ADDENDUM #I

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

Addendum #: 01 **Addendum Date:** October 5, 2021
Project: STP-5909(802) **Owner:** Greene County Highway Department
Kansas Expressway Extension Phase I

Greene County Bid Number: 21-10887 **Greene County Project Bid Number:** 10034

Attachments: BID FORM (3 Pages), JOB SPECIAL PROVISIONS (233 Pages)

ADDENDUM: ADDENDUM ONE

The following items shall be incorporated into the Contract Documents as either clarifications, substitutions, or revisions to the work described. Revisions are noted by the inclusion of a Rev 1 triangle

REVISIONS TO THE BID DOCUMENTS

1. **Bid Form.** Roadway items 4011209, 4013000, and 4071005 have been added to the bid form. A new revised bid form is included for use.
2. **Job Special Provisions**
    a. QQQ – "Availability of On-Site Class C Excavation Material" has been added.
    b. SSS – "City Utilities Gas & Water Relocations Attachment C – Job Special Provisions for Kansas Expressway Extension Phase I" has been revised.

ACKNOWLEDGEMENT OF RECEIPT OF ADDENDUM 1 – TO BE INCLUDED IN BID

Seal

_____
Company Name

_____
Signature

_____
Printed Name

_____
Title

_____
Address

_____
City/State/Zip Code

BID FORM PAGE 1: KANSAS EXPRESSWAY EXTENSTION

Pay Item Number	Description	Quantity	Unit	Unit Price	Estimated Cost
ROADWAY					
2013000	CLEARING AND GRUBBING	36	ACRE		
2022010	REMOVAL OF IMPROVEMENTS	1	LS		
2031000	CLASS A EXCAVATION	193,257	CUYD		
2032000	CLASS C EXCAVATION	19,329	CUYD		
2039900	EMBANKMENT IN PLACE	29,415	CUYD		
2036000	COMPACTING EMBANKMENT	162,205	CUYD		
2037075	COMPACTING IN CUT	96.3	STA		
3040504	TYPE 5 AGGREGATE FOR BASE (4 IN. THICK)	10,694	SQYD		
4011209	BITUMINOUS PAVEMENT MIXTURE PG64-22, (BP-1)	177.8	TONS		
4013000	BITUMINOUS PAVEMENT MIXTURE PG64-22 (BASE)	355.5	TONS		
4071005	TACK COAT	81	GAL		
6061060	MGS GUARDRAIL	522	LF		
6061068	MGS BRIDGE APPROACH TRANSITION SECTION (EXTENDED CURB)	2	EA		
6061080	MGS END ANCHOR	3	EA		
6063014	TYPE A CRASHWORTHY END TERMINAL (MASH)	2	EA		
6079903	(72 IN.) PRIVACY FENCE	723	LF		
6081000	CONCRETE MEDIAN	135.0	SQYD		
6081010	CONCRETE CURB RAMP	164.1	SQYD		
6081012	TRUNCATED DOMES	210	SQFT		
6083006	6 IN. CONCRETE MEDIAN STRIP	138.9	SQYD		
6086004	CONCRETE SIDEWALK, 4 IN.	9,684.7	SQYD		
6096041	PLACING TYPE 1 ROCK DITCH LINER	47	CUYD		
6096043	PLACING TYPE 3 ROCK DITCH LINER	108	CUYD		
6096050	BEDDING MATERIAL FOR ROCK DITCH LINER	39	CUYD		
6099903	CURB AND GUTTER (TYPE ST-2) - SPRINGFIELD	21,351	LF		
6099907	PLACING GRAVEL FILTER DAM	228	CUYD		
6181000	MOBILIZATION	1	LS		
6189902	ADDITIONAL MOBILIZATION FOR SEEDING	10	EA		
6240103A	PERMANENT EROSION CONTROL GEOTEXTILE	2,243	SQYD		
6274000	CONTRACTOR FURNISHED SURVEY AND STAKING	1	LS		
8051000A	SEEDING - COOL SEASON MIXTURES	24.1	ACRE		
				SUBTOTAL ROADWAY:	
STORM SEWER					
2063000	CLASS 3 EXCAVATION	2,731	CUYD		
6042020	ADJUSTING BASIN OR INLET	2	EA		
6097000	ROCK LINING	155	CUYD		
6149902	DROP INLET (TYPE SS-6) - SPRINGFIELD	55	EA		
7269915	15 IN. R.C. PIPE CULVERT	2,662	LF		
7269918	18 IN. R.C. PIPE CULVERT	625	LF		
7269924	24 IN. R.C. PIPE CULVERT	386	LF		
7269930	30 IN. R.C. PIPE CULVERT	358	LF		
7269936	36 IN. R.C. PIPE CULVERT	171	LF		
7319902	STANDARD JUNCTION BOX - GREENE COUNTY	1	EA		
7329915	15 IN. FLARED END SECTION FOR R.C. PIPE CULVERT	34	EA		
7329918	18 IN. FLARED END SECTION FOR R.C. PIPE CULVERT	2	EA		
7329924	24 IN. FLARED END SECTION FOR R.C. PIPE CULVERT	1	EA		
7329930	30 IN. FLARED END SECTION FOR R.C. PIPE CULVERT	5	EA		
7329936	36 IN. FLARED END SECTION FOR R.C. PIPE CULVERT	2	EA		
				SUBTOTAL STORM SEWER:	
TRAFFIC CONTROL					
6161005	CONSTRUCTION SIGNS	2,326	SQFT		
6161008	ADVANCED WARNING RAIL SYSTEM	4	EA		
6161009	FLAG ASSEMBLY	4	EA		
6161010	RELOCATED SIGNS	170	EA		
6161020	CHANNELIZER (DRUM-LIKE)	20	EA		
6161030	TYPE III MOVEABLE BARRICADE	9	EA		
6161099	CHANGEABLE MESSAGE SIGN WITH COMMUNICATION INTERFACE, CONTRACTOR FURNISHED, CONTRACTOR RETAINED	4	EA		
6205301B	TEMPORARY REMOVABLE MARKING TAPE 4 IN., WHITE	1,617	LF		
6205303B	TEMPORARY REMOVABLE MARKING TAPE 4 IN., YELLOW	1,111	LF		
6205442	PREFORMED SHORT TERM MARKING TAPE STRAIGHT ARROW	4	EA		
6207001	PAVEMENT MARKING REMOVAL	4,685	LF		
				SUBTOTAL TRAFFIC CONTROL:	
EROSION CONTROL					
8061004	SEDIMENT TRAP ROCK	9	CUYD		
8061005	ROCK DITCH CHECK	6,280	LF		
8061007A	CURB INLET CHECK	1,050	EA		
8061016	SEDIMENT REMOVAL	509	CUYD		
8061017	TEMPORARY SEEDING AND MULCHING	26.5	ACRE		
8061050	TYPE C BERM	2,777	LF		
8064140	TYPE 3B EROSION CONTROL BLANKET	6,295	SQYD		
8069901	SILT SOCK (8")	2,465	LF		
8069902	SILT SOCK (12")	6,971	LF		
8069903	MULCH BERM	9,436	LF		
				SUBTOTAL EROSION CONTROL:	
				SUBTOTAL PAGE 1:	

REVISED 1

BID FORM PAGE 2: KANSAS EXPRESSWAY EXTENSTION

Pay Item Number	Description	Quantity	Unit	Unit Price	Estimated Cost
PAVEMENT MARKINGS					
6200009	PREFORMED THERMOPLASTIC PAVEMENT MARKING, 6 IN. WHITE	1,245	LF		
6200015	PREFORMED THERMOPLASTIC PAVEMENT MARKING, 24 IN. WHITE	531	LF		
6200018	PREFORMED THERMOPLASTIC PAVEMENT MARKING, 24 IN. YELLOW	255	LF		
6200021	PREFORMED THERMOPLASTIC PAVEMENT MARKING, LEFT/RIGHT ARROW	45	EA		
6200042	PREFORMED THERMOPLASTIC PAVEMENT MARKING, 12 IN WHITE, YIELD LINE TRIANGLES	26	EA		
6206000C	4 IN. WHITE STANDARD WATERBORNE PAVEMENT MARKING PAINT, TYPE P BEADS	8,456	LF		
6206001C	4 IN. YELLOW STANDARD WATERBORNE PAVEMENT MARKING PAINT, TYPE P BEADS	19,717	LF		
				SUBTOTAL PAVEMENT MARKINGS:	
SIGNS					
9031010	CONCRETE FOOTINGS, EMBEDDED	4.4	CUYD		
9031270A	2 IN. PSST POST - 12 GA.	648	LF		
9031271	POST ANCHOR FOR 2 IN. PSST - 7 GA.	126	LF		
9031273	POST ANCHOR FOR 2 IN. PSST - 12 GA.	42	LF		
9031280	2.5 IN. PSST POST - 12 GA.	48	LF		
9031281	POST ANCHOR FOR 2.5 IN. PSST - 7 GA.	12	LF		
9035004A	SH - FLAT SHEET	436.00	SQFT		
				SUBTOTAL SIGNS:	
CONSPAN STRUCTURE					
7259901	BEBO ARCHES (SUPPLIED AND INSTALLED)	1	LS		
2061000	CLASS 1 EXCAVATION	1,790	CUYD		
2061003	CLASS 1 EXCAVATION IN ROCK	624	CUYD		
2062000	CLASS 2 EXCAVATION	402	CUYD		
2062003	CLASS 2 EXCAVATION IN ROCK	2,562	CUYD		
6214600A	FLOWABLE BACKFILL	289	CUYD		
7034040	CLASS B-1 CONCRETE (CULVERTS-BRIDGE)	2,092.5	CUYD		
7061020	REINFORCING STEEL (CULVERTS-BRIDGE)	219,580	LB		
				SUBTOTAL CONSPAN STRUCTURE:	
MSE WALLS					
6071050	CHAIN-LINK FENCE (RETAINING WALLS)	775	LF		
7110300	CONCRETE AND MASONRY PROTECTION SYSTEM	2	LS		
7110400	SACRIFICIAL GRAFFITI PROTECTION SYSTEM	2	LS		
7201000	MECHANICALLY STABILIZED EARTH WALL SYSTEMS	8,221	SQFT		
				SUBTOTAL MSE WALLS:	
BRIDGE					
5031010A	BRIDGE APPROACH SLAB (MAJOR ROAD)	183	SQYD		
6071066	(72 IN.) PEDESTRIAN FENCE (STRUCTURES)	491	LF		
6113040	PLACING TYPE 2 ROCK BLANKET	1,009	CUYD		
7011104	DRILLED SHAFTS (3 FT. 0 IN. DIA.)	104.4	LF		
7011203	ROCK SOCKETS (2 FT 6 IN. DIA.)	45	LF		
7011300	VIDEO CAMERA INSPECTION	9	EA		
7011400	FOUNDATION INSPECTION HOLES	135	LF		
7011600	SONIC LOGGING TESTING	9	EA		
7021210	GALVANIZED STRUCTURAL STEEL PILES (10 IN)	180	LF		
7026000	PRE-BORE FOR PILING	158	LF		
7027000	PILE POINT REINFORCEMENT	15	EA		
7034003	CLASS B-1 CONCRETE (SUBSTRUCTURE)	168.0	CUYD		
7034212	SLAB ON STEEL	2,154.0	SQYD		
7039903	CORRAL RAIL	934	LF		
7039903	CORRAL RAIL TRANSITION	35	LF		
7061060	REINFORCING STEEL (BRIDGES)	33,100	LB		
7071000	CONDUIT SYSTEM ON STRUCTURE	1	LS		
7110500	TEMPORARY COATING - CONCRETE BENTS AND PIERS (WEATHERING STEEL)	1	LS		
7121113	FABRICATED STRUCTURAL LOW ALLOY STEEL (I-BEAM) A709, GRADE 50W	661,690	LB		
7151001	VERTICAL DRAIN AT END BENTS	2	EA		
7161002	LAMINATED NEOPRENE BEARING PAD	5	EA		
7161003	LAMINATED NEOPRENE BEARING PAD (TAPERED)	5	EA		
7162000	LAMINATED NEOPRENE BEARING PAD ASSEMBLY	15	EA		
				SUBTOTAL BRIDGE:	
GAS & WATER RELOCATIONS					
6039931	FURNISH AND INSTALL 2" PL GAS MAIN	410	LF		
6039932	FURNISH AND INSTALL 4" PL GAS MAIN	1,060	LF		
6039933	FURNISH AND INSTALL 8" PL GAS MAIN	4,900	LF		
6039934	FURNISH AND INSTALL 3/4" PL GAS SERVICE, ANY METHOD	2	EA		
6039935	FURNISH AND INSTALL 3/4" PL GAS SERVICE, STREET CROSSING	2	EA		
6039901	FURNISH AND INSTALL 2" HDPE WATER MAIN	200	LF		
6039902	FURNISH AND INSTALL 8" C900 WATER MAIN	220	LF		
6039903	FURNISH AND INSTALL 12" HDPE WATER MAIN	1,890	LF		
6039904	FURNISH AND INSTALL 12" C900 WATER MAIN	2,100	LF		
6039950	FURNISH AND INSTALL FIRE HYDRANT	9	EA		
				SUBTOTAL GAS & WATER RELOCATIONS:	
				SUBTOTAL PAGE 2:	

BID FORM PAGE 3: KANSAS EXPRESSWAY EXTENSTION					
Pay Item Number	**Description**	**Quantity**	**Unit**	**Unit Price**	**Estimated Cost**
ELECTRIC					
9019901	FURNISH AND INSTALL 2" RIGID PVC IN TRENCH STANDARD BACKFILL (PVC-2)	15,184	LF		
9019902	FURNISH AND INSTALL 4" RIGID PVC IN TRENCH STANDARD BACKFILL (PVC-4)	10	LF		
9019903	FURNISH AND INSTALL 4" GALVANIZED IN TRENCH ROCK BACKFILL (GALV-2)	1,223	LF		
9019904	FURNISH AND INSTALL CONCRETE STREETLIGHT FOUNDATION (CF24-140)	55	EA		
9019905	FURNISH AND INSTALL CONCRETE CONTROLLER FOUNDATION (WWC-U)	1	EA		
9019906	INSTALL SINGLE PHASE PLASTIC TRANSFORMER PAD (PD-TRP)	1	EA		
9019907	INSTALL THREE PHASE JUNCTION CABINET AND SLEEVE (JC3-2C)	5	EA		
9019908	INSTALL SECONDARY PEDESTAL (SP-2C)	21	EA		
9019910	FURNISH/INSTALL PRIMARY RISER START (PR-4CP)	1	EA		
				SUBTOTAL ELECTRIC:	
SANITARY SEWER RELOCATIONS					
6039921	RAISE EXISTING 4' STANDARD MANHOLE (0-4.0')	1	EA		
6039922	RAISE EXISTING 4' STANDARD MANHOLE (4.1-8.0')	1	EA		
6039923	REMOVE EXISTING MANHOLE	1	EA		
6039924	MANHOLE PATCH REPAIR (PER MANHOLE)	1	EA		
6039925	15" SDR-21 PVC GRAVITY SEWER MAIN	378	LF		
6039926	21" STEEL CASING (15" PVC SEWER MAIN)	310	LF		
6039927	REINFORCED CONCRETE ENCASEMENT CRADLE OVER EXISITNG 8" SEWER PIPE	73	LF		
				SUBTOTAL SANITARY SEWER RELOCATIONS:	
TRAFFIC SIGNALS					
COS-14.2.12.2	CONCRETE FOR BASES	13	CUYD		
COS-14.2.4.6.1.2	PULL BOX, PREFORMED (TYPE II)	2	EA		
COS-14.2.5.2.9.5.55.15	TYPE S SIGNAL POST WITH MAST ARM & LUMINAIRE (55')	3	EA		
COS-14.3.4.3.1	TYPE A PEDESTRIAN SIGNAL POST	2	EA		
COS-14.2.8.5.1.3	SIGNAL HEAD (3-SECTION) (INSTALLATION ONLY)	12	EA		
COS-14.2.8.5.2	16" COUNTDOWN PEDESTRIAN SIGNAL HEAD (INSTALLATION ONLY)	6	EA		
COS-14.2.9.3.120	LUMINAIRE	3	EA		
COS-14.2.10.4.1	RADAR DETECTION SYSTEM (INSTALLATION ONLY)	1	EA		
COS-14.2.11.10.1.332D	SIGNAL CONTROLLER CABINET, 332D (INSTALLATION ONLY)	1	EA		
9029902	BATTERY BACKUP	1	EA		
COS-14.2.11.10.2	TYPE 2070 CONTROLLER (INSTALLATION ONLY)	1	EA		
COS-14.2.3.12.3.2	CONDUIT IN TRENCH (2")	15	LF		
COS-14.2.3.12.3.3	CONDUIT IN TRENCH (3")	49	LF		
COS-14.2.3.12.3.4	CONDUIT IN TRENCH (4")	36	LF		
COS-14.2.3.12.4.4	HDPE CONDUIT, BORED (4")	297	LF		
COS-14.2.2.14.7.1.8	LUMINAIRE CABLE, 1C#8	2,200	LF		
COS-14.2.2.14.7.1.10	LUMINAIRE CABLE, 1C#10	485	LF		
COS-14.2.2.14.1.1.6	1C #6 POWER CABLE	80	LF		
COS-14.2.2.14.3	2C #14 CABLE FOR PUSHBUTTONS	1,685	LF		
COS-14.2.2.14.2.5.14	SIGNAL CABLE (5C #14)	840	LF		
COS-14.2.2.14.2.7.14	SIGNAL CABLE (7C #14)	420	LF		
COS-14.2.2.14.2.16.14	SIGNAL CABLE (16C #14)	715	LF		
COS-14.2.2.14.9	1C #10 GROUND CABLE	1,470	LF		
COS-14.3.7.2	SIGNAL MOUNTED SIGNS (INSTALLATION ONLY)	1	LS		
				SUBTOTAL TRAFFIC SIGNALS:	

BID FORM OPTIONAL PAVEMENT: KANSAS EXPRESSWAY EXTENSTION					
Pay Item Number	**Description**	**Quantity**	**Unit**	**Unit Price**	**Estimated Cost**
ASPHALT PAVEMENT OPTION					
3049905	TYPE 5 AGGREGATE FOR BASE (8 IN. THICK)	44,616	SQYD		
4019905	ASHPALT PAVEMENT OPTION	37,635.8	SQYD		
				SUBTOTAL ASPHALT PAVEMENT OPTION:	
CONCRETE PAVEMENT OPTION					
3040504	TYPE 5 AGGREGATE FOR BASE (4 IN. THICK)	44,616	SQYD		
4019905	CONCRETE PAVEMENT OPTION	37,635.8	SQYD		
				SUBTOTAL CONCRETE PAVEMENT OPTION:	

SUBTOTAL PAGE 1:	
SUBTOTAL PAGE 2:	
SUBTOTAL PAGE 3:	
SUBTOTAL ASPHALT OR CONCTRETE PAVEMENT OPTION:	
TOTAL CONSTRUCTION:	

JOB SPECIAL PROVISIONS TABLE OF CONTENTS

(Job Special Provisions shall prevail over General Special Provisions whenever in conflict therewith.)

STATE OF MISSOURI MICHAEL EDWARD HERLETH NUMBER E-26929 PROFESSIONAL ENGINEER THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY	"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."	**Greene County, Missouri** Greene County Highway Department 2065 N Clifton Drive Springfield, MO 65803 Phone 417-831-3591
		Burns & McDonnell *9400 Ward Parkway* *Kansas City, MO 64114* Certificate of Authority: 000165 Consultant Phone: 816-822-3900
		If a seal is present on this sheet, JSP's have been electronically sealed and dated.
		ADDENDUM DATE: ***October 5, 2021***
Only the following items of the Job Special Provisions are authenticated by this seal: All Except F, LL – RR, RRR, and SSS		

STATE OF MISSOURI LINDSEY N. CHAFFIN PE-2017018955 10/05/2021 PROFESSIONAL ENGINEER	"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."	**Greene County, Missouri** Greene County Highway Department 2065 N Clifton Drive Springfield, MO 65803 Phone 417-831-3591
		Great River Engineering *2826 S. Ingram Mill Road* *Springfield, MO 65804* Certificate of Authority: 2000156885 Consultant Phone: 417-886-7171
		ADDENDUM DATE: ***October 5, 2021***
Only the following items of the Job Special Provisions are authenticated by this seal: F, LL – RR, RRR, and SSS		

JOB SPECIAL PROVISIONS

A. General - Federal JSP-09-02F

1.0 Description. The Federal Government is participating in the cost of construction of this project. All applicable Federal laws, and the regulations made pursuant to such laws, shall be observed by the contractor, and the work will be subject to the inspection of the appropriate Federal Agency in the same manner as provided in Sec 105.10 of the Missouri Standard Specifications for Highway Construction with all revisions applicable to this bid and contract.

1.1 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 and requires adherence to a schedule of minimum wages as determined by the United States Department of Labor. For work performed anywhere on this project, the contractor and the contractor's subcontractors shall pay the higher of these two applicable wage rates. State Wage Rates, Information on the Required Federal Aid Provisions, and the current Federal Wage Rates are available on the Missouri Department of Transportation web page at www.modot.org under "Doing Business with MoDOT", "Contractor Resources". Effective Wage Rates will be posted 10 days prior to the applicable bid opening. 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.

1.2 The following documents are available on the Missouri Department of Transportation web page at www.modot.org under "Doing Business with MoDOT"; "Standards and Specifications". The effective version shall be determined by the letting date of the project.

General Provisions & Supplemental Specifications

Supplemental Plans to July 2020 Missouri Standard Plans
For Highway Construction

These supplemental bidding documents contain all current revisions to the published versions and 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.

B. Contract Liquidated Damages JSP-13-01B

1.0 Description. Liquidated Damages for failure or delay in completing the work on time for this contract shall be in accordance with Sec 108.8. The liquidated damages include separate amounts for road user costs and contract administrative costs incurred by the Commission.

2.0 Period of Performance. Prosecution of work is expected to begin on the date specified below in accordance with Sec 108.2. Regardless of when the work is begun on this contract, all work shall be completed on or before the date specified below. Completion by this date shall be in accordance with the requirements of Sec 108.7.1.

Notice to Proceed: December 3, 2021
Completion Date: October 31, 2023

3.0 Liquidated Damages for Contract Administrative Costs. Should the contractor fail to complete the work on or before the completion date specified in Section 2.0, the contractor will be charged contract administrative liquidated damages in accordance with Sec 108.8 in the amount of **$4,300** per calendar day for each calendar day, or partial day thereof, that the work is not fully completed.

C. Work Zone Traffic Management JSP-02-06J

1.0 Description. Work zone traffic management shall be in accordance with applicable portions of Division 100 and Division 600 of the Standard Specifications, and specifically as follows.

1.1 Maintaining Work Zones and Work Zone Reviews. The Work Zone Specialist (WZS) shall maintain work zones in accordance with Sec 616.3.3 and as further stated herein. The WZS shall coordinate and implement any changes approved by the engineer. The WZS shall ensure all traffic control devices are maintained in accordance with Sec 616, the work zone is operated within the hours specified by the engineer, and the contractor does not deviate from the specified hours without prior approval of the engineer. The WZS is responsible to manage work zone delay in accordance with these project provisions. When requested by the engineer, the WZS shall submit a weekly report that includes a review of work zone operations for the week. The report shall identify any problems encountered and corrective actions taken. Work zones are subject to unannounced inspections by the engineer and other departmental staff to corroborate the validity of the WZS's review and may require immediate corrective measures and/or additional work zone monitoring.

1.2 Work Zone Deficiencies. Failure to make corrections on time may result in the engineer suspending work. The suspension will be non-excusable and non-compensable regardless of if road user costs are being charged for closures.

2.0 Traffic Management Schedule.

2.1 Traffic management schedules shall be submitted to the engineer for review prior to the start of work and prior to any revisions to the traffic management schedule. The traffic management schedule shall include the proposed traffic control measures, the hours traffic control will be in place, and work hours.

2.2 The traffic management schedule shall conform to the limitations specified in Sec 616 regarding lane closures, traffic shifts, road closures and other width, height and weight restrictions.

2.3 The engineer shall be notified as soon as practical of any postponement due to weather, material or other circumstances.

2.4 In order to ensure minimal traffic interference, the contractor shall schedule lane closures for the absolute minimum amount of time required to complete the work. Lanes shall not be closed until material is available for continuous construction and the contractor is prepared to diligently pursue the work until the closed lane is opened to traffic.

2.5 The engineer shall be notified a minimum of 30 days prior to any required road closure starting.

2.6 Traffic Safety.

2.6.1 Recurring Congestion. Where traffic queues routinely extend to within 1000 feet of the ROAD WORK AHEAD, or similar, sign on a divided highway or to within 500 feet of the ROAD WORK AHEAD, or similar, sign on an undivided highway, the contractor shall extend the advance warning area, as approved by the engineer.

2.6.2 Non-Recurring Congestion. When traffic queues extend to within 1000 feet of the ROAD WORK AHEAD, or similar, sign on a divided highway or to within 500 feet of the ROAD WORK AHEAD, or similar, sign on an undivided highway infrequently, the contractor shall deploy a means of providing advance warning of the traffic congestion, as approved by the engineer. The warning location shall be no less than 1000 feet and no more than 0.5 mile in advance of the end of the traffic queue on divided highways and no less than 500 feet and no more than 0.5 mile in advance of the end of the traffic queue on undivided highways.

3.0 Work Hour Restrictions.

3.1 Except for emergency work, as determined by the engineer, and long term lane closures required by project phasing, all lanes on Republic Road shall be scheduled to be open to traffic during the six major holiday periods shown below, from 12:00 noon on the last working day preceding the holiday until 6:00 a.m. on the first working day subsequent to the holiday unless otherwise approved by the engineer.

Memorial Day
Independence Day
Labor Day
Thanksgiving
Christmas
New Year's Day

3.2 The contractor shall not perform any construction operation on the active lanes during restricted periods, holiday periods or other special events specified in the contract documents.

3.3 Allowable hours of work on the Project except for work on Republic Road shall be from 7:00 am to 8:00 pm. It shall be the responsibility of the engineer to determine if the above work hours may be modified. Working hours for evenings, weekends and holidays will be determined by the engineer. The contractor shall supply information for lighting plans when requesting work hours during overnight periods.

3.4 Any work requiring a reduction in the number of through lanes of traffic on Republic Road shall be completed during nighttime hours. Nighttime hours shall be considered to be 10:00 p.m. to 5:00 a.m. for this project.

4.0 Detours and Lane Closures.

4.1 When a changeable message sign (CMS) is provided, the contractor shall use the CMS to notify motorists of future traffic disruption and possible traffic delays two weeks before traffic is shifted to a detour or prior to lane closures. The CMS shall be installed at a location as approved or directed by the engineer. All messages planned for use in the work zone shall be approved and authorized by the engineer or designee prior to deployment.

4.2 Detours and road closures should be limited to the extent and durations detailed in the plans, and any deviations from the traffic control plans shall be approved by the engineer.

5.0 Basis of Payment. No direct payment will be made to the contractor to recover the cost of equipment, labor, materials, or time required to fulfill the above provisions, unless specified elsewhere in the contract document. All authorized changes in the traffic control plan shall be provided for as specified in Sec 616.

