as approved by the Engineer.

9.4 The final curing shall continue for a cumulative number of seven days, not necessarily consecutive, during which the temperature of air in contact with the concrete is above 50°F. If high-early-strength cement has been used, the final curing shall continue for a total of three days. Changes in the temperature of the concrete shall be as uniform as possible and shall not exceed 5° in any one hour, nor 50°F in any 24-hour period.

9.5 Cold Weather: Shall be as specified in Section 03 39 01 - COLD WEATHER CONCRETING CURING.

9.6 Hot Weather: Shall be as specified in Section 03 39 02 - HOT WEATHER CONCRETING CURING.

9.7 Protection From Mechanical Injury: During curing the concrete shall be protected from damaging mechanical disturbances, heavy shock or excessive vibration. All finished surfaces shall be protected from damage cause by construction equipment, materials, or methods and rain or running water.

9.8 Temperature and Shrinkage Cracks: Any temperature and shrinkage cracks which develop prior to the final acceptance of the project by the Owner shall be repaired and waterproofed to the satisfaction of the Engineer and as called for in other applicable parts of the Specifications.

10. TESTING

10.1 General: The Contractor shall keep a log identifying the exact locations of poured concrete represented by each test cylinder and shall furnish two copies of the test reports and logs to the Engineer as they become available.

10.2 All strength tests shall be performed by a reputable testing laboratory hired by the Contractor at his expense and approved by the Engineer. The costs of performing all strength test as specified herein shall be borne by the Contractor and no extra compensation will be allowed.

10.3 Slump Tests: Slump tests will be performed by the Resident Project Representative at his discretion and shall conform to "Standard Method of Test for Slump of Portland Cement Concrete", ASTM C143.

10.4 Strength Tests: Test cylinders shall be taken by the Contractor as directed by the Resident Project Representative and shall be cured and tested in accordance with the "Standard Method of Making and Curing Concrete Compressive and Flexural Strength Test Specimens in the Field", ASTM C31. Not less than three specimens shall be made for each 50 cubic yards of concrete or fraction thereof in each day's pour, except that in no case shall a given mix design be represented by less than five tests. In the event that three test cylinders are not considered sufficient to represent the work done, the Resident Project Representative may direct that extra cylinders be made. The standard age of test shall be 28 days, but seven-day tests and 14-day tests may be used provided that the relation between the seven-day, 14-day and 28-day strengths of the concrete is established in advance by test for the materials and proportions used and approved by the Engineer. If the Contractor desires, extra cylinders may be made and tested for the purpose of indicating sufficient concrete strength for form removal or other purposes. If the average of the strengths of the test cylinders fails to attain the specified strength so as to justify doubt as to the quality of the concrete, further tests shall be made, at the Contractor's expense, of the concrete in place to determine its fitness to remain in the structure. These tests shall be performed in accordance with the "Standard Method of Obtaining and Testing Drilled Cores and Sawed Beams of Concrete", ASTM C42.

10.4.1 The strength level of the concrete will be considered acceptable if the average of three 28-day test strength results equal or exceed the specified compressive strength, and no individual tests fall below the specified compressive strength by more than 500 psi.

10.5 Air Content Tests: Air content tests may be requested by the Resident Project Representative at his discretion and shall conform to the "Standard Method of Test for Air Content of Freshly Mixed Concrete by the Volumetric Method", ASTM C173 or the "Standard Method of Test for Air Content of Freshly Mixed Concrete by the Pressure Method", ASTM C231. The Contractor shall provide all necessary equipment, materials, sampling, and testing.

11. DAMPPROOFING

11.1 General: Dampproofing shall be undertaken for all slabs on grade for all buildings, and for all basement floor slabs. Dampproofing for all floor slabs shall be by the installation of 6 mil. thickness polyethylene vapor barrier installed in accordance with the manufacturer's recommendations.

11.2 The exterior surface of all concrete basement walls and stairwells below grade and the backfill side of all retaining walls and underground dry pits containing equipment shall be dampproofed with two coats of an asphalt base coating as specified in Section 09 90 00 - PAINTING.

END OF SECTION 03 31 00

SECTION 03 31 10 – CONCRETE ADMIXTURES

1. GENERAL

1.1 Description: The work of this section consists of furnishing and using materials and procedures for air-entrainment of and/or addition of chemical admixtures to concrete.

2. MATERIALS

2.1 Air-entrainment Admixtures: Air-entrainment shall be accomplished by the use of Type 1 Portland cement with the addition of an approved air-entrainment admixture or by the use of Type 1A Portland cement. Air-entrainment admixtures shall conform to "Standard Specifications for Air-Entraining Admixtures for Concrete", ASTM C260.

2.2 Water Reducing, Retarding, and Accelerating Admixtures: Water reducing, retarding, or accelerating admixtures, if permitted, shall conform to "Standard Specifications for Chemical Admixtures for Concrete", ASTM C494.

2.3 Fly Ash: Fly ash may be allowed as an admixture in the concrete mix provided the following requirements are addressed to the satisfaction of the Engineer:

2.3.1 Its use is in strict accordance with ASTM C618, latest revision. Fly ash shall be sampled and tested in accordance with ASTM C311, latest revision;

2.3.2 Prior to being approved for use, fly ash shall be tested in combination with the cement and aggregates proposed for use to ascertain its suitability with regard to water requirements, strength development, shrinkage, heat of hydration, and durability.

3. EXECUTION

3.1 Water Reducing, Retarding, and Accelerating Admixtures: Such admixtures may be used when such use is requested by the Contractor subject to review and approval by the Engineer. For certain uses, the Engineer reserves the right to require the use of a retardant or other admixtures for specific uses such as a retardant in extensive wall pours to assure elimination of cold joints or for other such purposes. No additional compensation will be allowed when such admixtures are used either at the Contractor's request or at the request of the Engineer. However, when certain such admixtures are used, it will be allowable to reduce the cement content of the mix to a minimum of 5½ bags of cement per cubic yard of concrete, subject to the following conditions: A trial batch and test cylinders taken therefrom demonstrate that the mix will meet the strength, workability, slump, and durability requirements of the specified mix previously herein stated. The strength shall be determined from seven-day test cylinders from a trial batch utilizing the admixture and made using the aggregates selected for the job, to establish the correct proportions to give proper workability with the water-cement ratio specified. The combination of fine and coarse aggregates shall be adjusted within limits specified until the mix meets approval of the Engineer. The seven-day test strength shall equal 95 percent of the specified minimum 28-day strength.