D. Emergency Provisions and Incident Management JSP-90-11A

1.0 The contractor shall have communication equipment on the construction site or immediate access to other communication systems to request assistance from law enforcement or other emergency agencies for incident management. In case of traffic accidents or the need for law enforcement to direct or restore traffic flow through the job site, the contractor shall notify law enforcement or other emergency agencies immediately as needed. The area engineer's office shall also be notified when the contractor requests emergency assistance.

2.0 In addition to the 911 emergency telephone number for ambulance, fire or law enforcement services, the following agencies may also be notified for accident or emergency situation within the project limits.

Missouri Highway Patrol Troop D: 417-895-6868		
Greene County	City of Springfield	City of Springfield
Sheriff: 417-868-4040	Fire: 417-874-2300	Police: 417-864-1810

2.1 This list is not all inclusive. Notification of the need for wrecker or tow truck services will remain the responsibility of the appropriate law enforcement agency.

2.2 The contractor shall notify law enforcement and emergency agencies before the start of construction to request their cooperation and to provide coordination of services when emergencies arise during the construction at the project site. When the contractor completes this notification with law enforcement and emergency agencies, a report shall be furnished to the engineer on the status of incident management.

3.0 No direct pay will be made to the contractor to recover the cost of the communication equipment, labor, materials or time required to fulfill the above provisions.

E. Project Contact for Contractor/Bidder Questions JSP-96-05

All questions concerning this project during the bidding process shall be forwarded to the project contact listed below.

Wayne Housley
Highway Department Contract Administration Tech
2065 North Clifton
Springfield, MO 65803

Telephone Number: 417-829-6518
Email: whousley@greenecountymo.gov

All questions concerning the bid document preparation can be directed to:

Steven Beam, P.E
Burns & McDonnell Engineering Company
6576 Lynch's Prairie Cove, Suite B
Springdale, AR 72762

Telephone Number: 479-384-5091
Email: srbeam@burnsmcd.com

F. Utilities JSP-93-26F

1.0 For informational purposes only, the following is a list of names, email addresses, and telephone numbers of the known utility companies in the area of the construction work for this improvement:

Utility Name	**Known Required Adjustment**
AT&T Scott Hall 417-836-2146 rp4629@att.com	_____Yes_____
City of Springfield Sanitary Sewer Matt Taylor 417-864-1988 mtaylor@springfieldmo.gov	_____Yes_____
City Utilities Electric Justin Penrose 417-831-8571 Justin.Penrose@cityutilities.net	_____Yes_____
City Utilities Gas and Water Clark McLemore 417-831-8389 Clark.mclemore@cityutilities.net	_____Yes_____
MCI Don Torbett 918-590-5922 Donald.torbett@verizon.com	_____None_____
Mediacom Kyle Keller 417-496-8577 kkeller@mediacomcc.com	_____Yes_____
Ozark Electric Cooperative, Inc. Dan Lohkamp	

417-724-5507
dan@ozarkelectric.com _____Yes_____
Southern Star Central Gas Pipeline, Inc.
Mike DeGraeve
270-852-5125
Mike.degraeve@sscgp.com _____Yes_____

Springnet
Rob Guiler
417-831-8669 _____Yes_____

1.1 The existence and approximate location of utility facilities known to exist, as shown on the plans, are based upon the best information available to the Commission at this time. This information is provided by the Commission "as-is" and the Commission expressly disclaims any representation or warranty as to the completeness, accuracy, or suitability of the information for any use. Reliance upon this information is done at the risk and peril of the user, and the Commission shall not be liable for any damages that may arise from any error in the information. It is, therefore, the responsibility of the contractor to verify the above listing information indicating existence, location and status of any facility. Such verification includes direct contact with the listed utilities.

1.2 The contractor agrees that any effects of the presence of the utilities, their relocation, contractor's coordination of work with the utilities and any delay in utility relocation shall not be compensable as a suspension of work, extra work, a change in the work, as a differing site condition or otherwise including but, without limitation, delay, impact, incidental or consequential damages. The contractor's sole remedy for the effects of the presence of utilities, delay in their relocation or any other effects shall be an excusable delay as provided in Section 105.7.3. The contractor waives, for itself, its subcontractors and suppliers the compensability of the presence of utilities, delay in their relocation and any cost to the contractor, its subcontractors and suppliers in any claim or action arising out of or in relation to the work under the contract.

1.3 The contractor shall be solely responsible and liable for incidental and consequential damage to any utility facilities or interruption of the service caused by it or its subcontractor's operation. The contractor shall hold and save harmless the Commission from damages to any utility facilities interruption of service by it or its subcontractor's operation.

2.0 It shall be noted by the contractor that MoDOT is a member of Missouri One Call (800 Dig Rite). Some work on this project may be in the vicinity of MoDOT utility facilities, which includes but is not limited to traffic signal cables, highway lighting circuits, ITS cables, cathodic protection cables, etc. Prior to beginning work, the contractor shall request locates from Missouri One Call. The contractor shall also complete the Notice of Intent to Perform Work form located at the Missouri Department of Transportation website:

https://www.modot.org/notice-intent#req1

The contractor shall submit the form over the web (preferred method) or by fax to the numbers on the printed form. The notice must be submitted a minimum of 2 and a maximum of 10 working days prior to excavation just as Missouri One Call requires.

G. Liquidated Damages for Winter Months JSP-04-17A

Delete Sec 108.8.1.3 (a)

Liquidated damages for failure to complete the work on time shall not be waived beginning December 15, 2023 and extending to March 15, 2024, both dates inclusive.

H. Restricted Access to Work Activities at Weaver Road

1.0 Description. Southern Star Central Gas Pipeline (Southern Star) has project required relocation work on Kansas Avenue and Weaver Road scheduled to begin in March, 2022 with completion anticipated in June, 2022.

2.0 Contractor Restrictions. The contractor is notified that no work activities can occur at Weaver Road until Southern Star has completed their relocation work and has notified County that other project activities can proceed.

3.0 Basis of Payment. No direct payment will be made to the contractor to recover the cost of equipment, labor, materials or time required to fulfill the above provisions, unless specified elsewhere in the contract document.

I. Liquidated Damages Specified-Closure of Weaver Road JSP-93-28

1.0 Description. If travel on Weaver Road is not restored prior to the start of the Springfield School District school year, the County, the traveling public, and local police and governmental authorities will be damaged in various ways, including but not limited to, increased construction administration cost, potential liability, traffic and traffic flow regulation cost, traffic congestion and motorist delay, with its resulting cost to the traveling public. These damages are not reasonably capable of being computed or quantified. Therefore, the contractor will be charged with liquidated damages specified in the amount of $1,500 per day for each full day that Weaver Road is not open to traffic. It shall be the responsibility of the engineer to determine the quantity of excess closure time.

1.1 The said liquidated damages specified will be assessed regardless of whether it would otherwise be charged as liquidated damages under the Missouri Standard Specification for Highway Construction, as amended elsewhere in this contract.

J. Final Payment Documents

1.0 Description. If the final payment documents are not completed and ready for final payment in accordance with Sec 109.8, within 60 calendar days of final acceptance of the project, the Contractor shall pay to the Contracting Authority the amount of $500.00 as liquidated damages and as a penalty for each Calendar Day until the final payment documents are completed and ready for final payment. The amount of liquidated damages shall be deducted from any payments due or to become due to the Contractor. Final payment documentation shall include but not be limited to the following:

(a) An affidavit, on the form prescribed by the Contracting Authority, to the effect that all payments have been made and all claims have been released for all material, labor and other items covered by the contract bond.

(b) A Certification, on the form prescribed by the Contracting Authority, showing the actual final DBE participation on the project including name of DBE, type of work and amount paid to each DBE firm.
(c) An affidavit, on the form prescribed by the Contracting Authority, to the effect that all workers have been paid in compliance with prevailing wage requirements within the contract. ADA Compliance and Final Acceptance of Constructed Facilities JSP-10-01B.

K. LPA Buy America Requirements JSP-18-08

106.9 Buy America Requirement. On all federal-aid projects, the contractor's attention is directed to Title 23 CFR 635.410 Buy America Requirements. Where steel or iron products are to be permanently incorporated into the contract work, steel and iron material shall be manufactured in the USA except for "minor usage" as described herein. Furthermore, any coating process of the steel or iron shall be performed in the USA. The use of pig iron and processed, pelletized and reduced iron ore manufactured outside of the USA will be permitted in the domestic manufacturing process for steel or iron material.

106.9.1 Any sources other than the USA as defined will be considered foreign. The required domestic manufacturing process shall include formation of ingots and any subsequent process. Coatings shall include any surface finish that protects or adds value to the product.

106.9.2 “Minor usage” of foreign steel, iron or coating processes will be permitted, provided the cost of such products does not exceed 1/10 of one percent of the total contract cost or $2,500.00, whichever is greater. If foreign steel, iron or coating processes are used, invoices to document the cost of the foreign portion, as delivered to the project, shall be provided and the engineer’s written approval obtained prior to placing the material in any work.

106.9.3 Buy America requirements include a step certification for all fabrication processes of all steel or iron materials that are accepted per Sec 1000.

106.9.3.1 Items designated as Category 1 will consist of steel girders, piling, and reinforcing steel installed on site. Category 1 items require supporting documentation prior to incorporation into the project showing all steps of manufacturing, including coating, as being completed in the United States and in accordance with CFR Title 23 Section 635.410 Buy America Requirements. This includes the Mill Test Report from the original producing steel mill and certifications documenting the manufacturing process for all subsequent fabrication, including coatings. The certification shall include language that certifies the following. That all steel and iron materials permanently incorporated in this project was procured and processed domestically and all manufacturing processes, including coating, as being completed in the United States and in accordance with CFR Title 23 Section 635.410.

106.9.3.2 Items designated as Category 2 will include all other steel or iron products not in Category 1 and permanently incorporated in the project. Category 2 items shall consist of, but not be limited to items such as fencing, guardrail, signing, lighting and signal supports. The prime contractor is required to submit a material of origin form certification prior to incorporation into the project from the fabricator for each item that the product is domestic. The Certificate of Materials Origin form (link to certificate form) from the fabricator must show all steps of manufacturing, including coating, as being completed in the United States and in accordance with CFR Title 23 Section 635.410 Buy America Requirements and be signed by a fabricator representative. The Engineer reserves the right to request additional information and documentation to verify that all Buy America requirements have been satisfied. These documents shall be submitted upon

request by the Engineer and retained for a period of 3 years after the last reimbursement of the material.

106.9.3.3 Any minor miscellaneous steel or iron items that are not included in the materials specifications shall be certified by the prime contractor as being procured domestically. Examples of these items would be bolts for sign posts, anchorage inserts, etc. The certification shall read “I certify that all steel and iron materials permanently incorporated in this project during all manufacturing processes, including coating, as being completed in the United States and in accordance with CFR Title 23 Section 635.410 Buy America Requirements procured and processed domestically in accordance with CFR Title 23 Section 635.410 Buy America Requirements. Any foreign steel used was submitted and accepted under minor usage”. The certification shall be signed by an authorized representative of the prime contractor.

106.9.4 When permitted in the contract, alternate bids may be submitted for foreign steel and iron products. The award of the contract when alternate bids are permitted will be based on the lowest total bid of the contract based on furnishing domestic steel or iron products or 125 percent of the lowest total bid based on furnishing foreign steel or iron products. If foreign steel or iron products are awarded the contract, domestic steel or iron products may be used; however, payment will be at the contract unit price for foreign steel or iron products.

L. Governing Specifications and Definition Changes

1.0 Description. The general requirements, provisions and technical specifications governing the completion of the work contemplated shall be those known and designated as the "Greene County Design Standards For Public Improvements" latest revision adopted by the Greene County Court and all revisions thereto (hereinafter referred to as the County design Standards), “City of Springfield, Missouri Design Standards for Public Improvements” latest revision adopted by the City of Springfield, and the "Missouri Standard Specifications for Highway Construction, 2020" (hereinafter referred to as the MoDOT Standard Specifications) together with General and Job Special Provisions, if any, and other State and Federal requirements contained in the contract documents. In the event of conflict between the above referenced specifications and special provision, the Job Special Provisions shall have precedence, followed in descending priority by the County Design Standards, the General Special Provisions, the MoDOT Standard Specifications, and the City of Springfield Design Standards. In the event of a disagreement between the Job Special Provisions and the Plans, the Plans shall have precedence.

1.1 All reference to the "Commission," "State" or "Owner" shall be interpreted as the Greene County Commission, Greene County, Missouri.

M. Notice of Letting

1.0 Description. After the date is fixed for the receipt of bids, the County may, in addition to the notice required by law, give notice of such date by mail directly to those contractors known to the consulting Engineer as being engaged in the type of construction to be bid.

N. ADA Compliance and Final Acceptance of Constructed Facilities JSP-10-01B

1.0 Description. The contractor shall comply with all laws pertaining to the Americans with Disabilities Act (ADA) during construction of pedestrian facilities on public rights of way for this project. An ADA Checklist is provided herein to be utilized by the contractor for verifying compliance with the ADA law. The contractor is expected to familiarize himself with the plans

involving pedestrian facilities and the ADA Post Construction Checklist prior to performing the work.

2.0 ADA Checklist. The contractor can locate the ADA Checklist form on the Missouri Department of Transportation website:

www.modot.org/business/contractor_resources/forms.htm

2.1 The ADA Checklist is intended to be a helpful tool for the contractor to use during the construction of the pedestrian facilities and a basis for the commission's acceptance of work. Prior to work being performed, the contractor shall bring to the engineer's attention any planned work that is in conflict with the design or with the requirement shown in the checklist. Situations may arise where the checklist may not fully address all requirements needed to construct a facility to the full requirements of current ADA law. In those situations, the contractor shall propose a solution to the engineer that is compliant with current ADA law using the following hierarchy of resources: 2010 ADA Standards for Accessible Design, Draft Public Rights of Way Accessibility Guidelines (PROWAG) dated November 23, 2005, MoDOT's Engineering Policy Guidelines (EPG), or a solution approved by the U.S. Access Board.

2.2 It is encouraged that the contractor monitor the completed sections of the newly constructed pedestrian facilities in attempts to minimize negative impacts that his equipment, subcontractors or general public may have on the work. Completed facilities must comply with the requirements of ADA and the ADA Checklist or have documented reasons for the non-compliant items to remain.

3.0 Coordination of Construction.

3.1 Prior to construction and/or closure on an existing pedestrian path of travel, the contractor shall submit a schedule of work to be constructed, which includes location of work performed, the duration of time the contractor expects to impact the facility and an accessible signed pedestrian detour compliant with MUTCD Section 6D that will be used during each stage of construction. This plan shall be submitted to the engineer for review and approval at or prior to the pre-construction conference. Accessible signed detours shall be in place prior to any work being performed that has the effect of closing an existing pedestrian travel way.

3.2 When consultant survey is included in the contract, the contractor shall use their survey crews to verify that the intended design can be constructed to the full requirements as established in the 2010 ADA Standards. When 2010 ADA Standards do not give sufficient information to construct the contract work, the contractor shall refer to the PROWAG.

3.3 When consultant survey is not included in the contract, the contractor shall coordinate with the engineer, prior to construction, to determine if additional survey will be required to confirm the designs constructability.

4.0 Final Acceptance of Work. The contractor shall provide the completed ADA Checklist to the engineer at the semi-final inspection. ADA improvements require final inspection and compliance with the ADA requirements and the ADA Checklist. Each item listed in the checklist must receive either a "YES" or an "N/A" score. Any item receiving a "NO" will be deemed non-compliant and shall be corrected at the contractor's expense unless deemed otherwise by the engineer. Documentation must be provided about the location of any non-compliant items that are allowed to remain at the end of the construction project. Specific details of the non-compliant items, the ADA requirement that the work was not able to comply with, and the specific reasons

that justify the exception are to be included with the completed ADA Checklist provided to the engineer.

4.1 Slope and grade measurements shall be made using a properly calibrated, 2 foot long, electronic digital level approved by the engineer.

5.0 Basis of Payment. The contractor will receive full pay of the contract unit cost for all sidewalk, ramp, curb ramp, median, island, approach work, cross walk striping, APS buttons, pedestrian heads, detectible warning systems and temporary traffic control measures that are completed during the current estimate period as approved by the engineer. Based upon completion of the ADA Checklist, the contractor shall complete any necessary adjustments to items deemed non-compliant as directed by the engineer.

5.1 No direct payment will be made to the contractor to recover the cost of equipment, labor, materials, or time required to fulfill the above provisions, unless specified elsewhere in the contract documents.

O. Samples, Tests and Certifications

1.0 Samples, Tests, and Certifications. The Contractor shall submit certifications and substantiating test reports, furnished by the supplier or fabricator for all materials incorporated into the work, certifying that material and manufacturing procedures conform to the specifications. All sampling and testing required by the specifications, and the results shall be signed, sealed and stamped according to laws related to professional engineers. There shall be no direct charge to the Owner for materials taken as samples, either for field tests or for laboratory tests. If a specification of a recognized national standard agency (ASTM, AASHTO, AWWA, AWS, etc.) is designated, the material may, unless otherwise specified, meet either the designated specification or the latest revision thereof in effect at the time of letting of the contract.

1.1 All submittals for samples, tests, and certification shall bear the name and address of the Contractor and supplier; the name of the project, and the specification reference for the material being submitted. Submittals not bearing this information will be rejected and returned without further review.

1.2 The Contractor shall employ at his expense a competent testing laboratory to perform job control tests as hereinafter specified. The testing laboratory to be used shall be subject to the approval of the Engineer. The name of the testing laboratory shall be submitted to the Engineer at least 10 calendar days prior to any testing.

1.3 The following field testing and certifications will be required by the Contractor at his expense:

A. Soil properties: Classification, Atterberg Limits and a moisture-density relationship curve for each type of proposed borrow material as well as a qualified soils engineer's recommendations as described in the section entitled "Embankment in Place."

B. Aggregate base: Name of supplier, source, gradation, and supplier certification.

C. Oil for Tack Coat: Name of supplier, source of oil, and supplier's certification.

D. Plant mix bituminous base and plant mix bituminous surface:

1. Name of supplier,
2. Source of materials used in the mix (coarse and fine aggregate,

oil,additives, etc.)
3. Oil supplier's delivery tickets, current
4. Current MoDOT approved Mix design (Must have been approved withinthe last 2 years)
5. TSR Values

E. Precast Concrete: Name of source and supplier of concrete and concrete materials, mix design, compressive strength test results, and supplier's certification.

F. Cast in place concrete: Name of supplier of concrete and source of aggregate, cement, admixtures; mix design; and supplier's certification.

G. Sod: Name and address of supplier and supplier certification.

H. Suppliers' certification for all other materials used in work.

1.4 Tests and sampling shall be done in accordance with the Specifications, General Special Provisions or Job Special Provision. Three copies of all test reports and certifications shall be submitted to the Engineer for review electronically. The Engineer reserves the right to waive certain tests or to require additional tests should job conditions or workmanship warrant. Such additional tests will be provided at the Contractor's expense except as otherwise provided for Defective Work.

1.5 If material is rejected for whatever reason, the Contractor shall pay for all retesting until a suitable material is found.

1.6 The Engineer may perform or employ a competent testing laboratory to perform the following job control tests:

A. Soil Density Tests. One test shall be made per 300 linear feet of roadway on exposed compacted subgrade and in each lift of embankment.

B. Cast-in-place concrete: One slump test, one air entrainment test, and 4 compression test cylinders will be taken for each concrete placement or for each 25 cubic yards placed.

C. Aggregate Base Density Tests. One test shall be made per 300 linear feet of Roadway base.

D. Plant Mix Bituminous Base and Pavement:

1. A hot mix sample will be taken from behind the paver from the mat prior to compaction. The following tests / calculations shall be made from the hot mix sample: Max Theoretical Specific Gravity, Bulk density, gradation, oil content.
2. In place Density testing: One core shall be cut every 500 linear feet ofpavement at locations designated by the Engineer. One of every four cores will be joint cores. Density of the cores will be calculated using the Maximum Theoretical Specific Gravity from the hot mix sample of the mix produced thatday.
3. TSR May be performed if deemed necessary by the Engineer.

1.7 The Contractor will notify the Engineer in advance of work requiring field inspection or testing in accordance with the section entitled "Inspection of Work" of these Job Special Provision Sections.

P. Allowable Noise Levels

1.0 Description. The contractor shall know, observe and comply with all federal and state laws, local laws, City of Springfield Noise Ordinances, codes, ordinances, orders, decrees and regulations existing at the time of or enacted subsequent to the execution of the contract relating to noise levels permissible within and adjacent to the Project construction site to reduce impacts of construction noise.

1.1 In addition to the requirements set forth in the Job Special Provision “Laws Related to Allowable Noise Levels”, the contractor shall reduce noise levels by the maximum extent feasible. This should include, but is not limited to, use of baffle generators and generator muffler silencers. The contractor may be asked to implement additional noise limiting measures at the discretion of Greene County, and the contractor has the responsibility to implement such measures in a timely manner.

2.0 Basis of Payment. No direct pay will be made to the contractor to recover the cost of complying with the laws addressing allowable noise levels.

Q. Equipment Inspection and Cleanliness

1.0 Description. The Contractor is required to inspect and clean all equipment used during construction of the Project before use in Project construction operations. The Engineer shall be notified when a new piece of equipment will be used on the project and a copy of the inspection report for each piece of equipment used during construction of the Project shall be provided to the Engineer.

2.0 Basis of Payment. No direct pay will be made to the contractor to recover the cost of inspecting or cleaning equipment prior to being used for the construction, or time required to fulfill the above provision.

R. Water Wells

1.0 Description. Any water wells encountered during construction will be appropriately abandoned in accordance with Missouri Well Construction Rules Section 10 CSR 23-3.110 and Section 202.10 of the Missouri Standard Specifications for Highway Construction.

2.0 Basis of Payment. Payment for providing required abandoned services of water wells shall be addressed as a Change in the Work.

S. Removal of Trade Material and Open Burning

1.0 Description. Removal and disposal of trade material, demolition materials or refuse generated during construction shall be in accordance with Section 201.2.5 of the Missouri Standard Specifications for Highway Construction. Open burning of tree trunks, limbs, or vegetation resulting from clearing and grubbing operations will not be allowed on this project.

2.0 Basis of Payment. No direct pay will be made to the contractor to fulfill the above provision beyond payment as covered under Section 201, Clearing and Grubbing.

T. Fugitive Dust Control

1.0 Description. The Contractor shall control fugitive dust on the Project. The Contractor shall take appropriate measures to reduce the generation and transport of fugitive dust. Watering the ground or using dust-retarding chemicals and washing vehicles prior to leaving the construction site may be used to reduce the generation and transport of fugitive dust. All methods must comply with applicable Federal, state, and local laws and regulations.

2.0 Basis of Payment. No direct pay will be made to the contractor to recover the cost of controlling fugitive dust, or time required to fulfill the above provision.

U. Unlocated or Unknown Hazardous Waste Sites

1.0 Description. Any unlocated or previously unknown hazardous waste sites that are found during Project construction will be mediated by the Contractor in accordance with state and Federal laws and regulations.

2.0 Basis of Payment. Payment for providing required mediation of Unlocated or Unknown Hazardous Waste Sites shall be addressed as a Change in the Work.

V. Tree Removal

1.0 Description. Tree removal is limited to areas necessary for constructing of the Project. The Contractor shall obtain approval from the Engineer before removing any trees on the project within the right of way boundary or easements (construction, drainage, utility) not specifically identified or designated for removal in the contract plans. Engineer must obtain approval to proceed from MoDOT Design Environmental and FHWA before additional tree clearing is allowed.

2.0 Basis of Payment. No direct pay will be made to the contractor for coordination of tree removal activities on the project, or time required to fulfill the above provision.

W. Tree Clearing Restriction

1.0 Description. The project is within the known breeding range of the federally endangered Indiana bat and federally threatened northern long-eared bat. These bats are known to roost in trees with suitable habitat characteristics during summer months.

1.1 MoDOT has determined that suitable roost trees exist within the project area. MoDOT and FHWA completed formal consultation for adverse effect on these species and obtained a Biological Opinion from USFWS.

1.2 To minimize impacts to roosting Indiana bats, tree clearing of any trees greater than or equal to three inches in diameter, measured at breast height, will only be allowed between November 1 and March 31.

2.0 Basis of Payment. No direct pay shall be provided for any labor, equipment, time, or materials necessary to complete this work. The contractor shall have no claim, or basis for any claim or suit whatsoever, resulting from compliance with this provision.

X. Permits, Easements, and Right-of-Way

1.0 Description. Unless specifically stated otherwise, the easements and rights-of-way for the construction will be provided by the County. The Contractor shall confine his construction operations to the immediate vicinity of the location shown on the plans and shall use due care so as to cause the least possible damage to property.

1.1 All licenses, permits, certificates, etc., required for and in connection with the work to be performed under the provisions of these contract documents shall be secured by the Contractor entirely at his own expense. This includes the MoDOT right of way Permit, Land Disturbance/Grading Permit, the Floodplain Development Permit and the Stormwater Pollution Prevention Plan issued by the Greene County Resource Management Department.

1.2 The Contractor shall not park, store materials, or equipment, etc. off of the right-of-way or temporary construction easement without written permission from the property owner. A copy of such written permission shall be given to the Engineer. The Contractor shall be fully responsible for any damages to property. The contractor shall use caution when working in the temporary easement area.

Y. Parking Equipment

1.0 Description. When construction activities are to occur near or adjacent to traffic, upon completion of construction activities on any given day, all equipment shall be parked or stored in staging areas or off the roadway until commencement of work the next day, even when in the presence of traffic drums or other traffic control devices.

2.0 Basis of Payment. No direct payment shall be made to the contractor for labor, equipment, time, or materials necessary to park or store equipment.

Z. Tree Removal Beyond Identified Project Boundary

1.0 Description. Greene County has obtained appropriate approvals for clearing activities within the designated project boundary. No tree removal shall be allowed outside the identified Project boundary.

2.0 If the Contractor determines any need to expand the tree clearing limits beyond what is shown on the contract plans, consultation with MoDOT and United States Fish and Wildlife will be required prior to any tree clearing activities being authorized.

3.0 Basis of Payment. No direct payment shall be made to the contractor for labor, equipment, time, or materials necessary to park or store equipment.

AA. Reporting of Injured or Dead Bats

1.0 Description. In the event any bat is found injured or dead, whether cause is apparent or not, the following processes shall be followed immediately at the time of the incident or upon first discovery:

- Notify Andy Roberts with U.S. Fish and Wildlife Service Midwest Region at andy_roberts@fws.gov. Injured bats must be reported immediately for deposition instructions.

- Contact U.S. Fish and Wildlife Service law enforcement by phone at 636-441-1909.
- Freeze dead specimens in a plastic bag with the date and latitude/longitude of the discovery.
- Provide report describing circumstances of discovery and incidental take.

2.0 Basis of Payment. No direct payment shall be made to the contractor for labor, equipment, time, or materials necessary for reporting or storing injured or dead bats.

BB. Land Disturbance/Grading Permit, Floodplain Development Permit, and Stormwater Pollution Prevention Plan

1.0 Description. Work in the vicinity of this project will be covered by the Land Disturbance/Grading Permit, Floodplain Development Permit, Greene County Stormwater Regulations, and Stormwater Pollution Prevention Plan bound herein and issued by the Greene County Resource Management Department.

1.1 The Contractor shall complete the Stormwater Pollution Prevention Plan included in this contract, have it signed by the Consultant and Greene County Highway Department, and have it approved before the Grading Permit will be issued for this project. No work will be allowed to begin until the Grading Permit is issued. The approval time for the Grading Permit will not be grounds for claim for additional calendar days to be added to the contract. Contractor shall comply with all applicable restrictions.

CC. Mailbox Relocation

1.0 Mailbox Relocation. Mail delivery must be maintained at all times. The Contractor is responsible for providing access and to relocate any mailboxes as required. If mailboxes are temporarily relocated the Contractor shall contact the *Post Office* prior to removal for specific locations and instructions. Replacement of mailboxes to their original (as nearly as possible) location shall be with all new posts and in accordance with postal regulations. Mailboxes which have been damaged by the Contractor shall be replaced. The work includes mailbox removal, temporary relocation and replacement to the new permanent location. All work is considered incidental and not a separate pay item.

DD. Safety Provisions

1.0 Safety Provisions. The contractor shall be solely responsible for establishing and conducting a project safety program for the protection of the public and personnel employed by the contractor and his subcontractor(s) on the project site or in the immediate vicinity of the work.

2.0 All costs incurred by the Contractor and his subcontractor(s) for establishment and maintenance of the Safety Program shall be considered completely covered by the total contract amount with no additional compensation being made for acquisition of safety equipment or performance of safety related procedures.

EE. Construction Site Access

1.0 Construction Site Access. Access for area businesses and residences, emergency

vehicles, and mail delivery must be maintained at all times. In the event that a driveway becomes inaccessible, the contractor shall give at least 72 hours notice prior to closure, shall make every effort to minimize the closure, and shall provide an alternative driveway for access to the area businesses and residents.

FF. Protection and Maintenance of Public and Private Property

1.0 Protection and Maintenance of Public and Private Property. The Contractor shall protect, shore, brace, support and maintain any underground pipes, conduits, drains, and other underground construction uncovered or otherwise affected by the construction work performed by him. All pavement, surfacing driveways, curbs, walks, buildings, utility poles, guy wires, and other surface structures affected by construction operations in connection with the performance of this contract, together with all trees and shrubs in yards adjacent to the construction limits, shall be maintained and, if removed or otherwise damaged, shall be restored to the original condition whether within or outside the easement. All replacements of such underground construction and surface structures, or parts thereof, shall be made with new material confirming to the requirement of these specifications, or if not specified, as approved by the Engineer, at this Contractor's expense.

1.1 The Contractor shall be responsible for all damage to streets, roads, highways, shoulders, ditches, embankments, culverts, bridges, or other public or private property or facility,regardless of location or character, which may be caused by moving, hauling or otherwise transporting equipment, materials, or men to or from the work or any part or site thereof whetherby him or his subcontractors. The Contractor shall make satisfactory and acceptable arrangements with the owner of, or the agency or authority having jurisdiction over, the damaged property or facility concerning its repair, replacement, or payment of costs incurred in connection with said damage.

1.2 No fences outside of the right-of-way or easement limits shall be removed without the prior written consent of the property owner of the lot or tract of land on which such fence is located.

GG. Site Drainage

1.0 Site Drainage. The Contractor shall be responsible for maintaining the site in a free draining condition such that water does not pond. The Contractor shall not construct cuts, embankments, ditches, etc., until provisions for drainage are in place. The Contractor may construct temporary ditches, berms, place temporary pipes, use pumps, etc., to facilitate draining the site. The Contractor shall schedule his work in a manner to meet these requirements.

1.1 There will be no direct payment for any additional cost for complying with this requirement as it shall be considered incidental to the contract.

HH. Toilet Facility Locations

1.0 Toilet Facility Locations. The Contractor shall provide portable toilets at a minimum of two locations on the project. To be placed near the majority of the work in progress. No direct payment will be made for furnishing and maintaining toilet facilities.

II. Construction Site Cleanup

1.0 Construction Site Cleanup. Cleanup shall follow immediately after and at the same rate

as construction. Cleanup shall not be delayed until the entire project is finished. Contractor shall clean all right-of-way and easement areas that were disturbed or occupied by him in connection with the construction. All disturbed brush and trees, all rubbish, excess materials, temporary structures, equipment, etc. shall be removed and the area left in a neat and presentable condition. If at any time during construction the Engineer determines that cleanup is not being accomplished, the Engineer may direct that no additional work be accomplished without meeting certain requirements. If so directed, no claim for additional time will be allowed.

JJ. Driveway Adjustment

1.0 Driveway Adjustment. Driveways shall be saw cut and a joint created at the appropriate location and drives replaced to that point. Driveway and approach replacement shall be paid for in square yards units, which will include the concrete and or asphalt as well as the compacted granular base, any necessary saw cutting, and the asphalt required for asphalt drive adjustment.

KK. Miscellaneous Adjustments

1.0 Miscellaneous Adjustments. The tops of all newly constructed or existing manholes, junction boxes, pull boxes, valves, meters, etc. shall be adjusted vertically to match the new finished construction grades, slopes, and elevations so they exactly match the new pavement and provide a smooth ride. Unacceptable tops will be readjusted, and all pavement repairs and adjustment costs will be the responsibility of the contractor. These adjustments shall be the responsibility of the Contractor and shall be considered incidental to this project and no additional payments will be made for these items.

LL. Bridge Construction Requirements

1.0 Description. This provision contains general construction requirements for this project.

2.0 Construction Requirements. The geotechnical report is included in the contract with the bridge electronic deliverables zip file for informational purposes only.

2.1 Provisions shall be made to prevent any debris and materials from falling into the stream, lake or onto the roadway. Any debris and materials that falls below the bridge outside the limits mentioned previously and if determined necessary by the engineer, the debris shall be removed as approved by the engineer at the contractor's expense.

2.2 Provisions shall be made to prevent damage to any existing utilities. Any damage sustained to the utilities as a result of the contractor's operations shall be the responsibility of the contractor. All costs of repair and disruption of service shall be as determined by the utility owners and as approved by the engineer.

2.3 Provisions shall be made to prevent damage to any existing utilities. Any damage sustained to the utilities as a result of the contractor's operations shall be the responsibility of the contractor. All costs of repair and disruption of service shall be as determined by the utility owners and as approved by the engineer.

2.4 Coating Information. In addition to what is specified in 1080.4.4, paint an additional 6” outside the edge of each integral diaphragm for each girder with no less than 2 mils of the prime coat per System H. Payment for this additional painting will be considered completely covered by the contract unit price for Fabricated Structural Low Alloy Steel (Plate Girder) A709, Grade 50W.

3.0 Method of Measurement. No measurement will be made.

4.0 Basis of Payment. Payment for the above described work will be considered completely covered by the contract unit price for other items included in the contract.

MM. Deflection and Haunching

1.0 Description. The contractor shall determine dead load deflections and haunching based on field measurements and/or existing bridge plans and these shall be adjusted based on the difference between the new and existing dead load weights.

2.0 Construction Requirements. In order to properly form the haunches for the new deck, the contractor shall survey top of deck elevations above each beam including centerline of roadway and along each beam line (top or bottom flange) prior to deck removal followed by surveying elevations of the beams (top or bottom flange) after deck removal.

3.0 Method of Measurement. No measurement will be made.

4.0 Basis of Payment. Payment for the above described work will be considered completely covered by the contract unit price for other items included in the contract.

NN. Dynamic Pile Testing

1.0 Scope of Work. Scope of work shall include furnishing all labor, equipment and analysis associated with dynamic testing of driven piles as specified in this special provision. Dynamic pile restrike testing will not be required on this job.

1.1 Performance and Design Requirements. Performance and design conditions for dynamic testing of driven piles shall be in accordance with section 4.0 of this special provision.

1.2 Approved Manufacturers. For the following hardware and software components, only the listed manufacturer is recognized as providing the level of quality required. If the contractor wants to propose a non-listed manufacturer that is considered to provide an equivalent level of quality, this manufacturer shall be identified and supporting documentation provided. Acceptance of the manufacturer as a substitute will be at the discretion of the engineer.

Component	Product	Manufacturer
Pile Driving Modeling - Wave Equation Software	**GRLWEAP**	**Pile Dynamics, Inc.**
Pile Driving Monitoring - Hardware & Software	Pile Driving Analyzer - Model PAK	Pile Dynamics, Inc.
Pile Driving Analysis – Signal Matching Software	**CAPWAP**	**Pile Dynamics, Inc.**

1.3 Test Requirements. Dynamic pile testing shall be conducted in accordance with the standard test method indicated below.

Standard Test Method	Designation	Conducted By
High-Strain Dynamic Testing of Piles	ASTM D 4945	Contractor

1.4 Qualifications. The contractor shall perform dynamic pile testing utilizing the services of

an independent dynamic pile testing consultant and qualified personnel. An engineer with a minimum of 3 years dynamic pile testing and analysis experience or who has achieved Basic or better certification under the High-Strain Dynamic Pile Testing Examination and Certification process of the Pile Driving Contractors Association and Foundation QA shall perform pile driving monitoring. An engineer with a minimum of 5 years dynamic pile testing and analysis experience or who has achieved Advanced or better certification under the High-Strain Dynamic Pile Testing Examination and Certification process of the Pile Driving Contractors Association and Foundation QA shall perform pile driving modeling and pile driving analyses.

2.0 Execution.

2.1 Pile Driving Modeling. The contractor shall perform preconstruction wave equation analyses and prepare a summary report of the results. The wave equation analyses shall be used to assess the ability of all proposed pile driving systems to install piles to the required capacity and the desired penetration depth within allowable driving stresses. The report shall include a drivability graph relating pile capacity, blow count and driving stresses to depth. The report shall include a bearing graph relating the pile capacity to the pile driving resistance. The bearing graph shall indicate blow count versus capacity and stroke. The report shall also contain a constant capacity analysis or inspector's chart to assist the engineer in determining the required driving resistance at other field observed strokes. The contractor shall perform wave equation analyses in accordance with section 4.0 of this special provision. Acceptability of the wave equation report and the adequacy of analyses will be determined by the engineer.

2.1.1 Approval by the engineer of the proposed pile driving system will be based upon the wave equation analyses indicating that the proposed system can develop the specified pile capacity at a pile driving rate of 2 to 10 blows per inch at the end of driving, and within allowable driving stresses per *AASHTO LRFD Bridge Construction Specifications*, Section 4.4.1. The contractor shall provide preliminary pile driving criteria based on wave equation analyses and any anticipated capacity changes after driving, set-up or relaxation, subject to revision based upon dynamic pile testing field measurements.

2.1.2 If any changes or modifications are made to the approved pile driving system, additional wave equation analyses in accordance with section 2.1 of this special provision shall be required.

2.2 High-Strain Dynamic Pile Testing.

2.2.1 The contractor shall perform dynamic pile testing at the locations and frequency required in accordance with section 4.0 of this special provision.

2.2.2 Dynamic pile testing involves monitoring the response of a pile subjected to heavy impact applied by the pile hammer at the pile head. The testing shall provide information on the driving stresses, pile capacity, structural integrity and hammer efficiency.

2.2.3 The contractor shall engage an independent dynamic pile testing consultant and qualified personnel in accordance with section 1.5 of this special provision. Prior to testing, the engineer will review and approve the proposed independent dynamic pile testing consultant, the experience and qualifications of assigned personnel, details of the method of testing, a list of equipment, and the method of analysis of test results. The contractor shall provide all available details of the subsurface conditions, pile dimensions and properties, and pile driving systems to the independent dynamic pile testing consultant.

2.2.4 All field testing and measurements shall be made in the presence of the engineer.

2.3 Field Testing.

2.3.1 Equipment. Dynamic pile testing field measurements shall be carried out using approved equipment, software and recording equipment. The data collected at the end of initial driving shall be analyzed using approved signal matching techniques and software.

2.3.2 Monitoring during driving. During pile driving, piles shall be instrumented and monitored with testing equipment satisfying the requirements of section 1.3 of this special provision.

2.3.2.1 The contractor shall install two sets of strain transducers and accelerometers near the top of each pile to be tested and shall use a compatible measuring and recording system to record the data during driving.

2.3.2.2 The equipment required to be attached to the pile shall be appropriately positioned and fixed to the approval of the engineer.

2.3.2.3 The hammer and all site equipment used shall be capable of delivering an impact force sufficient to mobilize the specified pile capacity indicated in section 4.0 of this special provision without damaging the pile.

2.3.2.4 The testing equipment shall monitor pile stresses during driving to prevent pile damage and ensure pile integrity and capacity. If the testing equipment indicates overstressing or damage to the pile, the contractor shall immediately discontinue driving and notify the engineer.

2.3.2.5 If the testing equipment determines that pile stresses during driving exceed acceptable levels, a new pile driving system, modifications to existing system or new pile installation procedures shall be proposed by the contractor. Approval by the engineer of any proposed changes to the pile driving system or pile installation procedures will be based upon the results of additional wave equation analyses in accordance with section 2.1.2 of this special provision.

2.3.3 Preparation of the Pile Head. The preparation of the pile head for the application of dynamic test load shall involve, where appropriate, trimming the head, cleaning, and building up the pile using materials that shall, at the time of testing, safely withstand the impact stresses. The impact surface shall be flat and at right angles to the pile axis.

2.3.4 Dynamic Measurement and Analysis. Monitoring of pile driving shall begin when pile driving begins. The data shall be recorded and processed immediately in the field by the pile driving monitoring equipment and software. Unless monitoring indicates that additional driving will damage the pile, pile driving and monitoring shall continue until both the specified pile tip elevation and the specified pile capacity, or practical refusal are reached.

2.3.4.1 The engineer may request use of pile driving monitoring equipment and software on additional piles if inconclusive results are obtained or unusual driving conditions are encountered.

2.3.4.2 Pile bearing capacity and integrity shall be evaluated based on the standard procedure used in practice.

2.3.4.3 Tabular records of the dynamic pile testing field measurements obtained at the end of initial driving shall be immediately provided to the engineer by the contractor.

2.3.5 Results.

2.3.4.4 Preliminary Reports. The contractor shall prepare a preliminary report for each pile tested for review by the engineer. Each report shall contain tabular as well as graphical presentation of the dynamic test results versus depth. Each report shall also indicate the pile driving criteria for the additional piles to be installed at the substructure unit of the pile tested. Each preliminary report shall include the following:

(a) The maximum force applied to the pile head.

(b) The maximum pile head velocity.

(c) The maximum energy imparted to the pile.

(d) The assumed soil damping factor and wave speed.

(e) Static capacity estimate.

(f) The maximum compressive and tensile forces in the pile .

(g) Pile integrity.

(h) Blows per inch.

(i) Stroke.

(j) Summary results of pile driving analysis from selected blow analyzed using signal matching techniques and software.

2.3.4.5 Summary Report. The contractor shall prepare a summary report of all piles tested for review by the engineer. The report shall include the results of hammer performance, pile driving stresses, and pile capacity during initial driving for all piles tested. The report shall also include the following:

(a) Date of testing and date of pile installation.

(b) Pile identification number and location.

(c) All information given in preliminary reports as follows:

(1) Length of pile below commencing surface.

(2) Total length of pile, including projection above commencing surface at time of test.

(3) Length of pile from instrumentation position to tip.

(d) Hammer type, drop, and other relevant details.

(e) Blow selected for signal matching analysis.

(f) Maximum compressive and tensile stresses, stroke, and capacity versus

penetration depth.

(g) Temporary compression.

(h) Pile integrity and location of damage, if any.

(i) Force/velocity versus time trace.

(j) Force/velocity match curve.

(k) Resistance distribution along the pile.

(l) Detailed graphical and tabular results from blow analyzed using signal matching techniques and software.

3.0 Schedule of Contract Submittals.

Item Number	Submittal Item	Type	Calendar Days	Event/Date	Liquidated Damages Apply
1	Proposed independent dynamic pile testing consultant, and a listing of assigned personnel and their experience and qualifications.	DOCS	45 Before	Start of Pile Driving Monitoring	No
2	Details of the components, method of testing, pile driving equipment and materials to be used, and the results of wave equations analyses.	DOCS	15 Before	Start of Pile Driving Monitoring	No
3	Two copies of each Preliminary Report as defined in section 2.3.5.1 of this special provision	DOCS	3 After	Completion of Each Field Test	No
4	Four copies of the Summary Report as defined in section 2.3.5.2 of this special provision	DOCS	7 After	Completion of All Field Tests	No

4.0 High-Strain Dynamic Pile Testing Specification.

Item	Requirement
Wave Equation Analysis	Minimum of 1 and sufficient additional analyses as needed to define performance for all combinations of piles, driving systems and subsurface conditions anticipated.
Dynamic Testing Pile Capacity	Nominal Axial Pile Compressive Resistance or 2.25 times the Design Bearing shown on the plans or as required by engineer

End of Initial Driving Test Frequency	As shown in the contract plans
Restrike Test Frequency	None
Time Interval between End of Initial Driving and Restrike	None
Pile Driving Analyses using Signal Matching Techniques	For each End of Initial Driving Test

5.0 Method of Measurement. Dynamic pile testing will be measured per each.

6.0 Basis of Payment. Payment for the above described work, including all material, equipment, tools, labor and any other incidental work necessary to complete this item, will be considered completely covered by the contract unit price for "Dynamic Pile Testing".

OO. Galvanized Structural Steel Pile

1.0 Description. This job special provision contains general requirements for furnishing, coating and placing galvanized steel piles and bracing as shown on the plans and shall be in addition to the requirements of Sec 702.

2.0 Material. Structural steel piles shall be galvanized in accordance with ASTM A123 and Sec 1080. Repairs to the galvanized coating and field galvanizing shall be in accordance with ASTM A780. Zinc rich paints will not be allowed. Repairs and field galvanizing will not be required where the pile will be encased in concrete or below the limits specified in section 3.0 of this job special provision. Protective Coatings specified in Sec 702 will not be required for galvanized piles or bracing.

3.0 Construction Requirements.

3.1 Galvanizing material shall be omitted or removed 1 inch clear of weld locations. The method used to omit or remove the galvanizing material shall be masking, grinding or other methods as approved by the engineer. If a weld location falls within an area where galvanizing is required, clean the weld area making sure to remove all welding slag. Then field galvanize the weld area in accordance with ASTM A780. Zinc rich paints will not be allowed.

3.2 All pile below the pile concrete encasement shall be galvanized down to an elevation as shown on the plans.

3.3 At the contractor's option, the entire pile length may be galvanized.

4.0 Method of Measurement. Galvanized Structural Steel Pile in place will be the actual length to the nearest linear foot for that portion of the pile that remains permanently in the structure. See Sec 702 Basis of Payment for any additional length authorized by the engineer resulting from pile splices. No separate measurement will be made for pile that is not galvanized.

5.0 Basis of Payment. The accepted quantity of galvanized and non-galvanized pile in place will be paid for at the contract unit price for Galvanized Structural Steel Pile. No direct payment will be made for incidental items necessary to complete the work unless specifically provided as a pay item in the contract.

PP. Surface Sealing Concrete

1.0 Description. This provision species surface sealing concrete work.

2.0 Construction Requirements. The surface of the new concrete shall be surface sealed in accordance with Sec 703.3.8. The Owner will approve 100% Acrylic water-based sealer with 19%-21% solids by weight, viscosity of 60-70 cps, weight of 8.5 – 8.6 lbs/gal, penetration in concrete 0.5 inch with no cracks and 1.0 inch with minor cracks and clear or light tint what will dry transparent. Surfaces that are sealed after each stage of construction shall have all vertical construction joints between stages protected from the surface sealant. If asphalt roadway surface is adjacent to the new concrete, the asphalt surface shall be protected from spillage of the sealant.

Concrete to be sealed is to be thoroughly cleaned with a compatible cleaner. Apply sealer to clean, visibly dry surfaces when air temperature will be at least 40°F during application and for 8 hours following. Do not apply to any frozen concrete. Do not apply sealer if concrete and air are at 95°F or higher. Sealer can be applied with brush, roller or low-pressure spray. If sprayed, set the sprayer to produce a wet stream. Avoid atomization of the sealer. Apply heavy enough coat to keep surface wet for 2 to 3 minutes before penetrating. Broom out all puddles thoroughly until they penetrate the surface.

Treated surface will be dry to touch in 1 hour and must be protected from rainfall for a minimum of 6 hours following application. Pedestrian and vehicular traffic may be allowed on the surfaces 24 hours after application. All handling, storage, use and excess material disposal of the sealer is to be in full compliance with the manufacturer's recommendations including safety information.

3.0 Method of Measurement. No measurement will be made.

4.0 Basis of Payment. Payment for the above described work will be considered completely covered by the contract unit price for other items included in the contract.

QQ. Acceptance of Precast Concrete Members and Panels

1.0 Description The following procedures have been established for the acceptance of precast concrete girders, slab panels, MSE wall systems, and other structural members. Shop drawings shall be submitted for review and approval by Greene County. The approval is expected to cover only the general design features, and in no case shall this approval be considered to cover errors or omissions in the shop drawings. Greene County has the option of inspecting the precast units during fabrication or requiring the fabricator to furnish a certification of contract compliance and substantiating test reports. In addition, the reports shown below shall be required.

- Certified mill test reports, including results of physical tests on the prestressing strands in reinforcing steel, as required.
- Test reports on concrete cylinder breaks.

2.0 Construction Requirements. Greene County shall verify and document that the dimensions of the precast units were checked at the jobsite and found to be in compliance with the shop drawings.

RR. Acceptance of Structural Steel

1.0 Description The following procedures have been established for the acceptance of structural steel. Shop drawings shall be submitted for review and approval to Greene County. The approval is expected to cover only the general design features, and in no case shall this

approval be considered to cover errors or omissions in the shop drawings. The contractor shall utilize a fabricator that meets the appropriate American Institute of Steel Construction (AISC) certification provisions as outlined in Sec 1080.3.1.6 of the current version of the MoDOT Standard Specifications for Highway Construction. Additional information regarding the AISC certification program can be found on their website, www.AISC.org.

All welding operations, including material and personnel, shall meet the American Welding Society (AWS) specifications. Primary welds shall meet the provisions of Sec 1080.3.3.5.2 of the current version of the MoDOT Standard Specifications for Highway Construction. Greene County has the option of inspecting the steel units during fabrication or requiring the fabricator to furnish a certification of contract compliance and substantiating test reports. In addition, the reports shown below shall be required.

- Certified mill test reports, including results of chemical and physical tests on all structural steel as furnished.
- Non-destructive testing reports.
- Verification of the girder camber, sweep, and other blocking data.
- Verification of coating operations.

2.0 Construction Requirements. Greene County will verify and document that the dimensions of the structural steel units were checked at the jobsite and found to be in compliance with the shop drawings.

SS. Drop Inlet (Type SS-6): Bid Item 6149902

1.0 Description. This work shall include all labor and equipment necessary to place Drop Inlets (Type SS-6). Where called for on the Project Drawings, in the details, or as instructed by the Construction Manager, place Drop Inlet (Type SS-6).

2.0 Materials. All material shall be in accordance with the Missouri Department of Transportation Standard Specifications.

3.0 Execution. Drop Inlet (Type SS-6) shall be in accordance with City of Springfield, Department of Public Works Standard Drawing SS-6 Curb Inlet.

4.0 Method of Measurement. Each “Drop Inlet (Type SS-6)” completed shall include all labor, equipment, subgrade preparation, incidental’s, materials, etc. necessary to install.

5.0 Basis of Payment. Payment for “Drop Inlet (Type SS-6) will be made per each at the contract unit bid price.

TT. 72 Tall Inch Privacy Fence: Bid Item 6079903

1.0 Scope. This work shall include all labor and equipment necessary to install 72 Tall Inch Privacy Fence.

Where called for on the Project Drawings, in the details, or as instructed by the Construction Manager, install 72 Tall Inch Privacy Fence.

2.0 Materials. All material shall be in like kind of adjacent existing fence.

3.0 Execution. 72 Tall Inch Privacy Fence shall be constructed in like kind with regards to appearance, quality, and workmanship with adjacent existing fence.

4.0 Method of Measurement. All 72 Tall Inch Privacy Fence completed shall include all labor, equipment, incidental's, materials, etc. necessary to install.

5.0 Basis of Payment. Payment for "72 Tall Inch Privacy Fence" will be made per linear foot at the contract unit bid price.

UU. Fertilizing

1.0 Fertilizing. This work shall consist of the application of agricultural lime and commercial fertilizer and soil preparation for seeding on areas indicated on the plans. Work, materials and Basis or Payment shall be in conformance with Section 801 of the MoDOT Standard Specifications.

2.0 Fertilizing Rate. Soil Neutralization: The rate of application of effective neutralizing material shall be 1200 lbs. per acre.

Commercial Fertilizer: In accordance with Section 801.2.3, the following fertilizer shall be applied at the rate specified:

Nitrogen (N)	80 lbs. per acre
Phosphoric Acid (P205)	80 lbs. per acre
Potash (K20)	80 lbs. per acre

VV. Final Seeding

1.0 Final Seeding. This work shall consist of preparing, liming and fertilizing the seed bed, and furnishing and sowing the specified seed mixture. The seed mixture shall be applied at a rate specified elsewhere in this contract. Work, materials, and Basis of Payment shall be in conformance with Section 805 of the MoDOT Standard Specifications.

1.1 It shall be the responsibility of the Contractor to notify the Engineer a minimum of 24 hours prior to beginning any final seeding operation. If such operations are to be performed on a Saturday, Sunday, or Monday, notification must be made to the Engineer by 11:00 a.m. of the preceding Friday. The Contractor shall receive approval from the Engineer of each area to be seeded prior to beginning any seeding activity. The lack of observation or inspection by the Engineer shall not relieve the Contractor of the responsibility to construct the project according to the plans and specifications. Any work performed or materials used without authorization by the Engineer may be ordered removed and replaced at the Contractor's expense.

The seed mixture shall be applied at a rate specified elsewhere in this contract.

2.0 Final Seeding Rate. The following seed mixtures, purity and germination shall be applied at the locations and rates specified:

TYPICAL MIX - Inside and Outside Final Right-of-Way Limits

	Mixture	Germination	Purity	Rate
Perennial Rye Grass	30%	85%	97%	150 lbs/acre
K-31 Fescue	60%	85%	98%	300 lbs/acre
Annual Rye Grass	10%	85%	98%	50 lbs/acre

TOTAL	100%	500 lbs/acre

The seed shall be free from johnson grass, Canadian thistle, or field bind weed seed. The seed shall not contain more than two (2%) percent of other weed seeds. A certification of this mixture shall be furnished to the engineer prior to seeding.

WW. Hydro-Mulch

1.0 Hydro-Mulch. Materials and application of Hydro-Mulch shall contain all wood fibers and tackifier similar to Conweb Fibers, Hydro Mulch 200 applied at 2000 lb/Acres.

XX. Temporary Seeding and Mulching

1.0 Temporary Seeding and Mulching. Description: This work shall consist of fertilizing, sowing of seed and mulching.

1.1 The purpose of temporary seeding and mulching is to produce a quick ground cover to reduce erosion in disturbed areas that are expected to be disturbed again at a later date. Finished grading of areas will not be required until just before final seeding and mulching. Hydro-seeding allowing mixing of fertilizer and seed will be allowed.

2.0 Construction Requirements. Seeding and/or mulching will be a continuous operation on all cut and fill slopes, waste sites, stockpiled, and borrow pits during the construction process. All disturbed areas shall be seeded and mulched when and where necessary to reduce erosion. Areas disturbed multiple times shall receive temporary seeding and mulching each time disturbed at no additional cost to the project.