3.2 Air-entraining, shrinkage reducing, and chemical admixtures shall be charged into the mixer as a solution and shall be dispensed by an automatic dispenser or similar metering device. Powdered admixtures shall be weighed or measured by volume as recommended by the manufacturer. The accuracy of measurement by any admixture shall be within ± three percent.

3.3 Two or more admixtures may be used in the same concrete, provided such admixtures are added separately during the batching sequence and provided further that the admixtures used in that combination retain full efficiency and have no deleterious effect on the concrete or on the properties of each other.

3.4 Addition of retarding admixtures shall not be significantly delayed after the addition of the cement.

3.5 The addition of calcium chloride to the mix will not be allowed.

END OF SECTION 03 31 10

SECTION 03 39 01 – COLD WEATHER CONCRETE CURING

1. GENERAL

1.1 Description: This section consists of procedures to be followed when mixing, placing, and curing concrete in cold weather.

1.2 Definition: Procedures called out in this section shall be followed when the ambient temperature falls below 40°F.

2. CONCRETE PLACEMENT

2.1 Concrete Temperature: When the ambient temperature falls below 40°F, the minimum temperature of concrete as placed shall be 50°F.

2.2 Preparation Before Placement: The inside of forms, reinforcing steel, and embedded fixtures shall be free of all snow and ice at the time concrete is placed. Concrete shall not be placed on a frozen subgrade. If the subgrade is frozen, concreting shall be delayed until the ground thaws sufficiently to ensure that it will not freeze again during the curing period.

3. CONCRETE MIXING

3.1 As-Mixed Temperature: To maintain the temperature of the concrete above the minimum placing temperature required in Paragraph 2.1, the as-mixed temperature shall not be less than 55°F when the ambient temperature falls below 40°F.

3.2 If the water or aggregate has been heated, the water shall be combined with the aggregate in the mixer before cement is added. Cement shall not be added to mixtures of water and aggregate when the temperature of the mixture is greater than 100°F.

4. CURING AND PROTECTION

4.1 Concrete Protection: When the ambient temperature of the air falls below 40°F, the concrete shall be protected during the required curing period by one of the methods outlined below. The Contractor shall make arrangements for protecting the concrete, and shall gain approval of the method from the Engineer prior to placement of the concrete.

4.1.1 Insulating Blanket: The concrete may be protected by the use of commercial insulating blanket or bat insulation. The effectiveness of insulation shall be monitored by the Resident Project Representative by placing a thermometer under the insulation in contact with the concrete. If the temperature of the concrete is below 50°F, additional insulating material shall be applied. Extra care shall be taken to prevent corners and edges of the concrete from freezing.

4.1.2 Dry Straw: Concrete may be protected by using dry straw, 12 in. to 24 in. thick. Tarpaulins, canvas or waterproof paper shall be used to protect the straw. The temperature of the concrete shall be checked as specified in paragraph 4.1.1 of this Section and additional straw shall be applied if necessary.

4.1.3 Heated Enclosures: The concrete may be protected by an enclosure constructed of wood framework covered with tarpaulins or plastic sheets. The enclosure shall be sturdy and reasonably airtight, with ample space provided between concrete and enclosure to permit free circulation of warm air. The enclosure shall be heated by live steam, steam in pipes, oil-fired blowers or salamanders. If a fuel-burning heater is utilized, care shall be taken to prevent drying of the concrete and to prevent injury due to concentration of heat or carbon dioxide. Arrangements for heating the enclosure shall be made and approved by the Engineer prior to placement of the concrete. Air temperature within the enclosure shall be no lower than 50°F and no higher than 70°F.

4.2 Required Curing Period: The curing shall continue for a cumulative number of seven days, not necessarily consecutive, during which the temperature of the air in contact with the concrete is 50°F or above. If high-early-strength cement has been used, the curing shall continue for a total of three days.

END OF SECTION 03 39 01

SECTION 03 39 02 – HOT WEATHER CONCRETE CURING

1. GENERAL

1.1 Description: This section consists of procedures to be followed when mixing, placing, and curing concrete in hot weather.

1.2 Definition: Procedures called out in this section shall be followed when the ambient temperature of the air rises above 85°F.

1.3 Work with Portland cement concrete, when ambient temperatures are above 85°F, shall conform to standards and recommendations prescribed in ACI 305R, "Hot Weather Concreting", latest revision.

2. CONCRETE PLACEMENT

2.1 Concrete Temperature: Concrete placed in hot weather shall have a placing temperature of 90°F or less.

2.2 Preparation Before Placement: Forms, reinforcing steel, and subgrade shall be sprinkled with cool water just before concrete is placed. Prior to placing concrete, however, there shall be no standing water on the subgrade.

3. CONCRETE MIXING

3.1 Ingredients: The ingredients shall be cooled before mixing if necessary to maintain the temperature of the concrete below the maximum placing temperature required in paragraph 2.1.

4. CURING AND PROTECTION

4.1 Curing Procedures: During hot weather, arrangements for installation of windbreaks, shading, spraying, sprinkling, ponding, or wet covering shall be made and approved from the Owner gained in advance of placement and such protective measures shall be taken as quickly as concrete hardening and finishing operations will allow.

END OF SECTION 03 39 02

SECTION 03 60 00 – GROUTING

1. GENERAL

1.1 Description: The work of this section shall include the furnishing, hauling, placing, curing and testing of all grout required by the construction drawings and herein specified. This item includes furnishing, placing, and finishing the grout for fillets, under base plates, and other locations as required by the drawings or specified herein.

2. MATERIALS

2.1 Portland Cement: Portland cement shall conform to "Standard Specification for Portland Cement" ASTM C150 Type 1 or Type 1A. One sack of cement shall be considered as one cubic foot of volume or 94 pounds by weight.

2.2 Aggregates: Fine and coarse aggregates shall conform to "Standard Specification for Concrete Aggregate", ASTM C33. The nominal maximum size of the coarse aggregate shall be 1-1/2".

2.2.1 Deleterious Materials: Coarse aggregate shall not contain more than 1.0% shale, 2.0% chert, or 0.5% clay, by weight. Fine aggregate shall not contain more than 0.1% lignite and coal, 0.25% clay, or 0.25% shale, by weight.

2.3 Admixtures:

2.3.1 Air-entrainment Admixtures: Shall be as specified in Section 03 31 10 - CONCRETE ADMIXTURES.

2.3.2 Water Reducing Retarding and Accelerating Admixtures: If permitted by the Engineer according to procedures set forth in Section 03 31 10 - CONCRETE ADMIXTURES, water reducing, retarding and accelerating admixtures shall conform to requirements of ASTM C494, latest revision.

2.4 Mixing Water: Mixing water for concrete shall be fresh, clean, and potable. Non-potable water may be used only if it produces mortar cubes having 7- and 28-day strengths equal to the strength of similar specimens made with distilled water, when tested in accordance with "Method of Test for Compressive Strength of Hydraulic Cement Mortars", ASTM C109.

2.5 Water Stops: Shall be as specified in Section 03 15 13 - WATERSTOPS.

2.6 Curing Compounds: All curing compounds shall conform to specifications for liquid membrane forming compounds for curing concrete ASTM 309, applied in accordance with manufacturer's recommendations.

2.7 Non-Shrink, Non-Metallic Grout: Where called for on the drawings or by these specifications, or where, for a specific application, its use is otherwise required non-shrink, non-metallic grout shall be utilized. Such grout shall be SEALTIGHT 588 Grout as produced by W. R. Meadows, THORITE, as produced by Thoro System Products, or approved equal. Manufacturer's instructions for application shall be strictly followed.

2.8 Proportioning and Mixing: Grout shall consist of a mixture of 1-part Portland cement and 2 parts fine aggregate with a slump of three inches to five inches. The water-cement ratio shall be maintained at not more than 4½ gallons per bag of cement. The ingredients shall be mixed in accordance with the applicable portions of Paragraph 4 of this Specification, so as to produce a uniform mass of material.

3. EXECUTION

3.1 Placing: Before placing grout, the concrete shall be thoroughly cleaned of all dust, dirt, or other deleterious material and then shall be thoroughly wetted. Grout shall be placed in one continuous operation to the thickness shown on the plans with no construction joints allowed.

3.2 After the grout is placed, it shall be given a floated finish. surfaces shall be struck smooth after grout is placed and shall be floated to a texture reasonably consistent with that of the adjacent concrete surfaces. Final treatment on formed surfaces shall be uniform without voids or honeycomb.

3.3 Protection: Exposed surfaces of concrete shall be protected from premature drying and excessively hot or cold temperatures for the period of time necessary for the hydration of the cement and proper hardening of the concrete. During curing the concrete shall be protected from damaging mechanical disturbances, heavy shock or excessive vibration. All finished surfaces shall be protected from damage cause by construction equipment, materials, or methods and rain or running water.

3.3.1 Temperature and Shrinkage Cracks: Any temperature and shrinkage cracks which develop prior to the final acceptance of the project by the Owner shall be repaired and waterproofed to the satisfaction of the Engineer and as called for in other applicable parts of the Specifications.

3.4 Curing: Initial curing shall immediately follow the finishing operation. Concrete shall be kept continuously moist at least for 72 hours by either ponding or continuously sprinkling, under plastic sheeting, absorptive mat or fabric kept continuously wet. Whichever material or method is chosen shall be approved by the Resident Project Representative.

3.5 Immediately following the initial curing for a period of at least four days, final curing shall be accomplished by either continuation of the method used for initial curing, waterproof paper conforming to "Specifications for Waterproof Paper for Curing Concrete", ASTM C171, or other moisture retaining coverings as approved by the Engineer.

3.6 The final curing shall continue for a cumulative number of seven days, not necessarily consecutive, during which the temperature of air in contact with the concrete is above 50°F. If high-early-strength cement has been used, the final curing shall continue for a total of three days. Changes in the temperature of the concrete shall be as uniform as possible and shall not exceed 5° in any one hour, nor 50°F in any 24-hour period.

3.7 Cold Weather: Shall be as specified in Section 03 39 01 - COLD WEATHER CONCRETE CURING.

3.8 Hot Weather: Shall be as specified in Section 03 39 02 - HOT WEATHER CONCRETE CURING.

END OF SECTION 03 60 00

SECTION 04 22 00 - PRECAST RETAINING WALL BLOCKS

1. RELATED DOCUMENTS

1.1 Drawings and general provisions of the Contract, including Division 1 Specification Sections, apply to this Section.

2. SUMMARY

2.1 This Section covers single and multiple depth precast concrete segmental retaining wall blocks without soil reinforcement.

3. PERFORMANCE REQUIREMENTS

3.1 All precast concrete blocks shall conform to ASTM C1776/C1776M-17, Standard Specification for Wet-Cast Precast Modular Retaining Wall Units.

3.2 All blocks shall be constructed of plain concrete and shall be generally uniform in color. Face of blocks shall be a stone type pattern.

3.3 Basis of Design: Design of segmental retaining walls shown on drawings is based on block shape, profile, and step/batter indicated. Walls have been designed assuming the use of blocks cast utilizing the World Block form system.

3.3.1 If block shape, profile, and step/batter matches that which is shown on the drawings then the Supplier shall submit proposed product details. A detailed engineering analysis is not required.

3.3.2 If equivalent products of other manufacturers are proposed, provide proposed product details and an engineering design for the proposed products, including comprehensive engineering analysis by a qualified professional engineer licensed in the state of Missouri, using the performance requirements and design criteria indicated.

3.3.3 Structural Performance: Engineering design shall be based on the following loads and shall be according to NCMA's "Design Manual for Segmental Retaining Walls.
- Gravity loads due to soil pressures resulting from grades and sloped backfill indicated.

4. SUBMITTALS

4.1 Product Data: For each type of product being used.

4.2 Design Submittal: For segmental block retaining walls using products matching the drawings submit product and component details including
- General size and arrangement
- Face profile
- Concrete mix design
- Lift hook inserts
- Interlocking mechanism if one is used
- Delivery and storage plan.

For products not matching the drawings (equivalent products) submit all of the previously noted items with a comprehensive analysis and supporting data signed and sealed by the qualified professional engineer responsible for their preparation.

All products, those matching the drawings or otherwise, shall submit this information prior to bidding. Submittals must be received by the engineer at least 7 calendar days prior to the bid opening for review.

All products shall state and demonstrate conformance to ASTM C1776/C1776M-17, Standard Specification for Wet-Cast Precast Modular Retaining Wall Units.