The Contractor shall temporarily seed and mulch all disturbed areas as work progresses at the following rates.

1) Fertilizer shall be applied at the rate of 40 lb./acre of nitrogen (N). Lime will not be required for temporary seeding.

2) Temporary seeding mixtures and planting

season: December 1 to March 1 – Per Acre
50 lbs. Oat Grain

March 1 to December 1 – Per Acre 50 lbs. Cereal Rye or Wheat

2.1 Temporary Mulch placed over temporary seed mixtures shall be applied by hand or mechanical methods at a rate of 2,000 pounds per acre.

2.2 Permanent seeding and mulching following the temporary seeding will be performed according to provisions specified elsewhere during the favorable seeding seasons only.

2.3 The Contractor shall contact the County for areas that need to be temporarily seededand mulched. Only the areas approved by the County will be paid for by the County. If areas that have been approved for temporary seeding and mulching become disturbed after being

temporarily seeded and mulched, the Contractor shall reseed and mulch the disturbed area every time that it is disturbed at no additional cost.

3.0 Basis of Payment. Measurement of TEMPORARY SEEDING AND MULCHING will be made to the nearest 0.1 acre. The accepted quantity of all temporary seeded and mulched areas will be paid for atthe contract unit price per acre.

YY. Saw Cuts

1.0 Saw Cuts. Saw cuts shall be performed at the transition between all new pavement and existing pavement. This includes asphalt and concrete surfacing. Saw cuts shall be full depth. The saw cuts shall include, but not be limited to, ends of project, side streets, driveways, and locations noted on the plans. Saw cuts shall be considered incidental to other work and shall not be paid for directly.

ZZ. Curb Joints

1.0 Curb Joints. Curb and Gutter Joints – ¾ in. wide expansion joints shall be installed on both sides of residential and commercial entrances, storm water drains, and at other intervals as directed by the engineer. In no case shall a curb or curb and gutter extend beyond 100 ft. without an expansion joint or beyond 20 ft. without a control joint being constructed. Expansion joints shall be sawed or preformed through the entire curb and gutter depth and filled with preformed fiber expansion material. Control joints shall be sawed through the curb and ¼ the gutter depth through the gutter. Both types of joints shall be sealed with a cold pour polymer fortified crack fill material such as Sonneborne Sonolastic NP1 of SL1 or equivalent. Sealer shall be applied per manufacturer's recommendations.

AAA. Concrete Sidewalk Joints

1.0 Concrete Sidewalk Joints. Transverse Expansion Joints – ¾ wide transverse expansion joints shall be placed at each side of driveways, at intersecting walks or curbs, and at other locations as directed by the engineer. Sidewalks that are not placed adjacent to a curb, i.e., green space between the walk and curb, shall not exceed 200 ft. between transverse expansion joints. If sidewalks are placed adjacent to a curb and gutter, transverse expansion joints shall be placed wherever there are expansion joints in the curb and gutter. Expansion joints shall be performed through the entire dept of the sidewalk and filled with a preformed fiber expansion material. Expansion joints shall be sealed with a cold pour polymer fortified crack fill material such as Sonneborne Sonolastic NP1 or SL1 or equivalent. Sealer shall be applied per manufacturer's recommendations.

1.1 Longitudinal Expansion Joints – If sidewalks are placed adjacent to curb and gutter and a concrete surface is on the other side of the sidewalk, a ½ in. wide longitudinal expansion joint shall be placed between the sidewalk and the curb and gutter. The longitudinal joint shall be filled with a fiber expansion material and sealed with a cold pour polymer fortified crack filled material such as Sonneborne Sonolastic NP1 or SL 1 or equivalent. The Sealer shall be applied per manufacturer's recommendations.

1.2 Control Joints – Control joints shall be formed or sawed to a depth of ¼ the depth of the sidewalk. If a grooving tool is used to form the control joint, the groove shall not be wider than ¼ in. and edged with a 1/8 in radius. If the control joints are sawed, the groove shall not be less than 1/8 in. wide. Control joints shall be made to result in a panel length of not less than 4 ft. or greater than 6 ft.

BBB. On the Job Training Provisions

1.0 Description. This provision supplements subparagraph 7(e) of the Contract Provision entitled "Standard Federal Equal Opportunity Construction Contract Specification" (Executive Order 11246)", and in the implementation of CFR Part 230, Subpart A, Appendix B.

2.0 Training Requirements. As part of the contractor's equal employment opportunity affirmative action program, training shall be provided as follows.

2.1 The contractor shall provide on-the-job training aimed at developing full journeymen in the type of trade or job classification involved.

2.2 The number of trainee hours to be provided under this provision will be specified in the bidding documents.

2.3 Trainee goals will be set in 1,000 hour increments or 1 slot (person). For example, if the trainee goal on the project is 2,000 hours a maximum of 2 trainees will be approved for the project. In the event a trainee leaves the project for valid reasons the trainee shall be replaced as soon as possible. No apprentice/trainee can be assigned less than 500 hours on a contract. Providing less than 500 hours is not considered to be beneficial training nor helping to achieve journey-level status. Therefore, a trainee/apprentice, regardless of craft, must have been trained on the contact for at least 500 hours to be eligible for reimbursement. FHWA and MoDOT will only approve training programs meeting the requirements of the Training Special Provisions (TSP). A program will be approved if it is reasonably calculated to meet the equal employment opportunity obligations of the Contractor and to qualify the average trainee for journeyman status in the classification concerned by the end of the training period. Furthermore, apprenticeship programs registered with the U.S. Department of Labor, Bureau of Apprenticeship and Training, or with a State apprenticeship agency recognized by the Bureau and training programs approved but not necessarily sponsored by the Department of Labor, Manpower Administration, Bureau of Apprenticeship and Training will also be considered acceptable provided it is being administered in a manner consistent with the equal employment obligations of Federal-aid highway construction contracts.

2.4 When a contractor subcontracts a portion of the contract work, the contractor shall determine how many, if any, of the trainee hours are to be trained by the subcontractor, provided, however, that the contractor shall retain the primary responsibility for meeting the training requirements imposed by this provision. The contractor shall also ensure this training provision is made applicable to such subcontract. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training.

2.5 The number of trainee hours shall be distributed among the work classifications on the basis of the contractor's needs and the availability of journeymen in the various classifications within a reasonable area of recruitment. Prior to commencing construction, the contractor shall submit to the engineer for approval a trainee notification for each individual they intend to train on the project. The contractor will be credited for the hours worked by each trainee employed on the contract work who is currently enrolled or becomes enrolled in an approved program and will be reimbursed for such trainees as provided hereinafter. If the trainee goal on the project is 1,000, no more than two trainees will be approved for the project. Each individual must complete at least 500 hours before reimbursement or hour will be counted towards meeting the goal. In the event a trainee leaves the training program prior to completing the minimum 500 hours the External Civil Rights Division will determine if that individual can be replaced on the project.

2.6 Training and upgrading of minorities and women toward journeyman status is a primary objective of this provision. Accordingly, the contractor shall make every effort to enroll minority trainees and women (e.g., by conducting systematic and direct recruitment through public and private sources likely to yield minority and women trainees) to the extent that such persons are available within a reasonable area of recruitment. The contractor shall be responsible for demonstrating the steps taken in pursuance thereof, prior to a determination as to whether the contractor is in compliance with this provision. This training commitment is not intended, and shall not be used, to discriminate against any applicant for training, whether a member of a minority group or not.

2.7 No employee shall be employed as a trainee in any classification in which the employee has successfully completed a training course leading to journeyman status or in which the employee has been employed as a journeyman. The contractor shall satisfy this requirement by including appropriate questions in the employee application or by other suitable means. Regardless of the method used the contractor's records shall document the findings in each case.

2.8 The minimum length and type of training for each classification will be as established in the training program selected by the contractor and approved by the engineer and FHWA. A program will be approved if it is reasonably calculated to meet the equal employment opportunity obligations of the contractor and to qualify the average trainee for journeyman status in the classification concerned by the end of the training period... Furthermore, apprenticeship programs registered with the U.S. Department of Labor, Bureau of Apprenticeship and Training, or with a state apprenticeship agency recognized by the Bureau of apprenticeship and training programs approved, but not necessarily sponsored by, the Department of Labor, Manpower Administration, Bureau of Apprenticeship and Training, will also be considered acceptable provided the training is being administered consistent with the equal employment obligations of Federal-aid highway construction contracts.

2.9 Approval or acceptance of a training program shall be obtained from the engineer prior to beginning work on the classification covered by the program. It is the intention of these provisions that training is to be provided in the construction crafts rather than clerk-typists or secretarial-type positions. Training will be permissible in lower-level management positions, such as office engineers, estimators, timekeepers, etc., where the training is oriented toward construction applications and must be approved by FHWA. Training in the laborer classification may be permitted, provided significant and meaningful training is provided and approved by the engineer. Some offsite training will be permissible as long as the training is an integral part of an approved training program and does not comprise a significant part of the overall training.

2.10 Except as otherwise noted below, the contractor will be reimbursed $10.00 per hour of training given an employee in the contract in accordance with an approved training program. As approved by the engineer, reimbursement will be made for training persons in excess of the number of trainee hours specified in the contract. Reimbursement will be made even though the contractor receives additional training program funds from other sources, provided such other sources do not specifically prohibit the contractor from receiving other reimbursement. Reimbursement for offsite training indicated above may only be made to the contractor when the trainees are concurrently employed on a federal-aid project and the contractor does one or more of the following, and contributes to the cost of the training, provides instruction to the trainee, or pays the trainee's wages during the offsite training period. In order receive the reimbursement the trainee must complete at least 500 hours on the project.

2.11 No payment will be made to the contractor if either failure to provide the required training or failure to hire the trainee as a journeyman is caused by the contractor and evidences a lack of

good faith on the part of the contractor in meeting the requirements of this provision. It is normally expected that a trainee will begin training on the project as soon as feasible after start of work, utilizing the skill involved and remain on the project as long as training opportunities exist in the trainee's work classification or until the trainee has completed the training program. It is not required that all trainees be on board for the entire length of the contract. The contractor's responsibilities under this provision will be fulfilled if the contractor has provided acceptable training for the number of trainee hours specified.

2.12 Trainees shall be paid at least 60 percent of the appropriate minimum journeyman's rate specified in the contract for the first half of the training period, 75 percent for the third quarter of the training period, and 90 percent for the last quarter of the training period, unless apprentices or trainees in an approved existing program are enrolled as trainees on this project. In that case, the appropriate rates approved by the U.S. Department of Labor or Transportation in connection with the existing program will apply to all trainees being trained for the same classification who are covered by this provision.

2.13 When the job is 50% complete the contractor must have at least 50% of the trainee hours assigned on that job completed. The percentage of job completion is based on the total value of the contract paid to the Contractor. The remaining amount of the hours must be completed before the completion of the project, or the Contractor will be subject to liquidated damages unless a GFE is submitted to and approved by the External Civil Rights Division.

2.14 If the training hours have not been obtained and a GFE has not been displayed upon project completion, the Contractor will be assessed liquidated damages in the amount of $20.00 per hour for those hours not realized. For instance, if the project goal was 1,000 hours and only 450 hours were met, then liquidated damages would be assessed at 550 x $20.00 = $11,000.00.

2.15 In the event the External Civil Rights Division denies the Good Faith Effort (GFE) submitted by the contractor, the contractor shall have the right to an Administrative Reconsideration Hearing. The request for an Administrative Reconsideration Hearing must be made within seven (7) days of the receipt of the denial letter. The Administrative Reconsideration Committee may be constituted, as MoDOT deems appropriate and fair, provided no committee member on the Reconsideration Committee shall have taken part in the original MoDOT determination that the contractor failed to meet the OJT contract goal and/or failed to make adequate good faith efforts to do so.

2.16 If the Administrative Reconsideration Committee does not find the contactor met the OJT contract goal, and/or does not find the contractor made adequate and sufficient good faith efforts to do so, then the Administrative Reconsideration Committee will recommend that liquidated damages as outlined in the non-compliance sanctions sections of the OJT Training Special Provision will be carried out. If the Administrative Reconsideration Committed does find that the contractor has met a good faith effort (GFE), then no liquidated damages will be assessed.

2.17 If the Contractor does not achieve the full OJT goal, they will not receive partial credit for hours completed. For instance, if the goal on the project was 1,000 hours and only 450 were convened, then no reimbursement will be given for any hours fulfilled. If the goal on the project is 2,000 hours and only 1,500 hours are completed and no GFE is demonstrated, the contractor will receive credit for the 1,500 hours and also be assessed liquidated damages in the amount of the 500 hours there were not met.

2.18 The contractor shall furnish to the trainee a copy of the training program the contractor will follow in providing the training. The contractor shall provide each trainee and the resident

engineer with a certification showing the type and length of training satisfactorily completed.

2.19 The contractor shall provide for the maintenance of records and furnish monthly reports documenting the contractor's performance under this provision. Monthly reports shall include at least the following information:
Contractor's name and address
Period that the report covers
Job Number, Description, and Federal Aid number
Information for each employee being trained on the project, including:
- Name
- Social Security Number
- Trade/craft
- Pay percent, based on portion of training complete (if applicable)
- Journeyman's full prevailing wage applicable
- Trainee wage
- Hours this period
- Cumulative hours for the project

Total trainee hours for the project for this period Cumulative trainee hours for the project

2.20 When a contractor submits a trainee who is economically disadvantaged the following information should be submitted with the trainee notification to verify this status:
- The previous year's tax return verifying the individual's income is less than the federal poverty guidelines. - Verification of enrollment in food stamps received from Missouri Department of Social Services.
- Verification of housing assistance received from Missouri Department of Social Services.

CCC. Curb and Gutter (Type ST-2) – Springfield: Pay Item 6099903

1.0 Scope. This work shall include all labor and equipment necessary to place Curb and Gutter (Type ST-2). Where called for on the Project Drawings, in the details, or as instructed by the Construction Manager, place Curb and Gutter (Type ST-2).

2.0 Materials. All material shall be in accordance with the Missouri Department of Transportation Standard Specifications.

3.0 Execution. Curb and Gutter (Type ST-2) shall be in accordance with City of Springfield, Department of Public Works Standard Drawing ST-2 Curb and Gutter / Driveway Opening.

4.0 Method of Measurement. "Curb and Gutter (Type ST-2)" completed shall be include all labor, equipment, subgrade preparation, incidental's, materials, etc. necessary to install.

5.0 Basis of Payment. Payment for ""Curb and Gutter (Type ST-2)" will be measured and paid per linear foot at the contract unit bid price.

DDD. Disposal of Excess or Unsuitable Material

Before removing and/or hauling any excess or unsuitable fill material away from the project limits, the contractor must provide the engineer with a copy of their approved Greene County Grading Permit in order to identify where the material will be disposed of. Additionally, the contactor must furnish the engineer with a signed copy of an approved Waste Disposal Agreement executed between the property owner and the contractor. In the event that the contractor should encounter

any asbestos containing materials or other hazardous waste within the project limits, it shall be the responsibility of the contractor to dispose of those materials in a manner that complies fully with the Missouri Department of Natural Resources. If abatement is necessary, the contractor shall provide a certified contractor supervisor and a licensed abatement contractor to perform the abatement work.

EEE. Clearing and Grubbing – Timber Mulch

1.0 Scope. This work shall include all labor and equipment necessary for the Contractor to mulch tree clearing material for utilization as erosion control material.

2.0 Materials. Timber mulch shall conform to the Missouri Standard Specifications for Highway Construction Division 800 Roadside Development.

3.0 Execution. Contractor shall stockpile mulch within the project limits for utilization as erosion control material. Carefully install Mulch Berm as indicated on the plans and at locations designated by Engineer. Contractor shall verify the placement for installation of Mulch Berm.

4.0 Basis of Payment. No direct pay shall be provided for any labor, equipment, time, or materials necessary to complete this work. Pay for Clearing and Grubbing – Timber Mulch shall be included as part of the Contract bid item, Clearing and Grubbing.

FFF. Pavements

1.0 Description. This work shall consist of a pavement composed of either Portland cement concrete or asphaltic concrete constructed on a prepared subgrade. This work shall be performed in accordance with the standard specifications and as shown on the plans or established by the engineer.

2.0 The quantities shown reflect the total square yards of pavement surface designated for each pavement type as computed and shown on the plans.

2.1 No additional payment will be made for asphaltic concrete mix quantities to construct the required 1:1 slope along the edge of the pavement, or for tack applied between lifts of asphalt.

2.2 No additional payment will be made for aggregate base quantities outside the limits of the final surface area as computed and shown on the plans. When A2 shoulders are specified, payment for aggregate base will be as shown on the plans.

2.3 The grading shown on the plans was designed for the thicker pavement option. For projects with grading in the contract, there will be no adjustment of the earthwork quantities due to adjusting the roadway subgrade for optional pavements.

2.4 The contractor shall comply with Sections 401 through 403 for the asphalt option and Sections 501 and 502 for the concrete option.

2.5 Pavement options composed of Portland cement concrete shall have contrast pavement marking for intermittent markings (skips), dotted lines, and solid intersection lane lines. The pavement markings shall be in accordance with Section 620. No additional payment will be made for the contrast pavement markings.

3.0 Method of Measurement. The quantities of concrete pavement will be measured in accordance with Section 502.14. The quantities of asphaltic concrete pavement will be measured in accordance with Section 403.22.

4.0 Basis of Payment. The accepted quantity of the chosen option will be paid for by the contract unit bid price for Item 401-99.05, pavement, per square yard.

GGG. Supplemental Revisions

Compliance with 2 CFR 200.216 – Prohibition on Certain Telecommunications and Video Surveillance Services or Equipment.

Greene County shall not enter into a contract (or extend or renew a contract) using federal funds to procure or obtain equipment, services, or systems that uses covered telecommunications equipment or services as substantial or as critical technology as part of any system where the video surveillance and telecommunications equipment was produced by Huawei Technologies Company, ZTE Corporation, Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).

Stormwater Compliance Requirements

1.0 Description. This provision requires the contractor to provide a Water Pollution Control Manager (WPCM) for any project that includes land disturbance on the project site and the total area of land disturbance, both on the project site, and all Off-site support areas, is one (1) acre or more. Regardless of the area of Off-site disturbance, if no land disturbance occurs on the project site, these provisions do not apply. When a WPCM is required, all sections within this provision shall be applicable, including assessment of specified Liquidated Damages for failure to correct Stormwater Deficiencies, as specified herein. This provision is in addition to any other stormwater, environmental, and land disturbance requirements specified elsewhere in the contract.

1.1 Definitions. The project site is defined as all areas designated on the plans, including temporary and permanent easements. The project site is equivalent to the “permitted site”, as defined in MoDOT’s State Operating Permit. An Off-site area is defined as any location off the project site the contractor utilizes for a dedicated project support function, such as, but not limited to, staging area, plant site, borrow area, or waste area.

1.2 Reporting of Off-Site Land Disturbance. If the project includes any planned land disturbance on the project site, prior to the start of work, the contractor shall submit a written report to the engineer that discloses all Off-site support areas where land disturbance is planned, the total acreage of anticipated land disturbance on those sites, and the land disturbance permit number(s). Upon request by the engineer, the contractor shall submit a copy of its land disturbance permit(s) for Off-site locations. Based on the total acreage of land disturbance, both on and Off-site, the engineer shall determine if these Stormwater Compliance Requirements shall apply. The Contractor shall immediately report any changes to the planned area of Off-site land disturbance. The Contractor is responsible for obtaining its own separate land disturbance permit for Off-site areas.

2.0 Water Pollution Control Manager (WPCM). The Contractor shall designate a competent person to serve as the Water Pollution Control Manager (WPCM) for projects meeting the

description in Section 1.0. The Contractor shall ensure the WPCM completes all duties listed in Section 2.1.

2.1 Duties of the WPCM:

(a) Be familiar with the stormwater requirements including the current MoDOT State Operating Permit for construction stormwater discharges/land disturbance activities; MoDOT's statewide Stormwater Pollution Prevention Plan (SWPPP); the Corps of Engineers Section 404 Permit, when applicable; the project specific SWPPP, the Project's Erosion & Sediment Control Plan; all applicable special provisions, specifications, and standard drawings; and this provision;

(b) Successfully complete the MoDOT Stormwater Training Course within the last 4 years. The MoDOT Stormwater Training is a free online course available at MoDOT.org;

(c) Attend the Pre-Activity Meeting for Grading and Land Disturbance and all subsequent Weekly Meetings in which grading activities are discussed;

(d) Oversee and ensure all work is performed in accordance with the Project-specific SWPPP and all updates thereto, or as designated by the Engineer;

(e) Review the project site for compliance with the Project SWPPP, as needed, from the start of any grading operations until final stabilization is achieved, and take necessary actions to correct any known deficiencies to prevent pollution of the waters of the state or adjacent property owners prior to the engineer's weekly inspections;

(f) Review and acknowledge receipt of each MoDOT Inspection Report (Land Disturbance Inspection Record) for the Project within forty eight (48) hours of receiving the report and ensure that all Stormwater Deficiencies noted on the report are corrected as soon as possible, but no later than stated in Section 5.0.

3.0 Pre-Activity Meeting for Grading/Land Disturbance and Required Hold Point. A Pre-Activity meeting for grading/land disturbance shall be held prior to the start of any land disturbance operations. No land disturbance operations shall commence prior to the Pre-Activity meeting except work necessary to install perimeter controls and entrances. Discussion items at the pre-activity meeting shall include a review of the Project SWPPP, the planned order of grading operations, proposed areas of initial disturbance, identification of all necessary BMPs that shall be installed prior to commencement of grading operations, and any issues relating to compliance with the Stormwater requirements that could arise in the course of construction activity at the project.

3.1 Hold Point. Following the pre-activity meeting for grading/land disturbance and subsequent installation of the initial BMPs identified at the pre-activity meeting, a Hold Point shall occur prior to the start of any land disturbance operations to allow the engineer and WPCM the time needed to perform an on-site review of the installation of the BMPs to ensure compliance with the SWPPP is met. Land disturbance operations shall not begin until authorization is given by the engineer.

4.0 Inspection Reports. Weekly and post run-off inspections will be performed by the engineer and each Inspection Report (Land Disturbance Inspection Record) will be entered into a web-based Stormwater Compliance database. The WPCM will be granted access to this database and shall promptly review all reports, including any noted deficiencies, and shall acknowledge receipt of the report as required in Section 2.1 (f.).

5.0 Stormwater Deficiency Corrections. All stormwater deficiencies identified in the Inspection Report shall be corrected by the contractor within 7 days of the inspection date or any extended period granted by the engineer when weather or field conditions prohibit the corrective work. If the contractor does not initiate corrective measures within 5 calendar days of the inspection date or any extended period granted by the engineer, all work shall cease on the project except for work to correct these deficiencies, unless otherwise allowed by the engineer. All impact costs related to this halting of work, including, but not limited to stand-by time for equipment, shall be borne by the Contractor. Work shall not resume until the engineer approves the corrective work.

5.1 Liquidated Damages. If the Contractor fails to complete the correction of all Stormwater Deficiencies listed on the MoDOT Inspection Report within the specified time limit, the Commission will be damaged in various ways, including but not limited to, potential liability, required mitigation, environmental clean-up, fines and penalties. These damages are not reasonably capable of being computed or quantified. Therefore, the contractor will be charged with liquidated damages specified in the amount of $2,000 per day for failure to correct one or more of the Stormwater Deficiencies listed on the Inspection Report within the specified time limit. In addition to the stipulated damages, the stoppage of work shall remain in effect until all corrections are complete.

6.0 Basis of Payment. No direct payment will be made for compliance with this provision.

COVID-19 Safety

1.0 Description. The coronavirus disease 2019 or COVID-19 has reached a pandemic stage across the United States, including the State of Missouri. To reduce the impact of COVID-19 outbreak conditions on businesses, workers, customers and the public, the contractor shall be aware of all COVID-19 guidance from the Center for Disease Control (CDC) and other government health mandates. The contractor shall conduct all operations in conformance with these safety directives. The guidance may change during the project construction and the contractor shall change and adapt their operation and safety protocols accordingly.

2.0 Safety Plan. The contractor shall include these procedures in the project safety plan as called for in the contract documents and revise the safety plan as needed.

3.0 Essential Work. In accordance with any state or local Stay at Home Order, care for the infrastructure has been deemed essential and MoDOT is moving forward with construction projects, this project is considered essential, and the contractor and their employees, subcontractors and suppliers are considered essential business and performing essential functions.

4.0 Basis of Payment. Compliance with regulations and laws pertaining to COVID-19 is covered under Sec 107 of the Missouri Standard Specifications for Highway Construction. No direct payment will be made for compliance with this provision.

Anti-Discrimination Against Israel Certification

By signing this contract, the Company certifies it is not currently engaged in and shall not, for the duration of the contract, engage in a boycott of goods or services from the State of Israel, companies doing business in or with Israel or authorized by, licensed by, or organized under the

laws of the State of Israel, or persons or entities doing business in the State of Israel as defined by Section 34.600 RSMo. This certification shall not apply to contracts with a total potential value of less than One Hundred Thousand Dollars ($100,000) or to contractors with fewer than ten (10) employees. (See Attachment IV, must be completed and signed)

Delete Sec 413.10.5.5 and substitute with the following:

413.10.5.5 Weather Limitations and Calendar Restrictions. Micro-surfacing shall not be placed when the air or surface temperature is below 50 F; or when the forecasted low temperature for the next 48 hours, as reported by the National Weather Service, is below 40 F; or after October 1 of each calendar year. Temperatures shall be obtained in accordance with MoDOT Test Method TM 20. Micro-surfacing may be placed on a damp surface but shall not be placed on a wet surface with free standing water.

Delete Sec 413.30.2.3 and substitute with the following:

413.30.2.3 Reclaimed Asphalt. No reclaimed asphalt pavement or reclaimed asphalt shingles are allowed.

HHH. Mulch Berm

1.0 Description. This work shall include all labor and equipment necessary for the installation of Mulch Berm. Mulch from tree clearing is anticipated to be used on the project. If not enough mulch is available on-site from tree clearing, Contractor shall obtain mulch from an off-site location.

1.1 Mulch berms are a perimeter erosion control system that permits heavy equipment to cross. Contractor shall be responsible for maintaining the mulch berm perimeter if damaged from frequent crossing of equipment. Repair mulch berm by adding additional mulch to the top of the berm. Prior to final seeding, Contractor is permitted to spread the mulch berms on-site. Spreading mulch into any existing wetlands is strictly prohibited.

2.0 Materials. All materials, construction requirements, and the method of measurement shall conform to the Missouri Standard Specifications for Highway Construction Division 800 Roadside Development.

3.0 Execution. Contractor shall carefully install Mulch Berm as indicated on the plans and at locations designated by Engineer. Contractor shall verify the placement for installation of Mulch Berm. All materials and construction requirements shall conform to the Missouri Standard Specifications for Highway Construction (Section 806).

1.0 Method of Measurement. Each section of Mulch Berm completed shall be measured to the nearest linear foot and shall include all labor and materials necessary for installation.

2.0 Basis of Payment. Payment for Mulch Berm will be made per linear foot at the contract unit bid price.

III. Traffic Signal Items

1.0 General. Traffic Signal bid items shall be in accordance with Chapter 14 of the City of Springfield Public Works "General Conditions & Technical Specifications for Public Improvements, October 2019".