4.2.1 Compliance Review: All submittals will be reviewed and written correspondence will be returned to the Supplier.

5. DELIVERY, STORAGE, AND HANDLING

5.1 Supplier can deliver blocks to the storage sites at their discretion provided the minimum number of blocks are onsite every 3 months.

5.2 Delivery operations shall not cause traffic interruptions and all temporary lane closures shall be approved by Dakota Rusk (417-624-0820x598) prior to implementation.

5.3 Blocks shall be unloaded in such a manner to ensure they are not chipped, broken or otherwise damaged. City will not pay for damaged blocks and will require them to be removed from the storage site at the supplier's expense.

5.4 Blocks shall not be stored over any utility line/pipe. The Supplier shall call 811 and locate utilities prior to storing blocks.

5.5 Blocks shall not be stacked more than 6' high.

5.6 Blocks shall not be stacked within 10' of the back of curb or edge or asphalt or edge of sidewalk.

5.7 Truck traffic and unloading equipment shall not drive over sidewalk. Drive entrances to the sites are shown on the drawing and shall be used for access to the sites.

5.8 Any sidewalk, curb and gutter, road, or utility damaged by the supplier will be paid for by the supplier.

6. PAYMENT

6.1 Payment shall be measured and paid for on a square foot basis as provided for in the bid schedule.

END OF SECTION 04 22 00

SECTION 05 05 19 – POST-INSTALLED CONCRETE ANCHORS

1. GENERAL

1.1 Description: The work of this section consists of furnishing and installing concrete expansion anchors and all tools, labor, equipment, and incidentals necessary to complete this section.

2. MATERIALS

2.1 Stainless Steel Expansion Anchors: Stainless steel expansion anchors shall be provided where shown on plans, and shall be of the following materials:

2.2.1 Materials: Stud material shall be Type 303 Stainless Steel, Type XM-5, and shall meet requirements of ASTM A582. Expansion wedges shall be Type 304, Stainless Steel. Nuts and washers shall be of Type 18-8 Stainless Steel.

2.3 Stainless Steel Chemical Anchors: Stainless steel, two component adhesive anchors shall be provided where shown on the plans and shall be of the following materials:

2.3.1 Materials: Rod material shall be Type 316 stainless steel. Nut shall be stainless steel meeting the requirements of ASTM F594, and washer shall be stainless steel meeting ASTM F436. Adhesive shall be vinyl urethane methacrylate resin with dibenzoyl peroxide hardener.

3. EXECUTION

3.1 Expansion anchors shall be HILTI Kwik-Bolt, RAMSET Trubolt Wedge Anchor, or an approved equal, and shall be installed in accordance with manufacturer's recommendations using commercially available carbide masonry bits of appropriate nominal diameter.

3.2 The chemical anchors shall be Hilti HIT RE 500-V3 Adhesive System, consisting of a self-contained dispenser, and threaded rod with nut and washer.

3.3 The Engineer may require submittal of test reports, certified by an independent testing laboratory, of tension and shear tests conducted in various strengths of concrete prior to installation of expansion anchors.

END OF SECTION 05 05 19

SECTION 05 05 23 – METAL FASTENINGS

1. GENERAL

1.1 Description: The work of this section consists of furnishing and installing stainless steel bolts, or performing welding operations, for all shop or field connections of structural steel.

2. MATERIALS

2.1 Stainless Steel Bolts and Anchor Rods: All steel bolts, nuts, and washers, unless noted otherwise on the drawings or herein, shall be stainless steel conforming to ASTM F593, latest revision. Nuts shall conform to ASTM F594. High strength stainless steel bolts shall be Type 316 for typical applications and Type 316L for weldable applications.

3. EXECUTION

3.1 Bolting: Field connections, unless otherwise noted on the drawings or directed by the Engineer, shall be made with stainless steel bolts. Connections shall be completed are directed by the manufacturer.

3.2 Welding: If field welding is used, the Contractor's welding procedures, welders, and welding operators shall be qualified and certified in accordance with the requirements of AWS D1.0 "Welding in Building Construction" of the American Welding Society. Proof of certification shall be provided to the Engineer upon request. All welds shall be such as to conform to the requirements of the design loads.

END OF SECTION 05 05 23

SECTION 05 12 00 – STRUCTURAL STEEL FRAMING

1. GENERAL

1.1 Description: Contractor shall complete all structural steel as shown on the drawings as follows:

1.1.1 Fabricate structural steel herein specified and that may be required for a complete job.

1.1.2 Erect all steel work.

1.1.3 Provide all columns, struts, beams, channels, girders, trusses, tie rods, hangers, separators, billet plates, gusset plates, stiffeners, brackets, shear connectors, plates, bearing plates, anchors, bolts, nuts, rivets, all connections, etc. as required to complete the work of this section.

1.1.4 Provide holes, cutting, etc. for the installation of other work as may be required by others and shown on the drawings or herein specified.

1.1.5 Provide painting of steel work with one shop-coat by structural steel fabricator and one field coat by General Contractor. For further details of painting, see Section 09 90 00 – PAINTING AND COATING.

1.2 All steel shall be designed, fabricated, and erected in accordance with the specification for the Design, Fabrication, and Erection of Structural Steel for Buildings, as amended to date, and the Code of Standard Practice, latest edition, as adopted by the American Institute of Steel Construction, Inc., unless herein specified to the contrary, in which case, these specifications shall govern and supersede the Standards.

1.3 Materials Furnished in this Section but Installed by Others: This Contractor shall furnish and deliver complete all materials to other trades as required in connection with or for the support of other work; such as loose lintels, bearing plates, bolts, mechanical equipment support frames, grating frames, and other appurtenances which may be necessary.

2. MATERIALS

2.1 Steel: Shall conform to the Standard Specifications for Structural Steel, latest edition.

Structural steel members shall conform to the following table:

ASTM	Fy (ksi)	Fu (ksi)	Rebar	W	M	S	HP	C	MC	L	HSS	Pipe
A36	36	58-80										
A53 Grade B	35	60										X
A500 Grade C	46	58									X	
A572 Grade 50	50	65			X	X	X			X		
A615 Grade 60	60	90	X									
A992	50-60	65		X				X	X			

Members designated by gauge thickness shall be cold formed to the dimensions shown from sheet or strip conforming to ASTM A606 (50,000 psi minimum yield strength).

2.2 Stainless Steel Anchors: See Section 05 05 19 – POST-INSTALLED CONCRETE ANCHORS.

2.3 Stainless Steel Bolts: See Section 05 05 23 - METAL FASTENINGS.

3. EXECUTION

3.1 Shop Drawings: Shop drawings shall be submitted in accordance with the GENERAL CONDITIONS and AMENDMENTS TO GENERAL CONDITIONS and shall include all materials, dimensions, quantities, and finishes.

3.2 Fabrication: All workmanship shall be equal to the best practice in modern structural shops. Rolled sections, except for minor details, shall preferably not be heated, or, if heated, shall be annealed, but this restriction does not apply to gas cutting.

3.3 Shop Connections: All shop connections shall be welded. Welding procedures, welders, and welding operators shall be qualified and certified in accordance with the requirement of AWS D1.0 "Welding in Building Construction" of the American Welding Society. Proof of certification shall be provided to the Engineer upon request.

3.4 Bolt Holes: All bolts shall be provided as shown on the drawings.

3.5 Finishes:

3.5.1 Hot-Dip Galvanized: The finish of individual steel members and/or assembled steel fabrications which are required by the drawings to be hot-dip galvanized shall be applied in conformance with ASTM specifications A123, A384, and A385, latest revisions. Hardware used in galvanized member connections shall conform to ASTM A153 unless otherwise specified.

3.5.2 Shop Paint: All steel work not required by the drawings to receive a galvanized finish shall, before leaving the shop, receive surface preparation and a first coat of paint as set forth in Section 09 90 00 – PAINTING AND COATING. Parts inaccessible after assembly at shop shall be given final coats of paint as specified in Section 09 90 00. Machined surfaces and steel work encased in concrete will not require surface preparation and painting as specified herein.

3.5.3 Architectual Coatings: All steel work not required by the drawings to receive a galvanized finish shall, before leaving the shop, receive surface preparation and a first coat of paint as set forth in Section 09 97 13.23 EXTERIOR STEEL FLUOROPOLYMER COATING. Parts inaccessible after assembly at shop shall be given final coats of finish as specified in Section 09 97 13.23. Machined surfaces and steel work encased in concrete will not require surface preparation and painting as specified herein.

3.6 Erection: All work shall be erected complete except that inserts, lightweight loose lintels, and prefabricated items designed to be built into masonry may be furnished to the several trades for incorporation into their work. The Contractor shall be responsible for furnishing items to the proper trades at the proper time. All work shall be set true and plumb and shall be securely anchored by bolting, welding, or other adequate means. Field welds exposed to view shall be ground smooth. Each tier of columns shall be plumbed and maintained in a true vertical position. Contractor shall check level of floor beams at top of each tier. In general, steel shall be plumb and level within a tolerance of 1:500.

3.7 Temporary Bracing: Temporary bracing shall be introduced wherever necessary to take care of all loads to which the structure may be subjected, including erection equipment and its operation. Such bracing shall be left in place as long as may be required for safety. It shall finally be removed by the Contractor as part of his equipment. As erection progresses, the work shall be securely connected to take care of all dead load, wind, and erection stresses.

3.8 Field Painting: Field bolts and serious abrasions to the shop coat shall be spot-painted with the material used for the shop coat, or an equivalent, and mud and other firmly attached and objectionable foreign materials shall be removed and all scale, rust spots, etc. shall be wire-brushed prior to painting. After erection and spot-painting, structural steel may receive further coats as required in Section 09 90 00 – PAINTING AND COATING.

3.9 Dissimilar Materials: All aluminum surfaces in contact with other materials and permanently exposed to air and moisture shall be provided with the proper gasket protection to prevent contact between the two dissimilar surfaces.

END OF SECTION 05 12 00

SECTION 05 15 00 – WIRE ROPE ASSEMBLIES

1. GENERAL

1.1 Description: The work of this section consists of furnishing and installing wire rope and associated connections including all tools, labor, equipment, and incidentals necessary to complete this section.

2. MATERIALS

2.1 Wire Rope: Wire Rope shall be provided where shown on plans per the manufacturers recommendations and shall be of the following materials:

2.1.1 Materials: Use 1x19 Grade I Galvanized Structural Strand with Class A Coating Inner Wires and Class C Coating Outer Wires manufactured by Lexco Cable or approved equal. Wire rope shall comply with ASTM A586-1.

2.2 Connections: All connections shall be of the size and type shown on the plans and installed per the manufacturers recommendations. Connection types listed below shall be of the following materials:

2.2.1 Cable Clamp: Cable Clamps shall be Item #CC-64 manufactured by Lexco Cable or approved equal.

2.2.1 Anchor Socket: Provide Type 6 Anchor Sockets as specified in the plans. Part shall be manufactured by Lexco Cable or approved equal.

2.2.1 Spelter Socket: Provide Spelter Sockets as specified in the plans. Part shall be manufactured by Lexco Cable or approved equal.

2.2.1 Open Bridge Socket: Use a Houston Structures UF 600 'O' Series, Part Number: 610 with TH for Take-Up = 72" as specified in the plans or an approved equal. Part shall comply with ASTM A148 Grade 105/85.

3. EXECUTION

3.1 Install all materials in accordance with the manufacturer's recommendations and as outlined in the plans.

3.2 Conduct testing and inspection as required by the manufacturer and Engineer. Inspect all wire rope and connection components for corrosion protection and proper installation. Document all procedures and results. The Engineer may require submittal of test reports, certified by an independent testing laboratory.

END OF SECTION 05 15 00

SECTION 09 97 13. 23 - EXTERIOR STEEL
FLUOROPOLYMER COATING
(Meets LEED EQ 4.2. & CARB/VOC 2010)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. This Section includes shop and field surface preparation and shop and field painting of various substrates.

1. Surface preparation, including in the shop and applications of metal primer, and field applications of primers and finishes are specified in this Section.

B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes surface preparation and application of high-performance coating systems on the following substrates:

1. Exterior Substrates:

a. Steel Trusses & Structural Steel

B. Related Sections include the following:

1. Division 1 Section "LEED Green Building Summary, Requirements, and Goals" for additional LEED requirements.
2. Division 5 Sections for shop priming of metal substrates with primers specified in this Section.
3. Division 9 Section "Painting" for general field painting.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples for Initial Selection: For each type of finish-coat product indicated.