2.0 Payment. The materials listed under the bid items "Type S Signal Post with Mast Arm & Luminaire (55')", "Type A Signal Post", "Pedestrian Central Control Unit (CCU)", "Signal Head (3-Section)", "16" Countdown Pedestrian Signal Head", "Radar Presence Detection System", "Signal Controller Cabinet, 332D", and "Type 2070 Controller" will be supplied by the City. Payment will be made at the contract unit bid price for each as listed in Unit Prices and shall constitute full compensation for the labor and equipment necessary to install and complete the item.

For all other traffic signal bid items, payment made at the contract unit bid price for the units of each item as listed in Unit Prices and shall constitute full compensation for the materials, labor and equipment necessary to install and complete the item and are not to be supplied by the City.

JJJ. Clean Water Act Section 404 Permit Requirements NJSP 21-02

1.0 Description. The Contractor shall be aware that any work within streams, wetlands, or special aquatic sites requires a Clean Water Act Section 404 permit from the United States Army Corps of Engineers (USACE). A copy of the permit can be found in Section 4 of this Proposal.

2.0 This project meets the conditions of the following listed permits with no pre-construction notification (No PCN) to the USACE:

Section 404 Nationwide Permit 14

3.0 The Contractor shall abide by all general and regional conditions of Section 404 Permits, Section 401 Water Quality Certification, and specific conditions of the following listed Nationwide Permit found in the General Provisions and Supplemental Specifications to the current Missouri Standard Specifications for Highway Construction referenced in this contract.

SWL-2019-00032

3.1 If the Contractor makes any changes to the scope or limits of the project, the Contractor shall notify the Engineer who shall then notify the MoDOT Environmental Section to verify the project still meets permit conditions.

3.2 No additional time will be added to this contract for the Contractor to obtain any permits unless the need for additional permits is beyond the control of the Contractor.

5.0 Basis of Payment. There will be no direct payment for compliance with this provision.

KKK. Battery Backup System

1.0 Description. This work shall consist of providing and installing a "Battery Backup System" (BBS) at the signalized intersection.

1.1 In order to match other systems used in the area, the BBS shall be an Alpha FXM 1100 system. The system shall be comprised of the following items:

- 1 each Alpha outdoor enclosure SE48-1616 with Generator option ATS/MBS & Auto GTS, battery cable kit (ALPHA-026-53-26) and blue exterior LED backup power indicator lamp
- 1 each Alpha FXM 1100 Uninterruptable Power Supply (UPS) module with Ethernet (ALPHA-017-230-23)
- 1 each Remote Battery Monitoring System Plus (ALPHA-0370260-002)
- 4 each AlphaCell 195XTV battery (ALPHA-1810228)

2.0 Installation. The BBS shall be installed as per the manufacturer's recommendations. The system shall be mounted to the new power disconnect assembly (paid as a Type 2 power supply) as designated in the project plans. In addition, the cabinet shall have circuitry to switch the signal from normal operation to flash operation during battery backup operation.

A 2c #22 cable shall be installed from a programmable output on the UPS controller to signal cabinet terminals for input on I file, slot 11, upper channel. A contractor supplied model 242 DC isolator card shall be installed in I file slot 11 to utilize controller input C1-80.

3.0 Communications.

3.1 The BBS cabinet shall have Ethernet connection capability.

3.2 Ethernet Cable. The cable shall be outside plant rated (OSP), consisting of four (4) balanced twisted pairs of solid copper conductors, surrounded by a water blocking gel and designed for use in 10BASE-T through 1000BASE-T Ethernet networks. It shall be jacketed with a sunlight and abrasion resistant black, polyethylene outer jacket. The following performance compliance standards apply:

ANSI/TIA-568-C.2
ANSI/ICEA S-107-704-2012
RoHS-compliant/RoHS 2-compliant
REACH-compliant

3.3 RJ-45. The RJ-45 plug connectors shall be used at the BBS and signal cabinet. The supplier of the BBS shall approve the Category 5e cable, RJ-45 connector and crimping tool, and the manufacturer's instructions must be followed to insure proper connection.

4.0 Method of Measurement. Measurement of battery backup system will be made for payment per each complete system.

5.0 Basis of Payment

All costs incurred by the Contractor for furnishing and installing the battery backup system, including all incidentals shall be considered as included in and completely covered by the contract unit price.

Payments will be made under:

Item # 9029902 Battery Backup System – per each.

City crews will perform final connection and programming of the BBS.

LLL. Embankment in Place

1.0 Description. This work shall consist of providing approved embankment material for placement and compaction. This work shall be performed in accordance with the standard specifications and as shown on the plans or established by the engineer.

1.1 The quantities shown reflect the total cubic yards of embankment as computed and shown on the plans.

1.2 No additional payment will be made for Contractor compliance with the requirements of Section 203.3 including borrow site material testing and obtaining environmental clearances.

2.0 County Furnished Borrow Site. A County furnished borrow site is available for use by the Contractor. The County furnished borrow site is part of the Kansas Expressway Extension Phase 2 Project located south of Plainview Road. Information on the County furnished borrow site location including plan/profile sheets, erosion control sheets, and cross sections for the proposed future improvements have been added to the project plans “For Information Only”. Geotechnical information including boring logs is included with the project documents.

2.1 Requirements for Use. The following conditions are in effect for the use of the County furnished borrow site.

2.1.1 Location. The Contractor may obtain embankment from areas within the designated Kansas Expressway Extension from Plainview Road to station 112+50. The Contractor must contain all operations within the area designated as right of way. All activities, including any clearing and grubbing and erosion control installation must be completed within the identified station range. The Contractor shall not disturb the existing ground beyond station 112+50.

2.1.2 Clearing and Tree Removal. All Job Special Provision requirements included in this contract shall be in effect for use of the County furnished borrow site.

2.1.3 Limitations on Excavation. Excavation limits must be consistent with future cross section requirements, and no excavation may be made below future grading limits.

2.1.4 Drainage Requirements. The Contractor shall prepare a site drainage plan for furnished borrow site. Site drainage shall direct collection away karst feature KE-21 identified in the project plans.

2.2 Contractor Submittals. The Contractor shall be required to prepare and submit the following documents for review and approval by County.

2.2.1 Grading plan describing location of material to be removed. Grading plan should indicate limits for clearing and grubbing, station limits and anticipated depth of excavation. Submittal of cross-section information showing existing and proposed ground line is preferred. Contractor shall be responsible for completing all material testing requirements.

2.2.2. A SWPPP shall be submitted. The SWPPP submitted as part of the contract requirements for the project can be amended to revise the area of impact for inclusion of the County furnished borrow site. The Contractor shall follow all requirements of the Greene County Stormwater Regulations with specific reference to activities near karst features.

2.2.3 Erosion control plan including plan for temporary and permanent seeding.

2.2.4 Traffic control plan for transporting material across Plainview Road.

3.0 Method of Measurement. Method of Measurement for Embankment in Place shall be in accordance with Section 203.3.

3.1 Measurement for clearing and grubbing, erosion control measures including temporary and permanent seeding, and traffic control devices shall be in accordance with the appropriate sections the Missouri Standard Specifications.

4.0 Basis of Payment. Embankment in Place will be paid for at the contract unit price per cubic yard and will be considered full compensation for: (a) Transporting material from County furnished site, (b) Placing and forming embankments, (c) Compacting embankment or for adding or reducing the water content of the embankment, (d) Any excavation required to provide the embankment material included under the item of embankment in place, (e) Any work noted on the plans to be included in the contract unit price for embankment in place.

4.1 Payment for clearing and grubbing, erosion control, temporary seeding, permanent seeding and traffic control devices included as part of the Contractor's submittal for excavating in the County furnished borrow site shall be at unit bid price identified in the Contractor's bid.

MMM. Reinforced Concrete Pipe

1.0 Description. This work shall consist of providing and installing Reinforced Concrete Pipe for placement. This work shall be performed in accordance with the standard specifications and as shown on the plans or established by the engineer.

2.0 Materials. All materials, construction requirements, and the method of measurement shall conform to the Missouri Standard Specifications for Highway Construction Division 726 Rigid Pipe Culverts.

3.0 Execution. Contractor shall carefully install Reinforced Concrete Pipe as indicated on the plans and at locations designated by Engineer. Contractor shall verify the placement for installation of Reinforced Pipe Culvert. All materials and construction requirements shall conform to the Missouri Standard Specifications for Highway Construction (Section 726), and installation shall be completed according to Missouri Standard Plans for Highway Construction (Section 726).

4.0 Method of Measurement. Each section of Reinforced Pipe Culvert completed shall be measured to the nearest linear foot and shall include all labor and materials necessary for installation.

3.0 Basis of Payment. Payment for Reinforced Pipe Culvert will be made per linear foot at the contract unit bid price for the identified pipe diameter installed.

NNN. Reinforced Concrete Pipe Flared End Section

1.0 Description. This work shall consist of providing and installing Reinforced Concrete Pipe Flared End Sections for placement. This work shall be performed in accordance with the standard specifications and as shown on the plans or established by the engineer.

2.0 Materials. All materials, construction requirements, and the method of measurement shall conform to the Missouri Standard Specifications for Highway Construction Division 732 Flared End Sections.

3.0 Execution. Contractor shall carefully install Reinforced Concrete Pipe Flared End Sections as indicated on the plans and at locations designated by Engineer. Contractor shall verify the placement for installation of Reinforced Pipe Culvert Flared End Sections. All materials and construction requirements shall conform to the Missouri Standard Specifications for Highway Construction (Section 732), and installation shall be completed according to Missouri Standard Plans for Highway Construction (Section 732).

4.0 Method of Measurement. Each section of Reinforced Pipe Culvert Flared End Section completed shall not be measured.

2.0 Basis of Payment. Payment for Reinforced Pipe Culvert Flared End Section will be made per each at the contract unit bid price for the identified flared end section installed.

OOO. Delayed Notice to Proceed – Property 9

1.0 Description. Greene County has ongoing property acquisition commitments that may be finalized after the intended contract award date. The Contractor is advised that no entry or work on the identified property shall be conducted. The Contractor will be notified, in writing, when the parcel is acquired and released for access.

1.1 The following table list the property restricted from entry or work and the anticipated date of release to the Contractor.

Tract ID	Property Name	Project Location	Area of Right of Way or Easement to be Acquired	Anticipated Date of Release
9	Bowers	23+20 Left Farm Road 182	0.3 Acres Right of Way	November 1, 2021

2.0 Construction Requirements. The Contractor will not have access to the property until written notice is provided by the Engineer. The Contractor shall consider the property restrictions when scheduling proposed work.

3.0 Basis of Payment. No direct payment shall be made for compliance with this provision. Should property acquisition be delayed, the Contractor's sole remedy shall be a request to revise the Contract Time for Completion of Work, Sec 108.7.

PPP. Erosion Control

1.0 Description. Work in the vicinity of this project will be covered by the Land Disturbance/Grading Permit, Floodplain Development Permit, Greene County Stormwater Regulations, and Stormwater Pollution Prevention Plan bound herein and issued by the Greene County Resource Management Department.

1.1 The Contractor shall conduct a field review with the Engineer prior to beginning any clearing activities and assess erosion control plans included in the contract documents and make adjustments to reflect existing and constructed conditions. The Engineer may included the Greene County Environmental Compliance Manager as part of the review.

1.2 The Contractor shall include as part of the field review, specific review of all karst features within the project boundary. Erosion control plans shall be reviewed and installed to provide ground water protection as outlined in the Greene County Stormwater Regulations.

2.0 Basis of Payment. No direct payment shall be made for compliance with this provision. Pay for installation of erosion control devices shall be as identified in the Contractor's bid for the specific erosion control devices installed.

1

QQQ. **Availability of On-Site Class C Excavation Material**

1.0 Description. The Contractor may utilize excavated rock material to construct the gravel filter dam, rock blanket, and rock ditch liner. The excavated rock material shall be in accordance with Division 1000, Materials Specifications. Gradation of the excavated rock material shall be in accordance with applicable portions of Section 600 and as identified in the project plans. meet the requirements of

2.0 Basis of Payment. No direct payment shall be made for compliance with this provision. Pay for installation of gravel filter dam, rock blanket, and rock ditch liner shall be as identified in the Contractor's bid for each specific pay item.

RRR. City Utilities Electric

1.0 City Utilities of Springfield (CU) will install new primary conductors and terminations for existing underground 7.62kV primary electric in conflict with proposed improvements. In addition, CU will install new whiteway conductors, streetlight poles, and LED lights along the corridor.

1.1 Contractor shall refer to CU electric line engineering drawing #80636 with 6 sheets (drawing), included within the bid documents, for construction specifications, including a link to CU Electric construction standards online. The work shown on the drawing needs to happen in three phases as described below:

(a) Relocations along Republic Road: On sheet 1 of the drawing, Contractor shall notify CU inspector to remove a streetlight in conflict and a pole with anchor. Contractor shall contact CU inspector **two weeks** prior to requiring this work to be completed to have CU scheduled. Contractor needs achieve the final grade where the proposed pole and anchor will be installed prior to providing notice to CU inspector.

(b) Relocations along Farm Road 145: On sheet 3 of the drawing, contractor shall furnish and install conduit from an existing primary electric junction cabinet near Josie Way to a new primary riser near the intersection of Weaver Road. Contractor shall contact CU inspector **two weeks** prior to executing this work. CU inspector will coordinate a spare elbow being dug into existing junction cabinet and coordinate the primary riser location. After Contractor installations have been inspected and approved by CU per the drawing general notes, CU will install primary conductors and remove existing primary conductors in conflict with the proposed earthwork

along Farm Road 145 and Caleb Court. Contractor is encouraged, but not required, to have (a) Relocations along Republic Road and (b) Relocations along Farm Road 145 ready for completion at the same time.

(c) Streetlight foundations: On all sheets in the drawing, contractor shall furnish and install conduit, secondary pedestals (similar to a type 2 preformed pull box), and streetlight foundations as specified on CU drawing. Contractor shall contact CU inspector **seven days** prior to beginning this work. After all Contractor installations have been inspected and approved by CU per the drawing general notes, CU will install secondary conductors, streetlight poles, and LED lights. Contractor shall complete the following items listed below:

(i) Contactor shall have anchor bolt form method approved prior to concrete pour by CU inspector.
(ii) Concrete streetlight foundations shall be level with a top smooth finish.
(iii) Anchor bolts shall be supported during concrete pour and shall be covered, to be kept free from debris and concrete.
(iv) Anchor bolts shall be perpendicular to the concrete top surface and properly supported during concrete pour to eliminate any movement. A single form for the anchor bolts will not be accepted. Anchor bolts that are not perpendicular will be rejected.
(v) Anchor bolt square pattern shall have the nearest side parallel to the nearest roadway back of curb or edge of pavement, unless otherwise noted on the drawing.
(vi) Contractor shall remove all forms, nuts, and washers from anchor bolts.

1.2 Contractor shall enable CU to work within Contractor traffic control and leave new Kansas Expressway closed to traffic until all streetlight infrastructure is installed and operational. Contractor shall coordinate with CU inspector prior to requiring this work to be completed to have CU scheduled.

1.3 Contractor shall furnish all survey and staking as required per CU drawing.

1.4 Contractor shall furnish CU a detailed construction schedule for relocation work required for the project and of any significant changes that may occur. E-mail schedule to justin.penrose@cityutilities.net.

1.5 For CU-furnished material, as indicated on CU drawing, contractor shall pickup material from CU facilities at 742 N. Belcrest, Springfield MO 65802 and transport material to the project location. At the material counter, contractor shall provide the activity number **787076** for CU-furnished material. The preferred times for material pickup are 9:00AM-3:00PM Monday – Friday, excluding holidays.

1.6 Contractor shall notify CU inspector for inspection and approval of all Contractor installations prior to CU construction. Contact information and instructions are located in the General Notes on the CU drawing. Contractor shall not backfill prior to CU inspection and approval. Installation videos are available on the CU Youtube page for contractor reference at the following link: https://www.youtube.com/user/CityUtilities/videos

1.7 Contractor shall identify CU overhead conductors and maintain a minimum of 10 feet radial separation from all distribution conductors and comply with the Missouri Overhead Power Safety Act. Contractor shall familiarize themself with The Missouri Overhead Powerline Safety Act. If

necessary, Contractor shall contact CU Developer Services (417-831-8888) a minimum of **ten days** in advance, to make arrangements for line cover. Line cover is not an option for transmission line conductors. Contractor shall comply with any regulations imposed for working in proximity to transmission line conductors with a voltage of 69,000 volts or above.

1.8 Basis of Payment – There is no direct payment for contractor compliance with provision described in this section.

1

SSS. **City Utilities Gas & Water Relocations**

Board of Public Utilities
of the
City of Springfield, Missouri

GAS & WATER RELOCATIONS
FOR
KANSAS EXPRESSWAY EXTENSION
PHASE 1
WEST REPUBLIC STREET TO PLAINVIEW ROAD
GREENE COUNTY, MO PROJECT STP-5909 (802)

CITY UTILITIES DRAWING 78554

AUGUST 31, 2021

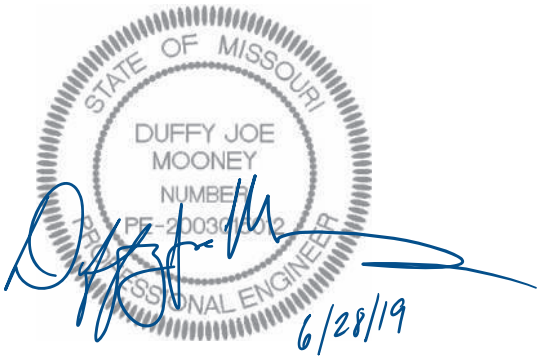
INDEX

City Utilities
Technical Specifications
For Natural Gas & Water Work

Revised June 28, 2019

SECTION 00007

SEALS PAGE



Duffy Joe Mooney – Professional Engineer MO #2003015012

The following Technical Specifications are true, complete, and accurate. This is the official document to be used for City Utilities Natural Gas and Water work until such time City Utilities certifies a revision.

END OF SECTION

SECTION 00010

INDEX TO TECHNICAL SPECIFICATIONS

END OF SECTION

SECTION 00600

DOT DRUG TESTING REQUIREMENTS

1.01 This Contract includes work covered by the drug testing requirement of the Department of Transportation, 49 CFR. Part 199 and Part 40. Contractor shall comply with all aspects of those two parts of the Code of Federal Regulations. City Utilities will have the right to inspect for compliance.

1.02 Once every three months, deliver to City Utilities the testing records (non-name specific) as requested for the purpose of monitoring the drug and alcohol training and testing program for compliance with DOT Regulations 49 CFR Parts 199 and 40. Said records shall be delivered within 30 days of the end of each three-month period. Additionally, upon 48 hours' notice, deliver to City Utilities the Anti-Drug and Alcohol Misuse Plan for the purpose of monitoring compliance with DOT Regulations 49 CFR Parts 199 and 40.

END OF SECTION

SECTION 00820

GENERAL PROJECT REQUIREMENTS

PART I GENERAL

1.01 Work includes, but is not limited to installation, relocation and/or retirement of gas and/or water mains, services, and appurtenances.

1.02 It is the intent of this Contract for the Contractor to install the gas and/or water facilities to the full extent as shown on the Drawings. It is the Contractor's responsibility to build these same gas and/or water lines to meet or exceed the requirements of the U.S. Department of Transportation and/or Missouri Public Service Commission and/or Missouri Department of Natural Resources regulations and/or City Utilities' Contract Documents, Technical Specifications, and Construction Standards, whichever is greater. Contractor shall make any minor changes in required fittings or in routing (horizontal or vertical) within the pipeline easements shown on the Drawings or within public rights-of-way as a result of field conditions at no additional cost to City Utilities. Some underground facilities are shown on the Drawings, but the Drawings may not accurately represent the locations of the underground facilities. There may be other underground facilities that are not shown on the Drawings. Contractor shall not use the Drawings to locate underground facilities. Contractor is responsible for locating all underground facilities in accordance with Section 01720.

1.03 NOTIFICATION AND CUSTOMER RELATIONS

A. Notify all residents affected by work done under this Contract at least 48 hours, but no more than 7 days, prior to starting work in the affected area. Notification shall be of a form and format approved by the Inspector.

B. If provided by City Utilities, Contractor shall erect and maintain Project Notification signs in locations as designated on the plans, or as directed by the Inspector.

C. Execute the work in a customer/neighborhood friendly manner. In addition, notify adjacent utility customers and property owners of proposed location of work equipment parked overnight and of proposed material storage areas and stockpiles of sand, gravel and dirt. Adjust parking and material storage to maximize customer satisfaction and to minimize traffic congestion.

D. Existing mailboxes along the route shall remain in service throughout the duration of construction. If necessary, temporary removal and replacement shall be coordinated with property owners and done so during a time when mail service will not be disrupted.

1.04 PREQUALIFIED GAS AND WATER CONTRACTORS: All City Utilities gas and water utility installation shall be performed by a prequalified gas and/or water Contractor. Prequalified Contractor application forms can be obtained from City Utilities Purchasing Department at (417) 831-8679 or purchasing@cityutilities.net.

PART II MATERIALS AND EQUIPMENT

2.01 City Utilities shall provide the following water materials: HDPE pipe, ductile iron pipe, PVC pipe, designed casing pipe, copper pipe, valves, valve boxes, pipe fittings, corporation stops, curb stops, brass adapters and connections, tracer wire, direct bury splice kits, solvent cement, solvent cleaner, joint lubricant, service saddles, meters, meter tiles and meter tile rings and lids unless otherwise specified in the Contract Documents.

2.02 City Utilities shall supply the following gas materials: steel pipe, polyethylene pipe, designed casing pipe, valves, valve boxes, fittings, tracer wire, pressure control fittings, pipe coatings, cathodic

protection materials, pipe dope and thread tape unless otherwise specified in the Contract Documents.

2.03 Contractor shall supply any other work materials and supplies as may be required. This would include, but not be limited to: sand, chat or other granular fill material; paint; paint brushes; tools; concrete and forms; topsoil; fertilizer, mulch and grass seed; fencing materials; erosion control materials; skids; dunnage; and welding rod. When Contractor elects to install piping by means other than open trenching then Contractor shall supply casing pipe.

2.04 The Inspector will order materials from City Utilities' Storeroom for Contractor as needed for the project. Requests for materials should be submitted to the Inspector at least 24 hours in advance.

2.05 Contractor shall pick up requisitioned materials at the City Utilities stores facility designated by the Inspector. All materials for the project shall be picked up at one time. However, on larger projects Inspector may designate several pick-ups as the job progresses. Contractor shall provide adequate transportation and labor to load and receive materials, except that City Utilities will provide a forklift and operator as necessary to load heavier items. Contractor shall provide wood blocking, straps, tarps, etc. required for hauling the materials. Materials may be picked up from 9:00 a.m. to 3:00 p.m. Monday through Friday, except holidays.

2.06 Generally, most materials issued shall be new. However, City Utilities reserves the right to issue used material which the Inspector has judged to be suitable for reuse.

2.07 All labor, tools, equipment and incidentals necessary to complete the work, as well as any materials not specifically provided by City Utilities, shall be completely covered by the prices in the Bid.

2.08 Contractor shall be responsible for the material, and for the replacement of lost, damaged or stolen material. Contractor shall examine all material upon receipt, and by acceptance, certify suitability for use. Make objections to issued materials to the Inspector. Inspector will establish a reasonable allowance for pipe waste on each project.

2.09 Pick up items normally packaged in bulk quantities, such as coiled tracer wire, in such bulk quantities. Unused quantities shall be returned to the stores facility by the Contractor in clean, like-new condition or transferred to the next job as long as additional work continues. The Inspector will make appropriate requisitions, transfers and returns for each project.

2.10 Provide equipment and personnel to handle products by methods to prevent soiling or damage to products or packaging.

PART III EXECUTION

3.01 Store fabricated products in such a way to prevent damage to material or packaging. Arrange storage in a manner to provide easy access for inspection or inventory by either the Contractor or the Inspector.

3.02 Do not hinder access to fire hydrants, fire and police alarms, mailboxes, water valves, gas valves and manholes.

3.03 Contractor is responsible for locating and procuring material storage sites. Do not use private property, including City Utilities property, for storage of materials without express written permission of property owner. Provide Inspector with documentation of permission to store materials. Do not damage public or private property in handling or storage of materials.

3.04 Make periodic inspection of stored products to ensure that products are maintained under specific conditions, and free from damage or deterioration.

3.05 Keep construction area as clean as possible. Control mud and dust to prevent customer dissatisfaction and complaints. Do not allow mud and dirt to enter Storm Sewer system. Keep trash, containers, packaging materials, etc., picked up on a daily basis.

3.06 Coordinate driveway closures with property owners. Give all property owners 48 hours advance notification prior to closing driveways.

3.07 At the end of the project, return all excess and/or salvage materials (used or new) to the City Utilities stores facility designated by the Inspector. All returned material shall be broken down into stock item components and be delivered in a clean, reusable condition suitable to the Storekeeper.

3.08 Inclusive in the work is close coordination with all appropriate jurisdictional agencies. The Contractor is responsible for determining paving requirements not specifically shown on the Drawings (temporary and permanent), construction standards, boring requirements, erosion and sediment control, traffic control and safety requirements of these agencies. No additional payment will be made for compliance to jurisdictional requirements. Contractor is responsible for coordinating the work as described herein.

END OF SECTION

SECTION 00890

PERMITS

PART I GENERAL

1.01 City Utilities will obtain railroad, Corps of Engineers, and MODOT permits. Contractor must obtain all other necessary permits and comply with all codes of construction as required by Sections 01350 and 01410.

END OF SECTION

SECTION 01110

WORK BY OTHERS

PART I GENERAL

1.01 City Utilities personnel shall operate all main line gas valves and perform all purging of gas mains. A 48-hour advance notification is required.

1.02 City Utilities personnel shall operate all main line water valves and provide labor and equipment for disinfection, flushing and sampling of all water mains. Such work shall require a 48-hour advance notification.

1.03 City Utilities will provide equipment, materials and labor for completion of main size taps on water mains unless otherwise specified in the Contract Documents (4" through 12" tap size). Such work shall require a 48-hour advance notification and will not be scheduled after 3:00 p.m. or outside normal working hours for City Utilities' crews. Contractor shall dig and prepare excavation with appropriately safe shoring and traffic control as necessary. Contractor shall install tapping sleeve, valve and other fittings and provide hoisting equipment for installation and removal of fittings and equipment. City Utilities personnel shall be responsible for removing and disposing of asbestos containing material directly associated with tapping procedures that City Utilities personnel perform. Any removal and disposal of asbestos containing material not directly associated with a tapping procedure performed by City Utilities personnel shall be the responsibility of the Contractor per City Utilities standards.

1.04 City Utilities will provide equipment, materials and labor for tapping gas mains unless otherwise specified in the Contract Documents (sizes 2" through 12", 150 psig maximum pressure). Such work shall require a 48-hour advance notification and will not be scheduled after 3:00 p.m. or outside normal working hours for City Utilities' crews. Contractor shall dig and prepare excavation with appropriately safe shoring and traffic control as necessary. Contractor shall provide hoisting equipment for installation and removal of fittings and equipment.