C. Samples for Verification: For each type of coating system and in each color and gloss of finish coat indicated.

1. Submit Samples on rigid backing, 8 inches square.
2. Step coats on Samples 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: For each product indicated. Cross-reference products to coating system and locations of application areas. Use same designations indicated on Drawings and in schedules.

E. LEED Submittals: For Credit EQ 4.2, manufacturers' product data for coatings, including printed statement of VOC content and chemical components.

1.4 QUALITY ASSURANCE

A. Material Performance Criteria:

1. Products: Provide certified test reports when submitting products other than those specified herein the specification. Test reports shall indicate the test method, system and requirements for those products being submitted, and shall meet or exceed the test criteria and performance values of the specified coatings herein.

B. Applicator Qualifications:

1. Preparation and Workmanship: A firm or individual with a minimum of (5) years experienced in applying coatings similar in material design, and extent to those indicated for a particular project, whose work has resulted in applications with a record of successful in-service performance.

C. Mockups: Apply benchmark samples of each coating system indicated 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 type of coating and substrate.

a. Provide samples of a section of the steel/metal surface to be coated.
b. Other Items: Architect will designate items or areas required.

2. Apply benchmark samples after permanent lighting and other environmental services have been activated.
3. Final approval of color selections will be based on benchmark samples.
4. If preliminary color selections are not approved, apply additional benchmark samples of additional colors selected by Architect at no added cost to Owner.
5. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to project site in manufacturer’s original, unopened packages and containers bearing manufacturer’s name and label and the following information.

1. Product name or title of material.
2. Product description (generic classification or binder type)
3. Manufacturer’s stock number and date of manufacture.
4. Contents by volume, for pigment and vehicle constituents.

5. Thinning instructions.
6. Application instructions.
7. Color name and number.
8. VOC content.

B. 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.

1.6 PROJECT CONDITIONS

A. Apply coatings only when temperature of surfaces to be coated and surrounding air temperatures are between 50 and 95 deg F.

B. Do not apply coatings in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

1.7 PRODUCT WARRANTY

A. Provide manufacturer’s (10) year color and gloss, crack, check, peel warranty at the completion of the project.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Materials specified are those that have been evaluated for the specific service on this project. Products of the Tnemec Company, Inc. are listed to establish a standard of quality. Equivalent materials of other manufacturer's may be submitted a minimum ten days prior to bid date on written approval of the Architect.

B. Materials specified herein shall not preclude consideration of equivalent or superior materials. Requests for substitution shall be submitted to the architect a minimum ten days prior to bid date in accordance with the general construction documents and in compliance with substitution procedures in Section 01 60 00 of this Project Manual.

1. Requests for substitution shall include evidence of satisfactory past performance on substrates that are listed herein.
2. Substitutions will not be considered that change the generic type, number of coats or do not meet specified total dry film thickness.

C. Colors: As selected by Architect from manufacturer's full range.

2.2 HIGH PERFORMANCE COATINGS GENERAL REQUIREMENTS

A. Materials Compatibility: Provide shop and field primers, and finish-coat materials that are single source and compatible with one another and with the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

B. Requirements: USGBC Version LEED 3 (v3), and EQ 4.2 Low-Emitting Materials; Paints & Coatings.

1. Paints and coatings used on the interior of the building (defined as inside of the weatherproofing system and applied on-site) shall comply with the following criteria:

a. Coating Type: VOC weight in grams/liter of product minus water
b. Non-flat: 150 g/L
c. Flat: 50 g/L

d. Anti-Corrosive Primer & Paint: 250 g/l

C. CARB/VOC Requirements

1. Industrial & Exterior – 250 g/l

2.3 EXTERIOR METAL PRIMERS

A. Aromatic Urethane, Zinc-Rich Primer (Anti-Corrosive Primer)

1. Tnemec Series 94-$H_2$0
2. Properties:
   a. Solids by Volume: 62.0 +/- 2.0% (mixed)
   b. VOC: 0.80 lbs/gallon (96 grams/litre)
   c. HAPS: 0.8 lbs/gal solids.

   d. Zinc Dust Content: 83% by weight in dried film

3. Performance Criteria:

   a. Adhesion: ASTM D 4541 (TTM-34) Type II Fixed Alignment Adhesion Tester. No less than 1,533 psi.
   b. Adhesion: ASTM D4541 (TTM-34) Type V Self-Aligning Adhesion Tester. No less than 1,730.
   c. Cathodic Disbondment: ASTM G 8, Method A. No rusting, blistering, cracking or delamination and no undercutting at holiday after 30 day exposure.
   d. Galvanic Protection: A one coat aromatic urethane zinc-rich coated steel panel containing several holidays is placed in a container of tap water. The panel's potential is measured by a voltmeter with the positive (+) pole attached to a bare spot on the panel above the water line and the negative (-) pole attached to an Ag/AgC1 referenced electrode immersed in the tap water. True theorectical galvanic action of the zinc having actual zinc-to-zinc contact would show a potential of -1100 millivolts. A range of -1100 millivolts to -750 millivolts would indicate galvanic action is occuring. The potential of -654 millivolts or less would indicate that the coating is only acting as a barrier coat

when tested with a Ag/AgCl reference electrode. The average measured potential of 94-H_20 is 818 millivolts.

e. Immersion: ASTM D 870. No blistering, cracking, rusting or delamination of film after two years immersion.

f. Prohesion: ASTM G 85 Prohesion Cabinet Testing. No blistering, cracking, rusting or delamination of film. No more than 1/8" creepage at scribe after 10,000 hours.

g. Re-coat Time/Immersion: Series 94-H_2O steel panles were exposed to direct sunlight for one, two, six and months. One set of panels was topcoated (without scarification) with a two-component epoxy and another set with an acrylic polyurethane. All panels were then exposed to 10 freeze/thaw cycles and adesion rated in accordance with ASTM D 3359, Method B (crosshatch). No rusting, blistering, delamination, or other film defects after 12 months immersion. Salt Spray (Fog): ASTM B117. No blistering, cracking or delamination of film. No more than 1% rusting on plane and no more than 1/16"rust creepage at scribe after 10,000 hours exposure.