1.05 City Utilities will provide equipment, materials and labor to perform all welding of steel gas pipes unless otherwise specified in the Contract Documents. Such work shall require a 48-hour advance notification and will not be scheduled after 3:00 p.m. or outside normal working hours for City Utilities' crews. Contractor shall dig and prepare excavation with appropriate safe shoring and traffic control as necessary. City Utilities personnel shall be responsible for removing and disposing of asbestos containing material directly associated with welding and tapping operations that City Utilities personnel perform. Any removal and disposal of asbestos containing material not directly associated with welding and tapping performed by City Utilities personnel shall be the responsibility of the Contractor per City Utilities standards.

1.06 City Utilities will perform all work that involves modifying components in service regulators such as orifice changes, etc.

PART II MATERIALS NOT USED

PART III EXECUTION NOT USED

END OF SECTION

SECTION 01200

MEASUREMENT AND PAYMENT

PART I GENERAL

1.01 Contractor shall furnish all labor, equipment, and necessary materials to accomplish the work as designated in the Contract.

1.02 Contractor shall construct the work for the unit prices established in the Bid Form. Standard Bid Items include, but are not limited to, pipe, fittings, valves, excavation, backfill, lowering-in, tracer wire, warning tape, pressure testing, disinfection, connections to existing mains and services, fusion, minor piping adjustments, pavement restoration, landscaping, and retirement of old mains, services and hydrants. Non-standard Bid Items may be included on the bid form, in which case the work to be performed by the Contractor will be described in the Special Conditions. Any work not itemized on the Bid Form shall be considered part of, and incidental to, the gas and/or water Bid Items unless noted as an exception to the initial bid.

1.03 Any delay, additional work or extra cost to the Contractor caused by or resulting from damage to existing underground installations shall not constitute a claim by Contractor for additional payment, time or damages.

PART II STANDARD BID ITEMS

2.01 The following items represent the Standard Bid Items for City Utilities natural gas and water utility construction projects. Bid items are to be installed as shown on the Drawings per the Technical Specifications and/or Construction Standards:

A. Install (Size & Material) Gas Main: This item covers the installation of gas main by an approved method. Payment will be made for actual footage installed measured along the centerline of the pipe.

B. Install (Size & Material) Gas Main, Joint Trench: This item covers the installation of gas main in a joint trench with another utility commodity. Payment will be made for actual footage installed measured along the centerline of the pipe. Payment for this bid item is additive to the bid item for the other utility commodity when located joint trench.

C. Install (Size & Material) Gas Service by Insertion Only: This item covers the installation of gas services by insertion through the existing gas service from the service tapping fitting or lateral connection to the riser, installed in a finished yard. The Contractor shall first expose the existing gas service at a minimum at the riser and at the right-of-way or easement to verify the existing gas service meets minimum cover requirements shown in the Construction Standards. If insufficient cover exists, then the service shall be installed by other methods and paid accordingly. If minimum cover exists, Contractor shall attempt to insert the service through the existing piping. If that is unsuccessful, then the Contractor may utilize other methods and will be paid accordingly. This item may require up to 20% of the total gas service length to be installed by trenching. Where trenching is required for a portion of the service, the Contractor shall install plastic gas casing pipe unbedded and insert plastic gas service pipe or install the plastic gas service bedded without casing (only ¾" and larger services may be installed without casing). Casing pipe in these instances shall be supplied by City Utilities. Payment for this Bid Item will be made for each service installed.

D. Install (Size & Material) Gas Service, Any Method: This item covers the complete installation of a gas service. Payment will be made for each service installed. Bid Item also includes installing a new riser and minor re-plumbing of customer's exterior piping as

needed. Any interior re-plumbing required will be paid separately or be handled by City Utilities.

E. Install (Size & Material) Gas Service Street Crossing: Item includes installation of and connection to service tapping fitting on one end, and connection to gas service on the other. Payment will be made for each crossing installed. On long side services, this bid item is additive to the appropriate gas service installation bid item.

F. Tie-Over (Size & Material) Gas Service: This item covers the tie-over of an existing gas service to a new gas main. Payment will be made for each tie-over performed.

G. Install (Size & Material) Gas Main Spot Lowering: This item covers the lowering of an existing gas main. Payment will be made for each lowering installed.

H. Install (Size & Material) Gas Service Spot Lowering: This item covers the lowering of an existing gas service. Payment will be made for each lowering installed.

I. Install (Size & Material) Water Main: This item covers the installation of water main by an approved method. Payment will be made for actual footage installed measured along the centerline of the pipe.

J. Install (Size & Material) Water Main, Joint Trench: This item covers the installation of water main in a joint trench with another utility commodity. Payment will be made for actual footage installed measured along the centerline of the pipe. Payment for this bid item is additive to the bid item for the other utility commodity when located joint trench.

K. Install (Size & Material) Water Service, Single Meterset: This item covers the installation of a water service from the service tapping fitting or street crossing connection to the meterset. Payment will be made for each meterset installed.

L. Install (Size & Material) Water Service, Dual Meterset: This item covers the installation of water services from the service tapping fitting or street crossing connection to the dual meterset. Payment will be made for each dual meterset installed.

M. Install (Size & Material) Water Service Street Crossing: Item includes installation of and connection to service tapping fitting on one end, and connection to water service on the other. Payment will be made for each crossing installed. On long side services, this bid item is additive to the appropriate water service installation bid item.

N. Install (Size & Material) Fire Service: This item covers the installation of a fire service to a new main. Payment will be made for each fire service installed.

O. Tie-Over (Size & Material) (Fire, Commercial, Domestic) Service: This item covers the tie-over of an existing service to a new main. Payment will be made for each tie-over performed.

P. Install (Size & Material) Water Main Spot Lowering: This item covers the lowering of an existing water main. Payment will be made for each lowering installed.

Q. Install (Size & Material) Water Service Spot Lowering: This item covers the lowering of an existing water service. Payment will be made for each lowering installed.

PART III EXECUTION

3.01 On a monthly schedule the Contractor is to submit requests for payment based on work completed. The quantities shown on the Drawings and Bid Form are estimates only and no guarantees are given as to actual quantities.

3.02 Contractor shall deliver and unload all materials to the job site without charge to City Utilities.

3.03 With final payment request, submit affidavit certifying compliance with wage rate determination.

3.04 Minor dimensional and routing changes are to be expected as part of the work. Changes in horizontal and vertical dimensions as well as minor changes requiring additional fittings or additional depth shall not constitute sufficient grounds for extra payment other than for the additional footage or quantities as described in the Bid Items.

3.05 No payment will be made for mobilization and/or preparatory work unless specifically detailed in the Contract Documents.

END OF SECTION

SECTION 01300

COORDINATION

PART I GENERAL - This Section includes coordination of trades and coordination with Owner, other contractors and jurisdictional agencies.

PART II MATERIALS - NOT USED

PART III EXECUTION

3.01 Coordinate the work of all trades under this contract.

3.02 Coordinate with existing operations on-site to access and use construction area during normal working hours.

3.03 Coordinate all activities through the Inspector.

3.04 COORDINATION WITH OTHERS

A. The Contractor, by agreeing to perform work under these Contract Specifications, hereby certifies that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work.

B. Other Contracts may be awarded during this Contract Time. Some of these Contracts may involve on-site activity which must be coordinated with this Contract. In addition, City Utilities crews may perform other work involving on-site construction which must be coordinated with this Contract.

3.05 Inclusive in the Work is close coordination with all appropriate jurisdictional agencies. No additional payment will be made for compliance to jurisdictional requirements. Contractor is responsible for coordinating the Work as described herein.

3.06 RESOLUTION OF DISPUTES

A. The Contractor and Inspector shall attempt to resolve all disputes.

B. If resolution is not reached, the Contractor may request additional meetings with the Resident Engineer. If a resolution is not reached, the Contractor may request to meet with City Utilities' management. These meetings will be scheduled through the Resident Engineer.

C. In the event that the Contractor fails to satisfactorily resolve disputes or complete work as called for in the Contract, such unresolved disputes or unfinished work may be held as sufficient ground by City Utilities to refuse to enter into any future contracts with the Contractor.

END OF SECTION

SECTION 01310

PROJECT PROGRESS MEETINGS

PART I GENERAL

1.01 A pre-construction meeting shall be scheduled prior to start of construction on the project to discuss any aspect of the prosecution of the work.

1.02 City Utilities or Contractor may at any time request a project meeting to discuss any aspect of work.

1.03 Contractor's resident superintendent must be present at any and all meetings.

PART II MATERIALS – NOT USED

PART III EXECUTION – NOT USED

END OF SECTION

SECTION 01330

SUBMITTALS

PART I GENERAL

1.01 As required by Resident Engineer, submit to City Utilities for approval a list of all materials provided by Contractor to be installed on the Project. All natural gas piping and HDPE water piping will require a "Certificate of Quality" from the pipe manufacturer specific to that batch or 'lot' of pipe, if pipe is supplied by Contractor. All steel gas piping supplied by the Contractor shall require mill test reports to be supplied to City Utilities.

1.02 All material to be supplied by the Contractor that is not currently an approved brand shall require a submittal and prior approval by City Utilities. The current approved Material Specifications & Acceptable Brands are located online at https://www.cityutilities.net/business/construction/ or by scanning the QR code. Materials supplied by City Utilities will also conform to these Specifications.

1.03 Contact Resident Engineer about any questions regarding approved materials.

PART II MATERIALS – NOT USED

PART III EXECUTION – NOT USED

END OF SECTION

SECTION 01350

ENVIRONMENTAL PROTECTION PROCEDURES

PART I GENERAL

1.01 Conduct all construction activities in conformance with all federal, state and local laws, regulations and ordinances for the protection of the environment.

1.02 The work under this Contract may affect the City of Springfield's drinking water supply. Under no circumstances shall the Contractor or any of his subcontractors allow any debris, fuel, chemicals, liquids or other materials to enter this water supply through direct or indirect means. Contain and dispose of all materials by means acceptable to the appropriate jurisdictional agency. Have materials on-site for containment of spills such as hydraulic hose breaks, etc.

PART II MATERIALS

2.01 No hazardous or toxic materials will be allowed in any phase of the work.

2.02 Drilling mud used shall not be harmful to the environment and shall comply with all applicable regulations.

PART III EXECUTION

3.01 When required, the Contractor shall acquire a Land Disturbance Permit and provide a Storm Water Pollution Prevention Plan (SWPPP) outlining the Best Management Practices (i.e. mulch logs, silt fences, etc.) that the Contractor is to carry out for the duration of the project.

3.02 Contractor shall comply with all requirements of the jurisdictional agency's Land Disturbance Permit and/or SWPPP, when applicable.

3.03 Contractor shall install and maintain Best Management Practices for stormwater sediment and erosion control during construction in accordance with the appropriate jurisdictional agency's construction standards. Best Management Practices shall also be utilized on projects when a SWPPP is not required.

3.04 All drilling mud shall be contained and reclaimed. Contractor is responsible for any spilled drilling mud.

END OF SECTION

SECTION 01410

REGULATORY REQUIREMENTS

PART I GENERAL

1.01 Conduct all construction activities in conformance with all applicable Federal, State and local laws, regulations and ordinances, including the Occupational Safety and Health Act of 1970 (OSHA) and applicable regulations of the Missouri Public Service Commission.

1.02 PERSONNEL QUALIFICATIONS

Any Contractor personnel performing a "Covered Task" as defined in the Missouri Public Service Commission Pipeline Safety Regulations, 4 CSR 240-40.030, Section 12(D) shall be appropriately Operator Qualified prior to performing such task. Contractors shall submit their Operator Qualification Plan for approval before any work may be performed. The plan must meet all Federal and Missouri Public Service Commission requirements.

A. The Operator Qualification plan shall include at a minimum:
   a. List and description of covered tasks covered by the Operator Qualification Plan.
   b. List and description of all training and evaluation modules that make up the full qualification for each covered task.
   c. Listing of job classifications with accompanying covered tasks and qualification modules.
   d. Description of the program under which employees are qualified and identification of any third-party vendors utilized for training and testing.

B. Per the Plan, employee information is required to be submitted with the plan. At a minimum this shall include:
   a. List of employees (including pictures) assigned to the project.
   b. Operator Qualification testing results for each employee assigned to the project.
   c. When and where each employee on the project was qualified and by whom.
   d. The expiration date of each current qualification for each employee assigned to the project.
   e. List and description of covered tasks for which each individual is qualified.

City Utilities reserves the right to deny any submitted plans and require an amended Plan to be resubmitted.

Any Contractor personnel installing HDPE water main must have attended a fusion training course and be qualified by City Utilities prior to performing any fusion work on City Utilities water distribution system. City Utilities offers this training, or, Contractor may submit training and qualification records for their personnel to City Utilities for approval.

PART II MATERIALS – NOT USED

PART III EXECUTION – NOT USED

END OF SECTION

SECTION 01420

WATER AND NATURAL GAS CONSTRUCTION STANDARDS

PART I GENERAL

City Utilities' Construction Standards and other instructions specified in the Drawings shall be followed for all work on the project. Construction Standards may be found at https://www.cityutilities.net/business/construction/ or by scanning the QR code. Any other construction details otherwise encountered will be provided by the Project Manager. Hard copies of Construction Standards are available at City Utilities' Gas and Water Operations Center, 1321 W. Calhoun. City Utilities may make substitutions of equivalent materials or assemblies for those shown in the Construction Standards at no additional cost.

PART II MATERIALS - NOT USED

PART III EXECUTION - NOT USED

END OF SECTION

SECTION 01425

REFERENCES

PART I GENERAL

1.01 REFERENCES AND ABBREVIATIONS

The latest edition of the following specifications covers certain materials and methods to be utilized by the Contractor. Abbreviations as used in the Contract Documents mean the following:

A. AWWA: American Water Works Association
B. AGA: American Gas Association
C. AASHTO: American Association of State Highway & Transportation Officials
D. API: American Petroleum Institute
E. ASA: American Standards Association
F. DOT: United States Department of Transportation
G. AWS: American Welding Society
H. AREA: American Railway Engineering Association
I. ACI: American Concrete Institute
J. OSHA: Occupational Safety and Health Administration
K. ASTM: American Society for Testing and Materials
L. ANSI: American National Standards Institute
M. IEEE: The Institute for Electrical and Electronics Engineers
N. NACE: National Association Corrosion Engineers
O. MANGO: Missouri Association of Natural Gas Operators
P. NESC: National Electric Safety Code
Q. PPI: Plastic Pipe Institute
R. DIPRA: Ductile Iron Pipe Research Association
S. UNIBELL: PVC Pipe Association

1.02 REFERENCES AND DATES

All standard references apply to the most current versions of these standards except where noted.

END OF SECTION

SECTION 01450

CONTRACTOR'S QUALITY CONTROL

PART I GENERAL

1.01 The Contractor's Resident Superintendent, to the extent qualified, may be used for quality control, supplemented as necessary by additional personnel for surveillance, special technicians or testing facilities to provide capability for the controls required by the Specifications.

PART II MATERIALS - NOT USED

PART III EXECUTION

3.01 Provide for inspection of all work to ensure that materials and supplies are placed and installed in accordance with the Drawings and Specifications. Do not build upon or conceal any feature of work containing uncorrected defects.

END OF SECTION

SECTION 01460

INSPECTIONS

PART I GENERAL

1.01 All work is subject to inspection, examination or test, at any time by the Resident Engineer.

1.02 The Inspector shall be the designated representative of the Resident Engineer.

1.03 The Resident Engineer and Inspector have the right and authority to determine whether the work is being done in accordance with the requirements of the Contract Documents, Drawings and Specifications.

PART II MATERIALS - NOT USED

PART III EXECUTION - NOT USED

END OF SECTION

SECTION 01525

FIELD OFFICES AND SHEDS

PART I GENERAL

1.01 The Contractor is responsible for supplying all of the facilities needed for the successful completion of the job. Maintain all working, storage and parking areas in a neat and orderly manner.

1.02 Obtain and maintain all utility services needed during construction.

1.03 FIELD OFFICES AND SUPERVISION

No field offices will be required unless otherwise specified in the Contract Documents. Provide Inspector with telephone numbers at which Contractor and his Resident Superintendent may be contacted at any time. Designate a minimum of two people as after hour contacts.

PART II MATERIALS AND EQUIPMENT

2.01 Furnish storage space, sanitary facilities, trash disposal and utilities.

2.02 The Contractor will be responsible for access to and from the site without causing damage to any adjacent facilities or surrounding land.

2.03 Provide gate locks to interlock with City Utilities' locks, if applicable. If locks are inappropriately secured prohibiting City Utilities access, they will be forcibly removed.

PART III EXECUTION

3.01 Workers' vehicles are to be parked legally in an area designated by the Contractor.

3.02 Upon completion of the project, remove all traces of temporary facilities. Fill all disturbed grass areas, grade and seed in conformance with Section 02900.

3.03 Maintain the continuity of security systems.

3.04 Upon completion of project, remove all traces of temporary utilities unless instructed otherwise by the Inspector.

END OF SECTION

SECTION 01720

FIELD ENGINEERING

PART I GENERAL

1.01 This section includes requirements for surveying and job layout.

PART II MATERIALS - NOT USED

PART III EXECUTION

3.01 The Contractor is solely responsible for locating all existing underground installations including, without limitation, service connections, in advance of excavating or trenching, by contacting the owners thereof, prospecting, and the use of the Missouri One-Call System and other appropriate locating services. The Contractor shall use its own information and shall not use the Drawings to locate underground facilities, since they may not accurately represent the locations of underground facilities or even the existence of all underground facilities. Contractor shall use all reasonable means necessary to avoid damage to underground facilities including, without limitation, hand-digging.

3.02 Damages to existing City Utilities gas or water mains should be reported to the Inspector, 911, and City Utilities central dispatching (417) 863-9000. City Utilities will repair all gas and water lines broken by tear-out, poor construction, blasting or any other reason due to the construction of these facilities. City Utilities crews will not perform service or meter box relocation work for the Contractor.

3.03 Contractor may elect to temporarily disconnect gas or water service lines during the course of the project to facilitate the installation of new mains. Notification shall be given to all customers affected as described in Sections 2515 and 2550. Customers shall be reinstated the same day to minimize disruptions. Some critical customers who may require water for life support, dialysis, etc. may not be able to be disconnected. If Contractor elects to temporarily disconnect the gas or water service lines, the fittings necessary to perform that work shall be supplied by the Contractor and approved by the Resident Engineer.

3.04 When blasting is to be performed, Contractor shall notify City Utilities 24 hours in advance so that the Inspector may be present to inspect gas and water facilities and arrange for a gas and water leak survey prior to blasting.

3.05 INSTRUCTIONS FOR UTILITY STAKING

A. GENERAL

1. City Utilities will provide construction surveying and staking for contracted work directly issued by City Utilities. All surveying and staking shall be performed under the direct supervision of a Professional Land Surveyor. The Surveyor shall set all property corners and stake the limits of any easements where utilities are to be installed. The Surveyor shall layout the construction site prior to the start of work and provide staking for all utility installations. The work shall consist of physically marking and placing stakes necessary for the Contractor to properly install utilities in accordance with the Drawings. After initial construction staking has been completed by City Utilities or its agents, it shall be the responsibility of the Contractor to protect the integrity of the construction stakes. If the construction staking is disturbed or destroyed during construction, the Contractor shall be responsible for any fees incurred by City Utilities for re-staking the remaining work to be completed.

2. For work not directly issued by City Utilities, construction surveying and staking shall be performed as described in the following paragraphs.

B. OFFSETS – DEPTH

1. Stake all utilities as shown on the project drawings with offset staking at 50' intervals. Offset stakes shall be set at nearest R/W or easement line to main but no less than 6 feet off centerline and perpendicular to line at points where the line changes direction. Centerline shall be staked at 50' intervals to correspond with offset stakes. Stakes shall also be placed and appropriately marked at all valves, fire hydrants, tees, taps, meter pit locations, property corners on main sides, lateral/street crossing locations, easement lines and as needed to insure inter-visibility along long runs of main or rough terrains.

2. All cuts shown on stakes are to be to bottom of trench from existing grade at base of offset stake. Necessary cuts shall be calculated based on required cover over gas/water main when site is finished grade. Cover is 3'-0" for electric conduit. On joint trench installations, the required cover for water mains shall be used to determine the necessary cut.

C. CENTERLINE STAKING

1. Water main stakes shall be marked "Centerline Water" on one side and tie with blue flagging.

2. Gas main stakes shall be marked "Centerline Gas" on one side and tie with yellow flagging.

3. Electric conduit sakes shall be marked "Centerline Electric" on one side and tie with red flagging.

D. OFFSET STAKING

Offset stakes shall have the offset distance in a circle and the word Water, Gas, or Electric marked on the front side with the cut. Backside of stake is to show the station (if applicable). All cuts will be figured from the ground elevation at the base of the offset stake unless otherwise directed by City Utilities. Tie the flagging colors as per Centerline Staking.

E. LATERALS

Laterals shall be staked at the tee and at the end point of the lateral. Offset stakes shall be set at both ends of the lateral. Gas lateral end points will be staked one foot (1') off of the right of way line on the opposite side of the street from the main. Water lateral end points will be staked at the right of way line on the opposite side of the street from the main. The stakes will be marked "Gas Lateral" or "Water Lateral" and tied with respective flagging color. Taps for laterals will be staked on the centerline of the main and marked "Gas Tap" or "Water Tap" and tied with respective flagging color. Offsets will be required on the tap.

F. FIRE HYDRANTS

Fire hydrants are to be staked 6 inches off the right-of-way line unless otherwise dimensioned on drawing. The backside of the stake shall be marked "Fire Hydrant." The front side of the stake will have a cut to the bottom of the trench, and a cut or a fill to the finish grade at that point. This cut or fill will coincide with the bury line on a fire hydrant.

Two offset stakes will also be set on property line/right-of-way, 10 foot either side of fire hydrant stake.

G. ELECTRICAL JUNCTION ENCLOSURES, TRANSFORMERS AND SECONDARY PEDESTALS

Unless otherwise noted, stake electrical junction enclosures, transformers, secondary pedestals and streetlights as shown on the applicable underground distribution standard drawing.

H. CUT SHEETS

Cut Sheets shall be kept on all construction staking and copies must be furnished to the City Utilities' Inspector upon request.

I. CONSTRUCTION STANDARDS

1. See Construction Standards for additional utility staking information.

2. Where gas and water mains and electric conduit are placed such that finished grade elevation will be higher than the paralleling centerline of street elevation, the utilities shall be installed below the street centerline elevation at the depths specified in the Construction Standards unless otherwise noted.

END OF SECTION

SECTION 01770

CONTRACT CLOSEOUT

PART I GENERAL

1.01 Prior to City Utilities making final payments a continuous signal must be verified on the tracer wire.

1.02 Within 14 days after Substantial Completion of construction, City Utilities shall notify the Contractor in writing (i.e. punch list) of any defects or defaults in performance which may have been discovered upon final inspection. The Contractor shall remedy promptly all such defects or defaults before the Construction Project shall be accepted by City Utilities.

1.03 In the event the Contractor fails to remedy such defects or defaults within 30 days after notification, City Utilities may elect to correct these defects or defaults and deduct the cost of such corrections from any reimbursements due the Contractor or may bill the Contractor for such corrections. In addition, the Contractor shall be removed from the list of City Utilities approved Contractors for a period of not less than one year from date of completion of project on which deficiencies occurred.

PART II MATERIALS - NOT USED

PART III EXECUTION

3.01 Completely remove all traces of equipment, excess materials and debris from the site after all punchlist items have been completed, inspected and approved by Inspector.

3.02 Clean-up site to Inspector’s satisfaction and leave site as good as or better than original conditions.

END OF SECTION

SECTION 02220

DEMOLITION AND CLEARING

PART I GENERAL

1.01 DESCRIPTION: Work includes, but is not limited to:

A. Removal of designated items.

B. Protection of items not designated to be removed.

C. URBAN FOREST MANAGEMENT POLICY - In an effort to responsibly manage the urban forest, guide all work performed under this Contract to reduce damage to any trees. Perform all work in accordance with the guidelines in the booklet "Trenching and Tunneling Near Trees - A Field Pocket Guide for Qualified Utility Workers." Copies of this booklet are available for inspection at City Utilities Forester located at 828 N. Prince Lane, Springfield, MO. Copies are also available from the National Arbor Day Foundation, 100 Arbor Avenue, Nebraska City, NE 68410.

PART II MATERIALS - NOT USED

PART III EXECUTION

3.01 CONSTRUCTION LIMITS

Inspector will establish construction limits and designate items to be removed and items to remain.

3.02 REMOVAL OF ITEMS

A. Completely clear, grub and remove tree stumps, brush, hedge and other items within the construction limits not designated to remain.

B. Existing structures, including, but not limited to, pavement, curbs, sidewalks or other similar objects where portions of these objects are to be left in place, shall be removed to an existing joint or a new joint sawed to a minimum depth of one inch with a true line and vertical face.

C. Completely remove and dispose of all debris. All concrete, masonry, drainage pipes, reinforcement steel, structural steel, castings, timbers, or other materials not salvageable shall be disposed of by the Contractor at his own expense. Contractor shall provide disposal location for all materials and obtain written approval from property owners for material deposited on private property. Submit written approval of the property owners to the Inspector.

3.03 PROTECTION OF REMAINING ITEMS

A. The Inspector may designate existing above-ground structures, trees, shrubs and plants that are to remain. Contractor shall preserve without damage these items throughout the construction period.

B. Contractor shall make temporary fence closures during construction and restore fences to original condition or better upon completion of the work.

C. Contractor shall protect and restore ornamental trees and shrubs.

END OF SECTION

SECTION 02315

EXCAVATION AND BACKFILLING FOR PIPING

PART I GENERAL

1.01 DESCRIPTION: Work includes, but is not limited to the following as they apply to all gas and water mains, services, and casing piping:

A. Trenching and trench backfilling.

B. Blasting and rock excavation.

C. Rough and finish grading.

D. Furnishing and installing granular fill.

1.02 REGULATORY COMPLIANCE

All excavation and backfill is subject to regulations and permits of appropriate jurisdictional agencies.

PART II MATERIALS AND EQUIPMENT

2.01 PIPE BEDDING MATERIALS

Bed all gas mains, water mains, gas services, and water services in accordance with the Construction Standards.

2.02 FILL MATERIAL

All fill material shall conform to City Utilities' Construction Standards and is subject to approval of the Inspector.

2.03 BACKFILL IN NON-PAVED AREAS

A. Other than pipe bedding, backfill with suitable materials excavated from trench and processed as required, or borrowed from locations arranged and paid for by Contractor. Material shall be free from organic matter, refuse, ashes, cinders or other unsuitable materials, and shall not be frozen. Backfill above the bedding may have materials up to a maximum of twelve inches in any dimension. Backfill material shall contain sufficient fines to provide a dense mass capable of being compacted.

B. Casing installed by open trenching shall be backfilled with materials no greater than four inches in any dimension for the first foot of backfill.

2.04 BACKFILL IN PAVED AREAS

A. Other than pipe bedding as called out in the applicable Construction Standards, backfill trenches in designated area with granular material that meets the appropriate jurisdictional agency's requirements.

B. Casing piping installed by open trenching of roadways shall be bedded and backfilled full depth with granular material meeting the specifications of the appropriate jurisdictional agency.

C. Granular material meeting the specifications of the appropriate jurisdictional agency will be required under sidewalks, existing paved areas, proposed paved areas, unpaved "driven-over" areas utilized as drives or parking lots, as necessary on excavations paralleling proposed or existing streets and drives to avoid settlement of curbs or paving.

D. When flowable fill is required, gas or water lines shall be covered with a protective rock shield.

PART III EXECUTION

3.01 TRENCHING

A. CENTERLINE: Maintain centerline of the trench in a straight line with minimum bends or changes in direction. When trenching in pavement, saw cut the pavement in a straight line on both sides of the future excavations.

B. LENGTH: Minimize the amount of open trench length at any time on the same street. Fill trenches as soon as practical after pipe is placed in the ditch and placement and bedding is approved by the Inspector. Coordinate closing of driveways with the individual property owners. Provide adequate access to all businesses during their operating hours.

C. WIDTH: Maintain width of trench ample to permit pipe to be laid and jointed properly and backfill to be placed and compacted as specified in accordance with applicable construction standards.

E. DEPTH

1. Depth shall be as shown in Construction Standards, unless otherwise indicated on the Drawings. Measurements shall be made from the low side of the trench. Areas where design depth differs from standard depth will be noted on construction Drawings however minor deviations in grade are to be expected in order to avoid other infrastructure and shall not constitute as additional work or payment due the Contractor.

2. Extra depth ditch may be required to route under existing obstructions. No extra payment will be made for extra depth ditch due to these obstructions.

3. Where gas and water mains are placed such that finished grade elevation will be higher than the paralleling centerline of street elevation, the utilities shall be installed below the street centerline elevation at the depths indicated in the constructions standards unless otherwise noted on the construction drawings.

4. Where crossing roadways, piping shall be installed as required by the jurisdictional agency's permit.

5. GAS SERVICES ON PRIVATE PROPERTY: Provide a minimum of 18 inches from the top of the pipe to existing grade unless service is inserted in existing steel service line. Maintain 12 inches minimum cover over inserted steel lines verified as described in gas piping section.

E. ADJACENT STRUCTURES, WATER, SEWER, GAS LINE AND TELEPHONE CABLE CROSSINGS

1. Follow such method of course as may be approved by the Inspector in passing all underground structures.

2. Exercise extreme care in crossing or paralleling water, sewer, gas lines and telephone cables. Cross or parallel all structures at Contractor's sole risk and responsibility. Should any damage occur to such lines, Contractor is fully liable and will pay full cost of repairing same.

3. Make all arrangements and pay for relocation and bracing where poles or anchors are affected by the trenching operation.

4. Contractor shall place a locator marker ball at all locations where sanitary sewer laterals are exposed.

F. FOUNDATION FOR PIPE

1. Grade the trench bottom as required to achieve uniform and continuous bearing and support for the pipe on solid and undisturbed earth free from rocks and other obstructions that could cause point loads throughout the length of pipe. Finish subgrade to a straight line between pipe joints.

2. Place, grade and compact to a uniform depth a minimum of six inches of specified bedding material in the ditch bottom prior to placing any pipe in the ditch.

3. Where trench excavation is inadvertently carried below specified grade, backfill with approved trench excavated material in 6-inch lifts compacted to provide a firm and unyielding subgrade.

4. Where the bottom of trench at subgrade is found to be unstable or include ashes, cinders, refuse or other organic material, excavate and remove such unsuitable material and fill according to Item 3, above.

G. TRENCH BRACING AND SHORING: Support all trenches in accordance with all pertinent and applicable codes, rules and regulations.

H. Protect the public from any excavations left open during times when Contractor is not working.

3.02 SPOIL AREAS

A. Store no spoil off the rights-of-way or easements unless prior written permission has been obtained from the property owner and a copy of said agreement provided to the Inspector.

B. Locate and maintain off-site spoil areas for excess excavated materials. Restore these areas to satisfactory condition before final payment is approved. Provide a certificate of acceptance from the owner of the spoil area to the Inspector.

3.03 PIPE BEDDING

Pipe bedding shall conform to all applicable Construction Standards.

3.04 BACKFILL AND COMPACTION

A. Do not backfill trench until work is inspected and approval to proceed with backfill has been given by the Inspector. Complete backfilling promptly after approval to proceed.

B. Place material in six-inch lifts and compact as necessary to avoid settlement of ditch line. Fill any settled areas for a period of one year after date of acceptance by City Utilities. Restore surface as needed.

3.05 ROCK EXCAVATION

A. All blasting is performed at the Contractor's sole risk. The Contractor is solely responsible for any and all damages caused by blasting to any adjacent structure or any other underground facilities. If damage does occur to any above or below ground facilities, including other City Utilities facilities, the Contractor is fully liable.

B. All excavation is considered unclassified. Presence of rock shall not relieve Contractor of depth requirements given in paragraph 3.01. There shall be no change in the Contract Price or Time due to rock, regardless of type or hardness unless provided for in the Bid Documents.

C. In high hazard areas, remove rock by jackhammering as necessary. Make determination of whether or not rock can be blasted, but Contractor shall be fully liable for any damages.

D. Perform all blasting in accordance with the City of Springfield's General Ordinance #4714, even for areas outside the jurisdiction of the City of Springfield. Only persons holding blasting licenses as issued by the Springfield Fire Department may perform blasting. Contractor must present areas desired to be blasted to Resident Engineer for prior approval. Upon approval contractor must obtain any necessary blasting permits and submit a copy to the Resident Engineer.

3.06 OPEN CUTTING ROADWAYS

Open cut roadways only as approved by the governing authority. If approval to open cut is not received, crossing must be installed using approved trenchless methods.

3.07 TRAFFIC CONTROL

The Contractor shall prepare a Traffic Control Plan in accordance with the latest edition of the Manual on Uniform Traffic Control Devices and submit it for review and approval to the jurisdictional agency.

END OF SECTION

SECTION 02320

UTILITY CASINGS

PART I GENERAL

1.01 SUMMARY

A. This section applies to casing pipe installed by tunneling or trenching.

B. Casings for Gas and Water lines shall be installed per applicable Construction Standards.

1.02 REFERENCES

A. APPLICABLE STANDARDS

1. AMERICAN PETROLEUM INSTITUTE (API)

   a. API 1104 – Standard for Welding Pipelines and Related Facilities
   b. API RP 1102 – Standard for Steel Casings

2. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

   a. A36 – Structural steel
   b. A570 – Hot-rolled carbon steel sheet and strip, structural quality
   c. D2513 - Standard Specification for Polyethylene (PE) Gas Pressure Pipe, Tubing, and Fittings

3. AMERICAN WATER WORKS ASSOCIATION (AWWA)

   a. C206 – Field welding of steel water pipe

4. STEEL STRUCTURES PAINTING COUNCIL (SSPC)

   a. SP-3 – Power tool cleaning

1.03 SUBMITTALS

If Contractor is supplying materials, submit shop drawings for proposed casing spacers and other items specified by Resident Engineer for approval prior to shipment.

PART II PRODUCTS

2.01 MATERIALS

All materials shall conform to current City Utilities Specifications unless otherwise specified in the Contract Documents. HDPE 4710 DR 11-21 pipe that meets ASTM D2513 is permissible for casing. Gas casing shall be black with yellow stripes. Water casing shall be black with blue stripes.

PART III. EXECUTION

3.01 INSTALLATION

A. All work shall, as a minimum, meet the requirements of API RP1102, the highway, railroad or utility having jurisdiction and shall be subject to their inspection and approval.

B. Casing pipes installed by tunneling shall conform to the following requirements and Section 02410:

1. Casings rejected due to misalignment or other failures to conform to specifications shall be abandoned in place. The ends of the abandoned casing shall be capped or plugged to provide a tight seal. Casing pipe shall not be recovered for reuse.

2. Casing spacers are not required when installing polyethylene gas or water pipe in a plastic casing unless called for on the Drawings.

C. Casing pipes installed by open cut shall conform to the following requirements and Section 02315:

1. Bottom of casing may be installed on graded, compacted earth or gravel bedding.

D. JOINTS

1. All joints along pipe casings shall be joined to conform with the requirements of Sections 02510 and 02550. Contractor shall be responsible for welding steel casing joints. Contractor personnel will not be required to be qualified for joining casing piping.

3.02 GROUTING

A. Where voids are present the casing pipe shall be grouted per the appropriate jurisdictional requirements.

END OF SECTION

SECTION 02410

TUNNELING

PART I GENERAL

1.01 DESCRIPTION

Includes augering, boring, driving, drilling, moling or other methods approved by Resident Engineer.

1.02 INSTALLATION

A. Any gas pipe installed by tunneling shall either be encased in a steel casing or sleeved in polyethylene gas pipe according to Construction Standards, except as noted in Item B.

B. Only steel gas pipe with polymer concrete coating over fusion bonded epoxy coating with 'Powercrete' coated joints may be installed uncased as described in the Construction Standards. Manufacturer's cure times on field applied coatings shall be strictly adhered to.

C. All water pipe intended to be cased shall be noted on the Drawings and shall be installed according to the Construction Standards.

D. Optional Casing Installations: In locations where tunneling is not required by the Contract Documents, Contractor may elect to tunnel gas or water lines, to avoid surface restoration, but only with Resident Engineer's approval. No extra payment will be made for such tunneling and Contractor shall supply or reimburse City Utilities for supplying additional casing materials.

PART II MATERIALS AND EQUIPMENT

2.01 DRILLING FLUIDS: All drilling fluids must be environmentally acceptable and shall be completely contained throughout the drilling process.

PART III EXECUTION

3.01 DIAMETER OF TUNNEL EXCAVATIONS

D. Perform all directional drilling in accordance with ASTM F1962 and PPI standards.

E. Maintain diameter of tunnel excavations large enough to allow insertion of the pipe without causing damage to the pipe. Diameter of tunnel excavation shall minimize the amount of annular space between the excavation and the piping.

F. Maintain diameter of tunnel excavation no more than 2 inches greater than the size of the pipe except 1 ¼" and smaller pipe may be inserted in a 4" tunnel excavation or otherwise approved by Resident Engineer.

3.02 GENERAL TUNNELING SPECIFICATIONS

A. Tunnel depth shall be at standard depth to the top of casing pipe unless more cover is required by governing jurisdictional agencies, unless otherwise noted on the Drawings.

B. Establish initial angle of tunnel excavation to maintain design depth throughout the tunnel excavation.

C. In the event of unforeseen deflections encountered during the tunnel excavation, a vertical upward deflection of up to six inches, vertical downward deflection of up to 18 inches, and lateral deflections up to 18 inches are allowed, provided there is no conflict with existing or proposed facilities. Deflections greater than this are unacceptable and will require re-boring or trenching to the appropriate depth.

D. During directional drilling, the boring head shall be located utilizing underground locating equipment capable of pinpointing the drill head. This shall be done at least once for every ten feet of drilling length in both the horizontal and vertical directions and provided to Inspector in writing.

E. Contractor shall ensure sanitary sewer main and lateral crossings are not damaged by exposing them during the tunneling process or by video camera inspection after tunneling is complete. Contractor shall complete City Utilities' Cross Bore Verification Form in Attachment B and submit to the Inspector prior to final payment. Contractor shall also take precautionary measures to avoid damaging all other foreign line crossings (stormwater, telephone, fiber optic, etc.). Contractor shall be responsible for the repair of any damage made to existing facilities. The use of "Fish Tape" for identifying depths of existing sewer mains and/or laterals shall not be an acceptable method for confirmation of depth and/or damage to existing utilities.

F. Piping installed in tunnel excavation shall be pulled back in one continuous section, as one continuous operation unless otherwise directed by Resident Engineer.

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G. Contractor shall utilize a swivel or other means to minimize rotation of the pipe during pullback.

H. Contractor shall provide adequate support rollers for the pipe during pullback. Rollers and cradles shall be of a type to prevent damage to the pipe and coating and of sufficient number to prevent overstressing of the pipe due to sag bends during pullback.

I. In the event the Contractor must abandon the tunnel excavation before completion of the full excavation, the Contractor shall seal the hole per the appropriate jurisdictional agency's guidelines. The Contractor shall then complete a new tunnel excavation at no extra cost to City Utilities.

J. Observe the bend radius of the piping being installed per the applicable Construction Standards and manufacturers recommendations.

K. Tracer wire shall be attached to the pull head of the drilling rig and be installed with all gas and water piping. Wire used is to be in accordance with the applicable Construction Standards.

L. When pulling polyethylene gas or water piping the Contractor shall not exceed the allowable tensile load values for safe pullback in accordance with ASTM F1804. Contractor shall use a weak link to prevent over-stressing the pipe during pullback. A mechanical break-away connector or a one-foot section of smaller SDR or diameter plastic pipe placed between the pull head and leading edge of the pipe are acceptable weak links. Below are approximate values for safe pull forces for PE4710 and PE2708 1-12 Hour Pulls.

PE 4710 1-12 Hour Pulls at 73°F*			
Safe Pull Force (lbs)			
Size (in)	SDR 11	SDR 13.5	SDR 17
1	597	-	-
2	1,947	-	-
4	-	6,602	-
6	16,440	13,644	-
8	28,282	23,471	-
12	60,167	49,933	-
16	104,547	86,764	-
18	-	-	87,961

*See Service Temperature Design Factors for temperatures over 80°F

Service Temperature Design Factors for PE 4710	
Service Temperature	Safe Pull Force Multiplier
≤ 80 F	1.00
≤ 90 F	0.90
≤ 100 F	0.80
≤ 110 F	0.71
≤ 120 F	0.63
≤ 130 F	0.57
≤ 140 F	0.50

PE 2708 1-12 Hour Pulls				
Safe Pull Force (lbs.)				
Size (in)	≤ 73°F	≤ 100°F	≤ 120°F	≤ 140°F
0.75	282	257	208	178
1.25	769	700	568	485
2	1,446	1,316	1,068	912
4	5,194	4,725	3,836	3,276
6	11,258	10,241	8,314	7,101
8	19,082	17,357	14,091	12,036

M. When polyethylene pipe is being installed, an additional 5% pipe length shall be installed at the entry and exit points to allow for relaxation due to temperature. MDPE and HDPE expansion/contraction according to PPI TR-21 handbook are expected to be 1.1 inch per 100 feet per 10 degrees temperature change. Allow piping to achieve the same temperature as the ground to counter act pipe creep prior to making tie-ins at the ends of the piping. The typical relaxation time should be twenty-four hours.

END OF SECTION

SECTION 02510

WATER PIPING

PART I GENERAL

1.01 DESCRIPTION Includes, but is not limited to, installation of water mains, including pipe, valves and fittings. Also includes retirement of mains and service tie-overs as shown on the drawing.

1.02 RELATED WORK DESCRIBED ELSEWHERE

A. Work by Others, Section 01110.

B. Field Engineering, Section 01720.

C. Demolition and Clearing, Section 02220.

D. Excavation and Backfilling, Section 02315.

E. Utility Casings, Section 02320.

F. Tunneling, Section 02410.

G. Disinfection and Testing, Section 02515.

H. Paving and Surfacing, Section 02700.

I. Concrete, Section 03300.

1.03 PRODUCT HANDLING

A. Use all means necessary to protect the material before, during and after installation.

1. Handle pipe with padded forklifts, wide non-abrasive slings, padded clamps or padded pipe hooks. Pipe must be secured so that it cannot fall while being handled. Conventional chains, chain hooks and non-padded forklifts are expressly forbidden.

2. All coated steel pipe and fittings shall be stored off the ground on wooden pallets or skids.

3. Contractor is responsible for all dents, gouges, coating defects and/or dimensional variations.

B. In the event of damage, Contractor shall immediately make all repairs and replacements to the approval of the Inspector.

PART II MATERIALS AND EQUIPMENT

2.1 All materials will conform to City Utilities material Specifications unless otherwise indicated on the Drawings or in these Specifications.

2.2 When contaminated soils are encountered unexpectedly, Contractor shall immediately notify Resident Engineer. Engineer may require additional precautions to protect water quality.

2.3 All valves shall be of open right (clockwise) design.

2.4 Ductile iron valves and fittings have a protective coating that shall be protected to minimize damage. Exterior coating defects shall be repaired with petrolatum wax tape.

PART III EXECUTION

3.1 INSTALLATION – GENERAL

Install pipe in strict accordance with the manufacturers' installation instructions and laying schedules. Run true to grade and alignment as shown on the Drawings with fittings and valves at the required locations. Match and make connections to existing fittings at the points of termination of the piping system. Make tie-ins onto existing live water mains under the supervision of the Inspector using approved equipment and materials. Do not operate any valves, blowoffs or similar equipment on the existing water system of City Utilities without prior approval by the Inspector.

3.2 INSTALLATION METHODS

Install pipe by trenching as specified in Technical Specifications, Section 02315, by tunneling as specified in Section 02410, and/or by casing as specified in Section 02320.

3.3 PIPE CLEANING AND PREPARATION

A. Thoroughly clean and inspect all pipe and fittings for damage before placing in the trench. If damage to pipe is found during inspection, repair or replace the pipe as directed by the Inspector.

B. Prevent foreign material from entering the pipe while it is being installed. Allow no debris, tools, clothing or other materials in the pipe.

C. When pipe laying is not in progress for an extended period of time such as nights and weekends, close the open ends of pipe with a water tight plug. If water is in the trench, the seal shall remain in place until the trench is pumped completely dry. Chlorine tablets may be added to the ditch water per AWWA C651 to avoid additional contamination as further described in Section 02515. Do not use hypochlorite intended for use in swimming pools. Do not lay pipe in water or when trench conditions are unsuitable.

3.4 REPAIR OF COATING

In case of damage to the protective coating or lining of ductile iron pipe, repair the pipe in accordance with AWWA C104. Repair of coating damage to epoxy coated surfaces shall be made with petrolatum wax tape.

3.5 PIPE SUPPORT AND EMBEDMENT

Support the barrel of the pipe by the granular leveling course with bell holes excavated for the bell end. Having so supported the pipe, embed it with granular material after joining pipe.

3.6 JOINING PIPE

A. PUSH-ON JOINTS: In accordance with manufacturers recommendations, lay pipe with bell ends facing in the direction of laying unless directed otherwise by the Inspector. After placing a length of pipe in the trench, clean and lubricate the gasket and gasket groove. Center the spigot end in the bell. Force pipe home giving care to not over-bell the pipe and bring to correct line and grade. Prevent dirt from entering the joint space.

B. THREADED JOINTS: Pipe dope or thread tape shall be applied to the threads prior to joining. Threaded joints are only to be used on 2" and smaller water lines.

C. COMPRESSION (PACK OR MECHANICAL) JOINTS: Install and tighten compression fittings per manufacturer's instructions.

D. FLANGE JOINTS: Assemble joints above ground and lower into trench, unless otherwise acceptable to the Inspector. Tighten bolts per manufacturer's instructions.

E. SOLVENT CEMENT JOINTS: Shall not be used unless indicated on the Drawings.

F. RESTRAINED JOINTS: Install per manufacturer's instructions and as detailed on the Drawings.

G. HDPE CONNECTIONS: Join HDPE pipe per ASTM F2620.

Butt fusions are the preferred method of joining with electro fusion and socket fusion also permissible when joining HDPE to HDPE. Data loggers shall be used when performing butt fusions with a hydraulic machine. City Utilities Inspector will provide the data logger. Hydraulic butt fusion equipment shall be McElroy or pre-approved equal. When equipment other than McElroy is proposed, the Contractor will be required to supply an equivalent data logger or other approved means of capturing fusion data and providing the fusion data to City Utilities Inspector. When joining HDPE to DI or PVC piping a MJ or threaded transition fitting shall be fused to the HDPE to make the change in materials.

Mechanical fittings are only permissible when called for on the Drawing or otherwise called for within the Specifications. A stainless-steel stiffener sized to encompass the entire bearing length of the compression fitting to the HDPE pipe is required when using approved mechanical or compression fittings.

All fusion joints shall be made by competent joiners who shall have been tested and approved in advance by City Utilities, and who have properly maintained this qualification. The test shall include destructive test of joints of each type to be made on the project.

Contractor shall make all fusions in accordance with the current manufacturer's recommended procedures.

Contractor shall provide an approved machine when butt fusions are to be made. Contractor shall provide all necessary tools, approved by the Inspector, to complete all required fusion. Only tools specifically designed for the joining of polyethylene water pipe shall be used. All tools shall be kept clean.

Contractor shall provide an approved electrofusion machine when electrofusion fittings are to be installed. Contractor shall provide all necessary tools to complete all required fusions to the satisfaction of the Inspector.

The pipe shall be prepared using an approved scraper designed for use with polyethylene piping. Paint-type scrapers will not be allowed unless approved by Resident Engineer.

3.7 PERMISSIBLE DEFLECTION AT JOINTS

Wherever it is necessary to deflect pipe from a straight line, either in the vertical or horizontal plane, to avoid obstructions or plumb valve stems, or where long-radius curves are permitted, deflect in accordance with the manufacturer's recommendations and Construction Standards for satisfactory joining.

3.8 TIE-IN POINTS AND CROSSINGS

Expose existing casings, mains, storm drains, other utilities, and other obstacles well in advance of trenching and pipe laying to avoid abrupt changes in vertical alignment and the use of unnecessary fittings at tie-in points and crossings.

3.9 CUTTING OF PIPE

Cut pipe for inserting valves, fittings or closure pieces without damage to the pipe or cement lining and leave a smooth end at right angles to the axis of the pipe. Make all cuts in accordance with the manufacturer's instructions. Only cut 16" or larger ductile iron pipe after it has been gauged to determine if the diameter of the pipe is within tolerance at the proposed cut location. HDPE pipe shall be cut with a guillotine style cutter or a chain saw with no lubricant in the bar oiler. Other methods will require approval by Inspector.

3.10 BENDING OF HDPE PIPING:

A. Install fittings at all locations as specified in the Drawings.

B. At locations where fittings are not specifically called for, HDPE pipe may be bent to route the line as required; however, bends which would produce excessive stress on the pipe shall not be allowed. The minimum bending radius shall adhere to the appropriate water Standard. Bends of a lesser radius shall not be permitted, and an appropriate fitting (elbow) shall be installed as necessary.

3.11 SQUEEZE-OFF OF HDPE PIPING:

A. Where available, City Utilities personnel shall utilize valves to control the flow of water in HDPE pipes. However, squeeze-off may be utilized where necessary to control the flow of water.

B. Contractor shall squeeze-off pipe using a properly designed tool and shall not damage the pipe. The tools shall be equipped with appropriate gap stops. The tools shall be squared and centered on the pipe and shall be located at least three pipe diameters away from the nearest fitting or fusion joint. All squeeze-off shall be performed with the Inspector present.

C. The same location of pipe shall not be squeezed-off more than once. All squeeze-off locations shall be marked on the pipe with electrical tape.

D. After squeeze-off, pipe shall be re-rounded. All squeeze-off operations shall conform to manufacturer's recommendations.

3.12 VALVE AND FITTING INSTALLATION

A. VALVES AND FITTINGS

Set and join valves, fittings, plugs and caps to pipe in accordance with the manufacturer's recommendation. Valves shall be installed so operating nut is plumb so valve key will easily operate the valve within the box. Valves shall be installed so that the operating nut is no more than eight feet below finished grade. If the valve is more than eight feet below finished grade the Contractor shall install a valve extension shaft.

B. VALVE BOXES

Install the valve box so as not to transfer surface loads directly onto the valve. Center and plumb valve box over the operating nut of the valve, with the box cover flush with the surface of the finished pavement or such other level as may be directed by the Inspector.

C. ANCHORAGE FOR VALVES AND FITTINGS

All fittings shall have suitable thrust protection as indicated on the Drawing or in the Construction Standards.

3.13 SERVICE LINES AND METER SETS

A. Water services: The minimum size of service lines shall be 1" piping from main to meter set unless otherwise called for on the Drawings. Meter sets shall be constructed per the Drawings and applicable standards. Services and meters shall be installed according to the applicable Construction Standards and Drawings. New piping shall be installed from the outlet of the meter setting to the customer's property line and tied over to the existing customer piping if it exists. No heat bending of piping material shall be allowed.

B. Fire Services: The minimum size of fire service lines shall be 2" piping from the main to the customer's property line or easement line. The customer's piping shall be considered the property line or easement line unless a fire service valve is installed, in that case, the customer's ownership will be the point immediately downstream of the valve.

3.14 LOCATOR WIRE & WARNING TAPE

A. Install tracer wire per Construction Standards.

B. Warning tape shall be installed with all water mains and services that are installed by trenching per applicable Construction Standards.

3.15 WORK EQUIPMENT AND TOOLS

Furnish work equipment and tools necessary for the installation and connection of mains.

3.16 MAIN TAPS

City Utilities will furnish equipment and labor for tapping of water mains (2"-12" tap sizes). Such work shall require a 48-hour advance notification and will not be scheduled outside normal working hours for City Utilities' crews unless prior approval has been received. Contractor shall dig and prepare excavation with shoring and traffic control as necessary. Contractor shall install tapping fitting, valve and provide hoisting equipment for installation and removal of tapping machine. Contractor may tap newly installed HDPE mains that are not in service using an EF branch saddle and tapping with a hole saw when approved by Resident Engineer. All shavings and debris shall be removed from the main after tap is made.

3.17 RETIRED WATER LINES

A. Other than minimum lengths as shown on the drawing and where retired water main conflicts with the installation of this projects' improvements, Contractor may leave retired water main in place. Contractor may elect to remove old main, in which case pipe shall become Contractor's to salvage. However, backfill, compact and restore all excavations performed in removing old pipe according to the Contract requirements, which may include backfilling with granular material under proposed or existing roadway areas and cleanup of established areas. No payment will be made to the Contractor for this pipe removal and excavation and restoration.

B. Plug and seal ends of all retired water lines with caps or plugs.

C. When necessary to complete installation of this project's improvements, remove retired water mains, services and meter pits, backfill and restore area per Contract requirements at no additional charge.

D. Retire asbestos cement (AC) pipe per Missouri Department of Natural Resources (MoDNR) requirements and as specified within this Section.

E. Contractor shall remove existing fire hydrants down to, and including, the shoe and return to City Utilities. Remaining piping shall be filled with a Froth Pack. Contractor shall also retire existing valve box below grade. Coordinate with CU Inspector for delivery instructions of salvaged hydrant material. Contractor shall fill and repair to existing grade.

F. All other retired valves and fittings shall be retired below grade per the Construction Standards, unless noted for removal.

3.18 SERVICE RENEWALS AND TIE-OVERS

A. Install new meter set and new meter tile per standards, retire existing service and install new customer service piping from the outlet of the meter tile to behind the property line to reconnect the customer's piping per applicable standards. Meters shall be installed as close as practical to the customer's property line or easement line.

B. All plumbing work shall conform to all applicable code requirements.

C. Coordinate with Inspector regarding the routing of the customer line and the scheduling of the work.

D. Services shall be completely renewed main to meter and backside of service tied to customers piping as called for within this Specification unless specifically called out to remain and be tied over to the new main on the Drawings.

3.19 RETIREMENT OF EXISTING SERVICES AND METER SETTINGS

Where services are called to be retired, retire at the main by closing the curb stop valve and install locator marker ball. Where services are being retired as part of ongoing construction, install a section of one-inch pipe vertically over the corporation stop one foot above the top of the corporation stop to serve as a marker. When the main is also being retired physical retirement of the services at the main is not required. Remove meters from the existing setting and return to City Utilities. Remove rings and lids for reuse in relocated service installations or for return to City Utilities material yard. When retiring a meter tile, the elevation shall be adjusted to a position below grade backfill according to Section 02315 and restore surface per Section 02700 or Section 02900.