2.4 EPOXY INTERMEDIATE COATING

A. Tnemec Series L69 and L69F Hi-Build Epoxoline II (Non-Flat, Intermediate Coat)

1. Generic Type: Polyamidoamine Epoxy
2. Finish: Satin
3. Properties:

   a. Solids by Volume: 65 +/- 2.0% (mixed)
   b. VOC: 0.82 lbs/gallon (98 grams/litre)
   c. HAPS: 0 lbs/gal

4. Performance Criteria:

   a. Abrasion: ASTM D4060, (CS-17 Wheel, 1,000 grams load). No more than 140 mg. loss after 1,000 cycles.
   b. Adhesion: ASTM D 4541Type II Fixed Alignment Adhesion Tester. No less than 1,583 psi (10.91 MPa) pull, average of three tests.
   c. Adhesion: ASTM D4541 Type V Self-Aligning Adhesion Tester. No less than 1,943 psi (13.40 MPa) pull; average of three tests.
   d. Exterior Exposure: ASTM D 1014. No blistering, cracking, checking, rusting or delami nation of film. No more rust creepage at scribe after (5) years exposure.
   e. Exterior Exposure: Exposed at 45 degrees facing south (light industrial area). No blistering, cracking or delamination of film. No rust creepage at scribe or no rusting at edges after 72 months exposure.
   f. Fresh Water: Continuous immersion in tap water at 75^0F (24^0C). No blistering, cracking, rusting or delamination of film after four years.
   g. Humidity: ASTM D4585. No blistering, cracking, rusting or delamination of film after 4,500 hours exposure.
   h. Immersion: ASTM D 870. No blistering, cracking, checking, rusting or delamination of film after two years or 17,088 hours continuous water immersion.
   i. Moisture Vapor Transmission: ASTM D 1653. No more than 9.9 g/m^2 24 hours water vapor transmission and no more than 0.31 grains/ft^2 hour in Hg. Water vapor permeability.

j. Prohesion: ASTM G 85. No blistering, cracking, checking, rusting or delamination of film. No rust creepage at scribe after 5,000 hours exposure.

k. Salt Spray (Fog). ASTM B117. No blistering, cracking or delamination of film. No more than 1% rusting on plane. No more than 1/64" rust creepage at scribe after 10,000 hours exposure and no more than 1/16" rust creepage at scribe after 6,700 hours exposure.

2.5 FLUOROPOLYMER FINISH COATING

A. Fluoropolymer, Pigmented & Metallic Coating (Non-Flat, Finish Coat)

1. Product: Tnemec Series 1071V Fluoronar (Exterior Finish Coat)
2. Finishes:

a. Series 1070V - Gloss
b. Series 1071V – Semi-Gloss
c. Series 1072V - Satin
c. Series 1078 - Metallic

3. Properties:

a. Solids by Volume:

i) 1070V: 51.0 +/- 2.0%
ii) 1071V: 56.0 +/- 2.0%
iii) 1072V: 54.0 +/- 2.0%
iii) 1078: 54.0 +/- 2.0%

b. VOC:

i) Series 1070V: 0.83 lbs/gallon (99 grams/litre)
ii) Series 1071V: 0.81 lbs/gallon (97 grams/litre)
iii) Series 1072V: 0.77 lbs/gallon (93 grams/litre)
iii) Series 1078: 3.40 lbs/gallon (407 grams/litre)

4. Performance Criteria:

a. Abrasion: ASTM D4060, (CS-17 Wheel, 1,000 grams load). No more than 103 mg loss after 1,000 cycles.
b. Adhesion: ASTM D 4541 (Method B, Type II Tester). No less than 1,333 psi (9.19 MPa) pull, average of three tests.
c. Adhesion: ASTM D 4541 (Method E, Type V Tester). No less than 1,930 psi (13.3 MPa) pull, average of three tests.
d. Exterior Exposure: Exposed at 45 degrees facing south. No blistering, cracking, rusting or delamination of film. No less than 87% gloss retention (8.9 units gloss change) and 2.99 DED FMCII (MacAdam units) color change after 24 months.
e. Exterior Exposure: ASTM D 4141, Method C (EMMAQUA). No blistering, cracking or chalking. No less than 96% gloss retention (3.2 units gloss change) and 0.18 DED Hunter Lab color change after 1,260 M/J m2 EMMAQUA exposure, average of five tests in five colors.

f. Flexibility: ASTM D 522 (Method A – Conical Mandrel). No less than 14.83% elongation average of three tests.

g. Graffiti Resistance: The following graffiti materials applied to coating and allowed to 7 days.

Reagent	Series 680	Xylene	MEK
Acrylic Spray Paint	Removal	Removal	Removal
Epoxy Spray Paint	Removal	Removal	Removal
Markette Marker	Removal	Removal	Removal
Ball Point Ink	Removal	Removal	Removal
Crayon	Removal	Removal	Removal
Lipstick	Removal	Removal	Removal

Some slight gloss loss and/or softening may occur depending on the amount of effort required for removal of the graffiti and length of exposure of the underlying coating to the cleaning solvents.

h. Hardness: ASTM D 3363. No gouging or scratching with an 8H or less pencil.

i. Humidity: ASTM D 4585. No blistering, cracking, rusting or delamination of film after 3,000 hours exposure.

j. Impact: ASTM D 2794. No visible cracking or delamination of film after 34.6 inch/pounds (3.9J) or less direct impact.

k. QUV: ASTM D 4587 (UVA-340 Bulbs, Cycle 4:8 hours UV/4 hours condensation). No blistering, cracking, or chalking. No less than 93% gloss retention (5.7 units gloss change) and 2.21 DED FMCII (MacAdam Units) color change after 10,000 hours exposure, average of five tests in five colors. No blistering, cracking, or chalking. No less than 60% gloss retention (31.4 units gloss change) and 1.89 DED FMCII (MacAdam Units) color change after 25,000 hours exposure, average of five tests in five colors.

l. Salt Spray (Fog): ASTM B 117. No blistering, cracking, rusting or delamination of film. No more than 1/32 inch rust creepage at scribe after 10,000 hours exposure. No blistering, cracking, rusting or delamination of film. No more than 1/8 inch rust creepage at scribe after 10,000 hours exposure. No blistering, cracking, rusting or delamination of film. No more than 1/16 inch rust creepage at scribe after 10,000 hours exposure.

m. Weatherometer Exposure: ASTM D 5031. No blistering, cracking, or chalking. No less than 92% gloss retention (6 units gloss change) and 0.73 DED Hunter Lab Scale color change after 5,000 hours exposure.

2.6 SHOP SURFACE PREPARATION

A. Ferrous Metals – Surface preparation SSPC-SP6 Commercial Blast Cleaned steel

2.7 SHOP PRIMER

A. Ferrous Metals – Tnemec Series 94-H_20 Tneme-Zinc applied at 2.5 to 3.5 mils DFT

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 work.

1. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
2. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.
3. Coating application indicates acceptance of surfaces and conditions.

3.2 FIELD PREPARATION

A. Comply with manufacturer's written instructions and recommendations.

B. Steel Substrates: Remove rust and loose mill scale.

1. Clean using methods recommended in writing by coating manufacturer.
2. Blast clean according to SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning.

3.3 APPLICATION

A. Apply high-performance coatings according to manufacturer's written instructions.

1. Use applicators and techniques suited for coating and substrate indicated.
2. Coat surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, coat surfaces behind permanently fixed equipment or furniture with prime coat only.
3. Coat back sides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.

B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of the same material are to be applied. Tint undercoats to match color of finish coat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.

C. If undercoats or other conditions show through final coat, apply additional coats until cured film has a uniform coating finish, color, and appearance.

D. Apply coatings by spray application to produce surface films without cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections. Produce sharp glass lines and color breaks.

3.4 FIELD QUALITY CONTROL

A. Owner reserves the right to invoke the following procedure at any time and as often as Owner deems necessary during the period when coatings are being applied:

1. Owner will engage the services of a qualified testing agency to sample coating material being used. Samples of material delivered to Project site will be taken, identified, sealed, and certified in presence of Contractor.
2. Testing agency will perform tests for compliance with specified requirements.
3. Owner may direct Contractor to stop applying coatings if test results show materials being used do not comply with specified requirements. Contractor shall remove noncomplying coating materials from Project site, pay for testing, and recoat surfaces coated with rejected materials. Contractor will be required to remove rejected materials from previously coated surfaces if, on recoating with complying materials, the two coatings are incompatible.

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 coating application, clean spattered surfaces. Remove spattered coatings by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from coating operation. Correct damage by cleaning, repairing, replacing, and recoating, 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 coated surfaces.

3.6 HIGH-PERFORMANCE COATING SCHEDULE

A. Steel Substrates: Exterior Exposed Steel, Handrails, Cast Iron and Ornamental Metals

1. Acrylic Polyurethane, Pigmented Coating, Exterior

a. Shop Primer: Series 94-$H_2$0 Hydro-Zinc applied at 2.5 to 3.5 mils DFT

b. Touch-up: Series 94-$H_2$0 Hydro-Zinc applied at 2.5 to 3.5 mils DFT

c. First Coat: Series L69 and L69F Hi-Build Epoxoline II, applied at 4.0 to 6.0 mils DFT]

d. Finish Coat: Series 1071V-color Fluoronar, applied at 2.0 to 3.0 mils [1070V, gloss] [1071, semi-gloss] [1078, metallic [1)]]

END OF SECTION 09 97 13. 23

SHORING..... 31 41 00

1. GENERAL

1.1 Description: The work of this section shall consist of furnishing all equipment, labor, materials, tools, and incidentals necessary to provide for the protection of the personnel and to protect the excavations for both structural and trenching and existing structures; and as required by the applicable federal and state laws and regulations.

2. MATERIALS

2.1 None.

3. METHODS

3.1 Responsibilities: The Contractor is solely and totally responsible for the design, installation, maintenance, and safety of any shoring and/or bracing that may be required.

3.2 Type of Shoring & Bracing: The type of shoring and bracing shall be that which is removable following the installation of the structure. No permanent type of shoring or sheeting shall be used which must remain within the limits of the excavation. The shoring or bracing shall be removed following approval by the Engineer of the excavation, installation of the structure, and installation of required backfill material.

4. MEASUREMENT AND PAYMENT

4.1 Shoring shall not be measured or paid for separately but shall be considered incidental to that work of which it is a part.

END OF SECTION

SECTION 31 51 16 – ROCK ANCHORS

1. GENERAL

1.1 Description: The work of this section consists of furnishing and installing rock anchors and all tools, labor, equipment, and incidentals necessary to complete this section. Rock anchors shall be manufactured by Williams Form Engineering Corporation, type as specified in plans, or an approved equal.

2. MATERIALS

2.1 All-Threaded Rebar: All-Threaded Rebar shall be provided where shown on plans, and shall be of the following materials:

2.1.1 Materials: Use Grade 75 or Grade 80 all-threaded rebar, complying with ASTM A615.

2.2 Grout: Grout shall be provided where shown on the plans per the manufacturers recommendations and shall be of the following materials:

2.2.1 Materials: Use a high-strength, non-shrink Portland Cement Grout material suitable for rock anchor applications that complies with ASTM C845.

2.3 Rock Anchor Components: Anchor components including but not limited to nuts, bearing plates, collars, PVC sleeves and PVC centralizers shall be provided per the manufacturers recommendations and shall be of the following materials:

2.3.1 Materials: All materials shall be in accordance with applicable standards as specified by the manufacturer.

3. EXECUTION

3.1 Install all materials in accordance with the manufacturer's recommendations and as outlined in this section.

3.1.1 Drilling and Hole Preparation: Drill holes into the rock substrate as specified in the approved shop drawings. Ensure cleanliness by removing debris using compressed air or water. Verify hole depth according to design requirements.

3.1.2 All-Threaded Rebar Insertion: Position the all-threaded rebar within the holes, maintaining proper alignment. Check thread engagement to ensure secure anchoring.

3.1.3 Grout Injection: Mix and inject grout into the annular space between the rebar and rock. Monitor grout flow to prevent voids. Follow manufacturer's guidelines for grout application.

3.1.4 Rock Anchor Components: Install all components as recommended by the manufacturer. Verify proper seating and alignment of anchor components.

3.2 Conduct testing and inspection as required by the manufacturer and Engineer. Minimum testing requirements are outlined below.

3.2.1 Proof Testing of Rock Anchor: Prior to installation, conduct proof testing on each All-Threaded Rebar anchor. Apply an incremental load up to 150% of the design load and hold maximum load for at least 10 minutes. Observe anchor behavior for elongation or deformation. Document test results for verification and submit to Engineer.

3.2.2 General: Inspect all anchor components for corrosion protection and proper installation. Document all procedures and results. The Engineer may require submittal of test reports, certified by an independent testing laboratory.

END OF SECTION 31 51 16