When service lines and meter sets not shown on the Drawings are encountered during the course of construction, notify the Inspector to determine whether service is to be replaced or abandoned.

3.20 REMOVAL OF DAMAGED PIPE

HDPE pipe found to have surface damage at a depth equal to or greater than 10% of the wall thickness, as determined by the Inspector, shall not be acceptable. Contractor shall cut out and replace with undamaged section of HDPE pipe, at the expense of the Contractor

Other piping materials found to have damage unacceptable to the Inspector, shall be cut out and replaced with undamaged pipe at the expense of the Contractor.

3.21 ASBESTOS CEMENT PIPE REPAIRS, DEMOLITION, AND DISPOSAL

Contractor is being made aware that work on asbestos cement (AC) pipe is governed by OSHA regulations and that compliance with OSHA regulations is the sole responsibility of the Contractor. Work on AC pipe shall only be performed by OSHA trained personnel overseen by a "competent person" as defined by OSHA. Contractor shall be or retain a Registered Asbestos Contractor with the Missouri Department of Natural Resources. Additionally, all work shall be in accordance with EPA's *National Emission Standards for Hazardous Air Pollutants (NESHAP),* EPA's *Governmental Employee Worker Protection Rule, and Missouri DNR's Air Asbestos Rule*.

A. EXCAVATION: When excavating an AC water main, take precautions to prevent the backhoe teeth from scraping or gouging the pipe. Use a spotter to warn when the pipe is first exposed. Use heavy equipment to excavate laterally down to and around the pipe, and then complete the job by hand. This is especially important if the pipe is to be retired and removed.

B. PIPE PREPARATION: AC pipe must be kept wet at all times while cutting, scraping, chipping, or otherwise abrading the pipe. Water mixed with a surfactant (soap, detergent or other agent, designed to reduce surface tension of the water) must be used to wet the pipe. A Hudson type sprayer shall be used to apply the solution. The solution shall be applied frequently to areas of the pipe being abraded.

C. CUTTING: Asbestos-containing pipe shall ***never*** be cut with a high-speed mechanical saw. Pipe shall be severed with a hand-operated pipe cutter or uncoupled and removed in entire joint lengths.

D. CORING (TAPPING): When tapping into an AC pipe do not use high-speed mechanical boring equipment. Minimize dust by using a hand-operated drill or auger. If the tapping hole is too large for a hand drill, use an electric drill specially equipped with a HEPA vacuum attachment. Treat all collected dust, crumbs, coupons, etc. as asbestos waste by collecting in and/or on plastic bags and sheeting.

E. RETIREMENT: Unless otherwise indicated on the Drawings, all existing AC pipe shall be abandoned in place. "Abandoned in place" pertains only to those sections of pipe that have not been moved from their location of original installation. All abandoned-in-place AC pipe shall be made locatable per one of the approved methods specified in the Construction Standards.

F. REMOVAL: Pipe sections that have been removed or disconnected from their installed position must be removed from the trench and properly disposed of. Pipe sections and fragments removed from the trench must be immediately packaged for disposal and moved to a secure location. This may entail placing directly into a lined roll-off container and/or double wrapping or bagging individual pieces of pipe and/or pipe fragments in 6-

mil plastic bags or sheeting. A locator marker ball shall be placed at all locations where asbestos pipe has been exposed. All cost for the proper disposal of AC pipe shall be borne by the Contractor.

G. DECONTAMINATION: All tools and equipment used during the maintenance of the AC pipe shall be thoroughly cleaned with soap, water, and disposable towels. All materials such as towels used for cleaning, gloves, or plastic sheeting that becomes contaminated with asbestos containing material shall be packaged and disposed of properly.

H. DISPOSAL: Contractor is responsible for ensuring all sections and pieces of AC pipe and materials that cannot be abandoned in place are properly packaged and disposed of at a licensed solid waste landfill approved by City Utilities. If desired, City Utilities will provide guidance to the Contractor on the landfill's waste approval process. However, costs for disposal are borne by the Contractor, unless otherwise indicated on the Drawings or in these Specifications. Contractor will document disposal by providing to City Utilities the waste manifest(s) signed and returned to the Contractor by the landfill representative.

I. REPORTING: Contractor is responsible to report to City Utilities information necessary for reporting compliance to Missouri Department of Natural Resources. Contractor shall supply the name of the competent person who is performing any work on the pipe or any pipe removal, transport and disposal. The contractor shall provide the name and location of the disposal facility. This information shall be submitted to City Utilities Environmental Affairs at least 20 days prior to work on the pipe.

END OF SECTION

SECTION 02515

DISINFECTION AND TESTING

PART I GENERAL

1.01 This covers disinfection and testing of the water distribution system.

PART II MATERIALS AND EQUIPMENT

2.01 Contractor shall supply all necessary materials and equipment for the work described in Part III unless otherwise specified.

PART III EXECUTION

3.01 TESTING

A. PREVENTATIVE MEASURES DURING CONSTRUCTION

During construction, the interior as well as all sealing surfaces of pipe, fittings, and other accessories should be kept as clean as possible. Inspect the interior of all pipes prior to installation. If dirt enters the pipe, it should be removed, and the affected interior of the pipe swabbed with a 1%-5% chlorine solution. All openings in pipelines should be closed with watertight plugs whenever the trench is unattended. Plugs should be treated with a 1%-5% chlorine solution prior to being inserted into the mains to avoid contamination. Likewise, fittings such as tapping fittings, valves, leak clamps, etc. shall be swabbed or sprayed with a 1%-5% chlorine solution to prevent contamination. Sealing, lubricating, or gasket materials used in pipe installation should be stored and handled in a manner that avoids contamination and be suitable for use with potable water. During construction, standing water in the trench that has the potential to enter open pipe ends should be treated with calcium hypochlorite tablets not intended for use in swimming pools according to AWWA 651 to ensure contaminants are not introduced into the pipe.

B. PRELIMINARY FLUSHING OF MAINS

Before pressure testing and disinfection, the main should be completely filled with water from the low point to the high point when possible, to eliminate air pockets and then flushed to purge the line of dirt and debris. The initial fill should be done slowly in order to eliminate all air pockets. The flow rate should not exceed 1 ft/s. All air relief valves, hydrants, and other access points should be opened during initial fill in order to ensure all air has been expelled. Ineffective removal of dirt and debris from lines prior to disinfection often leads to failed bacterial tests, requiring repeated disinfection. Preliminary flushing should follow the initial slow fill and should be done to achieve a flow rate of at least 2.5 ft/sec to scour the main and remove all foreign material. The initial fill shall be performed by the Contractor with the Inspector present. Preliminary flushing shall be performed by City Utilities Water Operations. Times shall be recorded for calculation of the amount of water used.

The following table shows the required flow rate to obtain a velocity of 2.5 ft/sec in commonly used sizes of pipe.

Flow Rates for Filling & Flushing

Pipe Size (inches)	1.0 ft/s Fill Velocity Flowrate (gpm)	2.5ft/s Flushing Velocity Flowrate (gpm)
2	10	25
4	39	98
6	88	220
8	157	391
12	352	881
16	626	1566
24	1409	3523
36	3171	7927
48	5637	14,093

C. HYDROSTATIC TESTING

The purpose of the hydrostatic test is both to test for the ability of the pipeline to withstand the applied pressure and to test for leakage. Hydrostatic tests shall be conducted in accordance with the following:

Pipe Material	Criteria
HDPE	AWWA C906, 651 & Manual M55; PPI Handbook of Polyethylene pipe 2nd edition, ASTM F2164
PVC	AWWA C605, C900, & Manual M23
Ductile Iron	AWWA C600 & Manual M41

Contractor shall provide a liquid filled or digital gauge that has increments of 2 psi or less. The gauge shall be calibrated and accurate to within one percent. Contractor shall provide pressure gauge calibration logs upon request of the Inspector.

Pressure testing shall not begin until all concrete thrust blocks, collars and restraint have cured to achieve the desired compressive strength. After the pipe has been laid, the main shall be filled slowly from the low point to the high point when possible and all air purged from the line through available hydrants, blow offs, and air relief valves. Once all air has been removed close air reliefs and other valves. The maximum length of piping to be tested at once shall be 2500 feet unless approved by Resident Engineer. The main shall be tested at 150 psi gauged at the highest elevation of the water main under test or corrected for the elevation of the test gauge if not at the high point.

The following formula shall be used to correct for the elevation difference between the high point of the section being tested and the location of the testing pump and gauge:

$$\text{Test Pressure} = 150\ (\text{psi}) - \frac{[\text{high pt. elevation (ft.)} - \text{Test gauge elevation (ft)}]}{2.31\ (\text{ft/psi})}$$

If extreme terrain differences are encountered on the project the piping pressure test shall be done in segments to ensure that no segment is pressure tested more than 1.5 times the systems design pressure rating.

a) PROCEDURE FOR PVC AND DI WATER MAINS

Gradually pressurize the test section to 150 psi at the highest point of the test section and maintain that pressure for two (2) hours or for the duration called for by the Resident Engineer. Add and measure make-up water as required to

maintain test pressure. Clean potable water from an uncontaminated container shall be used for make-up water. Monitor and record the amount of make-up water utilized and document on the as-built drawing. Ensure that the amount of makeup water used to maintain the test pressure does not exceed the maximum allowable leakage in the applicable AWWA standards or as calculated for each pipe size in the test section based on length. Use the table below to calculate the allowable makeup water volume for standard 150 psi test. Any allowable leakage noted on the Drawing is calculated for the entire piping length for the project.

Main Size	Maximum Allowable Make up Water PVC or DI Mains (gallons per hour per 1000 feet)
8	.66
12	.99
16	1.32
24	1.99
30	2.48
36	2.98
48	3.97

$$\text{Maximum Allowable makeup water (gal/hr)} = \frac{(\text{length})*(\text{diameter})*\sqrt{(\text{test pressure})}}{148{,}000}$$

If the test indicates leakage greater than the maximum allowable rate, locate and repair the defect. Run tests again after correction is made until leakage is within the allowable rate. Furnish all necessary labor and equipment for testing.

b) PROCEDURE FOR HDPE WATER MAINS

The test procedure for HDPE consists of an initial expansion and a test phase. Gradually pressurize the test section to 150 psi at the highest point of the test section adding make-up water as required to maintain test pressure for up to four hours. The test section pressure may be stabilized, and the pipe expansion accomplished in less than the allotted four-hour period but a minimum of one hour shall be used for the expansion period in all cases. After the expansion period (1-4 hours) is completed, the pressure shall remain steady for an additional one hour at the test pressure. If leaks are discovered, depressurize the test section before repairing leaks. Correctly made fusion joints should not leak. Leaking joints shall be cut out and replaced and retested.

If the pressure test is not completed due to leakage or other events, the test section should be depressurized for at least eight hours before retesting begins. Furnish all necessary labor and equipment for testing.

D. TRACER WIRE TESTING

Test tracer wire to verify a continuous signal on the wire. Contractor shall dig up and repair tracer wire where the signal isn't continuous.

E. HDPE DESTRUCTIVE TESTING

City Utilities reserves the right to perform destructive testing on up to 10% of the HDPE fusion joints installed by the Contractor on the project. Contractor is responsible for cutting out the joint identified by the Inspector or Resident Engineer and replacing the

section removed with a new section of fused HDPE pipe. The pipe joint shall be tested using a side-bend test. If the pipe joint fails, the Contractor shall be responsible for additional testing.

3.02 DISINFECTION

A. Disinfection of the water main and appurtenances shall be done in accordance with AWWA C-651 latest revision and this specification under the supervision of the City Utilities Inspector and Water Technician. After the pressure test, the Inspector will make arrangements with Water Operations to disinfect the installed lines. Contractor shall give City Utilities notice 48 hours in advance of the need for disinfection.

B. Perform disinfection operations after hydrostatic pressure tests have been completed. Do not perform disinfection until all line segments are ready for disinfecting, unless otherwise directed. Use no water from a new main for any purpose until disinfection is completed and accepted. City Utilities shall place out of service rings on all valves and fire hydrants until the main has been disinfected and ready for service.

C. Install and remove sample assemblies per construction drawings and standards to allow the main to be disinfected and sampled as directed by the Inspector. Points to sample the main will be required every 600 feet and at the end of all branch mains at a minimum. Service taps may be utilized as sample assembly points when appropriately located. Sample assembly to be shut off and the riser pipe cut and capped as close as possible to the main when retiring sample assembly. Provide a blow-off at the end of the main being disinfected to provide a means of flushing. Blow-off and sample assembly details are shown on the Standard Drawings.

D. Pretreatment of valves, sleeves, tees, and other fittings that present areas that can hold sediment or debris is encouraged. They should be treated with a 1%-5% chlorine solution prior to or during assembly. Tie in sections of piping or short segments of piping that do not lend themselves to standard disinfection shall be swabbed with a 1%-5% chlorine solution to provide disinfection.

E. All water mains shall be disinfected by City Utilities using the continuous feed method in accordance with AWWA C651 except as noted otherwise. The slug method prescribed in AWWA C651 may also be used with prior approval from the Resident Engineer when placing a main back in service in a quicker time frame is necessary. The continuous feed method that should be followed is described as follows: Sodium Hypochlorite in a liquid form shall be injected to perform the disinfection of the line. A chlorine solution may also be mixed using granular calcium hypochlorite to be injected into the water lines. The chlorine injected shall be no lower than 1% available chlorine (10,000ppm) and no higher than 10% available chlorine (100,000ppm). Chlorine shall be injected at the beginning of the main being tested through a sample assembly located within four feet from the main feed valve supplying water. The feed valve supplying water shall be opened just enough to produce a very low flow (not a heavy stream) through the main exiting at the blow-off or hydrant at the end of the line. The chlorine solution shall then be constantly injected by pumping while the concentrations of chlorine are tested to ensure a consistent concentration throughout the main is achieved. Sampling of the chlorine concentration during injection should start at the sample assembly located closest to the injection point then moving away from the injection point toward other assemblies and to the end of the main. Injection is complete once testing at all sample assembly locations (at least every 600 ft. and at the end of all branch mains) have indicated that chlorine concentrations are at least 25 ppm. This shall be verified once injection has ceased. When stopping the injection process the feed valve supplying water shall be shut off first followed by the chlorine feed. The blow-off or hydrant at the end of the line should be closed as soon as the injection has stopped. The chlorine concentrations shall be no lower than 10 ppm 24

hours following the injection. The results of this testing shall be provided to the Resident Engineer. The highly chlorinated water used for disinfection shall not remain in the water main longer than ninety-six hours.

City Utilities may use high-test chlorine tablets to disinfect new water mains less than 50' in length. The tablets can be secured to the top of each section of pipe with an approved food grade adhesive during main installation to supply the chlorine for disinfection. Use a minimum of one tablet per inch of pipe diameter per joint of pipe, up to 12" diameter pipe, based on the rate of ¼ once tablets with 65% available chlorine. Do not use the tablet method with polyethylene (HDPE) pipe or if trench water or foreign material enters the main. The use of 90% available chlorine tablets is not allowed. Store chlorine tablets in a sealed, opaque container until immediately before use.

F. Following disinfection, City Utilities Water Technician will flush and chemically de-chlorinate as needed the treated water from the line at all extremities until water in main has comparable chlorine residuals to surrounding system mains. The water in the main will then be sampled by the Water Technician 24 hours later at points at least every 600 feet and at the end of all branch mains and examined for contamination per AWWA standards. Water will be sampled by the Water Technician a second time after 15 minutes. During the sampling process water will not be flushed from the main except what is necessary to flush the sample assembly piping in order to retain the same water in the installed water pipe for the full sampling process. The feed valve may be opened slightly during the process, if necessary, to maintain pressure to obtain samples. After two consecutive sets of acceptable water quality samples, the main will then be approved and final tie-ins authorized to be made to the distribution system. Consideration shall be given by the Contractor for runoff water during the flushing process. Results of all water quality tests shall be provided to the Resident Engineer.

G. City Utilities will flush and sample a new main up to two times or four total quality sample tests. If water quality tests are still failing, the above disinfection process will be repeated. If the main still does not pass the water quality tests City Utilities may require the Contractor to pig the water main and continue to repeat the disinfection process until the main passes the quality tests. The Contractor will provide all labor, equipment, and all materials necessary to pig the main. This process shall continue until two consecutive water quality tests yield good results. Pigs used shall provide a general sweeping and swabbing of the line. They shall be foam (1-2lb/cubic foot density) with urethane coated nose cone wrapping and urethane rear sealing. Pigs should be able to pass through reduction of up to 60% to 65% of cross-sectional area of nominal pipe. Pigs shall be able to traverse standard piping configurations such as 90° elbows, tees, crosses, wyes, gate valves, and ball valves. Contractor shall be responsible for all pigging activities including but not limited to breaking down of the line to insert and remove the pig, tracking of the pig, removal of stuck pig, disposal of the pig and material removed from the line.

3.03 CONTINUITY OF SERVICE

Prior to closing any valves, notify all affected customers 24 hours in advance and state how long the service will be curtailed. Cause no customer to be without service for more than eight hours. Schedule all tie-ins and other operations affecting customer service only as approved by the Inspector. Carefully plan such operations in advance, verify materials and conditions, and work continuously until all customers are in service. Some off-hour work and overtime labor may be required to avoid causing unnecessary hardship for business, schools, etc. Contractor shall bid accordingly.

END OF SECTION

SECTION 02550

MECHANICAL – NATURAL GAS PIPING

PART I GENERAL

1.01 DESCRIPTION: Includes, but is not limited to, installation, retirement and/or relocation of gas mains and services, including pipe, valves and fittings.

1.02 RELATED WORK DESCRIBED ELSEWHERE: Section 02220, Demolition and Clearing, Section 02315 Excavation and Backfilling, Section 02410 Tunneling.

1.03 PRODUCT HANDLING

A. Use all means necessary to protect the material before, during and after installation.

1. Handle pipe with padded forklifts, wide non-abrasive slings, padded clamps or padded pipe hooks. Pipe must be secured so that it cannot fall while being handled. Conventional chains, chain hooks and non-padded forklifts are expressly forbidden.

2. Use wooden skids or padding for material storage. All steel pipe and fitting shall be stored off the ground on wooden pallets or skids.

3. Contractor is responsible for all dents, gouges, coating defects and/or dimensional variations.

B. In the event of damage, immediately make all repairs and replacements to the approval of the Inspector.

PART II PRODUCTS & EQUIPMENT

2.01 Unless otherwise indicated on project Specifications, plastic gas pipe, along with plastic valves and fittings, shall be (polyethylene) PE 2708 material, and steel gas pipe shall be API5L Grade B or X42 with fusion bonded epoxy coating.

2.02 HEAT FUSION EQUIPMENT

A. All heat fusion equipment to be used within the contract shall be maintained in accordance with the manufacturer's recommended practices or with written procedures that have been proven by test and experience to produce acceptable joints.

B. Contractor shall submit the Natural Gas Pipe Fusion affidavit in Attachment A prior to fusing any pipe under the contract, with appropriate supporting documentation for any written procedures that differ from the manufacturer's recommended practices.

PART III EXECUTION

3.01 INSTALLATION – GENERAL

Contractor shall install gas mains and services to make all required interconnections and at required grades with all fittings and valves at the required locations.

3.02 INSTALLATION METHODS

A. Install gas pipe by trenching as set forth in Section 02315, Excavation and Backfilling; by tunneling, as set forth in Section 02410, Tunneling; or by Insertion.

B. The minimum allowable depth for a service line to be inserted on private property shall be 18" for insertion through plastic service lines and 12" for insertion through steel service lines. The minimum depth on Right of Way shall be 18".

3.03 PIPE CLEANING

A. Prevent foreign material from entering the pipe while it is being installed. If the pipe laying crew cannot put the pipe into the trench without getting foreign material in the pipe, then a heavy, tightly woven canvas bag of suitable size shall be placed over each end and left there until the connection is to be made to the adjacent pipe. During laying operations, no debris, tools, clothing or other materials shall be placed in the pipe.

B. When pipe laying is not in progress, close the open ends of pipe with a watertight plug or other approved means. This provision shall apply during meal breaks as well as overnight. If water is in the trench, the seal shall remain in place until the trench is pumped completely dry. Pipe shall not be laid in water or when trench conditions are unsuitable.

3.04 GAS MAIN DEHYDRATION

A. Contractor shall be responsible for installing gas piping in a manner that does not allow water to enter the pipe. If the Inspector determines there is water in any gas piping two inches or larger in diameter, the Contractor shall be responsible for pigging that pipe in a manner approved by the Resident Engineer. The pipe shall be pigged repeatedly by the Contractor until the Resident Engineer has determined that the pipe is sufficiently dehydrated.

B. Pipeline pigs shall be Girard Poly Pig YBS-B, KRG or equal. Contractor shall supply all pigs. Inspector shall inspect pig after passage through pipe to determine if that pig may be reused.

C. Contractor shall be responsible for blocking passage of pig into pipes which do not need to be pigged. If pig passes into a pipe which does not need to be pigged, or if pig becomes stuck in the pipe, the Contractor shall retrieve the pig at his own expense, including but not limited to any excavation, pipe repair and landscape or pavement restoration.

D. If there is water in any gas piping, the Contractor shall be responsible for dehydration of the line as directed by the Inspector and to the Inspector's satisfaction.

3.05 STEEL PIPE JOINING METHODS

A. City Utilities shall perform all joining of steel pipes and fittings, unless otherwise noted in the Bid Documents. When the Contractor is required to join steel pipe and fittings it shall be done by the shielded metal arc welding process and the following requirements shall apply:

B. WELDING PROCEDURES

1. All welding, including welder qualification testing, shall be done following City Utilities written welding procedure specification (which complies with API 1104), or Contractor may submit for approval his own written welding procedure and procedure qualification records with his bid documents. Resident Engineer shall determine acceptability of submitted procedures based on API 1104 in advance of welder qualification testing. If Contractor has submitted his

own procedure, he must have his procedure qualified per API 1104 as in Item B.2. below.

2. All welding shall be done by competent welders who shall have been tested by an AWS certified welding inspector approved by City Utilities. The welding test shall comply with the requirements of the Missouri Public Service Commission Regulations and API 1104 and shall be administered by a welding inspector certified by the American Welding Society to have complied with the requirements of Section 6.1 of AWS QC1-88, "Standard for AWS Certification of Welding Inspectors." A list of companies with certified welding inspectors approved by City Utilities will be made available to the Contractor upon request.

   The Contractor shall arrange and pay for all welder and procedure qualification testing. This expense is coincident with the installation of steel gas main and shall not be considered grounds for additional charge to City Utilities. Welders shall perform a 12-inch multiple qualification test in accordance with API 1104 and have the results documented on a City Utilities approved form.

   Contractor may choose to use an AWS inspector or testing company other than those listed by City Utilities but must obtain approval in advance from Resident Engineer.

3. No gas materials will be issued to the Contractor until the welding procedure and the minimum number of welders required by that procedure have been tested and then approved by Resident Engineer. City Utilities will provide pipe for weld tests from the storeroom at 1402 N. Newton. Contractor shall be responsible for cutting pipe nipples to length and picking up the pipe for the tests.

4. Welders must have gas or petroleum pipeline welding experience or have been previously qualified by City Utilities or MANGO.

5. Contractor shall furnish all oxygen, acetylene, fuel, welding rod, welding machines, beveling machines, weld clamps, all tools and other material required for welder qualification testing and welding work. Welders using defective or deficient equipment or lacking these necessary tools will not be tested.

6. If welding is interrupted during weather conditions which may cause uneven or accelerated cooling of the weld, the joint shall be wrapped with insulating material and the weld joint shall be preheated when welding resumes. Weld must be preheated, if required by the Welding Procedure Specification.

7. Short "pup" joints must be a minimum of one pipe diameter, or 24" whichever is longer.

C. WELDING CODES

All welding must comply with the requirements of the following codes and standards:

1. Missouri Public Service Commission Pipeline Safety Regulations, 4 CSR 240-40.030, Section (5) "Welding of Steel in Pipelines."

2. Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards, Part 192, Subpart E and Appendix C.

3. API Standard 1104, Standard for Welding Pipelines and Related Facilities, latest edition.

4. ASME/ANSI B31.8. – Code for Pressure Piping.

5. Any other applicable local, state or federal regulations or codes.

D. WELDING EQUIPMENT

1. All machines and equipment used in connection with the welding work must be kept in good mechanical condition.

2. Non-arcing clamps are required for all pipe welding.

E. PREPARATION FOR WELDING

1. FIELD BEVELING OF PIPE ENDS: All steel pipe which is field-cut must have the ends properly beveled per API Standard 1104, latest edition, before welding. Bevel the pipe ends by machine tool or machine oxygen cutting. The beveled ends should be smooth and uniform. Dimensions shall be in accordance with the approved welding procedure. Mitered joints are not acceptable.

2. 90° welding elbows cut to make elbows of lower angle must be re-beveled as specified above. Elbows thus produced must have an inside arc length (crotch) of at least 1-inch.

3. Welders must shield from weld splatter the fusion-bond epoxy coating of pipe beyond the 2-inch cutback and alignment clamp by wrapping coated area with a leather protector.

4. Contractor shall provide protection for welders while working during cold, rainy or stormy weather, or other adverse weather conditions (blowing sand and dust, etc.) to assure good quality welds. Welding will not be done when the Inspector judges that weather conditions are severe enough to impair quality of the welds. Multiple welders may be required if the size of the pipe and the weather conditions dictate.

5. Prior to alignment, the beveled ends of each joint of pipe shall be thoroughly cleaned of paint, rust, mill scale, dirt or other matter.

6. Longitudinal seams of successive lengths of pipe shall be offset by a minimum 25 percent of the pipe diameter.

F. REPAIR OF DEFECTIVE WELDS

1. If non-destructive or visual inspection indicates a weld is defective, the Contractor shall cut a cylinder of pipe from the pipeline containing the defective weld and replace it with good pipe, welded properly, at no additional charge.

2. The Contractor may also elect to repair the weld in accordance with requirements of Section 7.0 of API Standard 1104, except all cracked welds shall be cut out and replaced as in F.1. above.

G. ARC BURNS

1. Contractor shall take necessary measures to avoid arcing between ground leads of the welding machines and the pipe or fittings. Striking the arc on the pipe or fittings at any point other than the welding groove shall not be permitted.

2. All arc burns on the pipe shall be removed by cutting out that portion of pipe as a cylinder and replacing with good pipe at no additional charge to City Utilities.

3. Arc burns in fittings, valves and tie-in welds may be repaired by grinding with prior authorization by the Inspector. The area repaired by grinding shall be checked for complete removal of the arc burn and metallurgical notch. The remaining wall thickness must then be verified.

3.06 FIELD BENDING OF STEEL PIPE

A. The minimum radius of curvature for all diameters of steel pipe shall be 1553 times the outside diameter of the pipe.

B. Field bending of steel pipe below the minimum radius of curvature shall not be allowed unless otherwise specified in the bid documents.

3.07 REMOVAL OF DAMAGED PIPE

A. Gas pipe found to have surface damage at a depth equal to or greater than 10% of the wall thickness, as determined by the Inspector, shall not be acceptable. Contractor shall cut out and replace with undamaged section of pipe, at the expense of the Contractor

B. Other gas fittings or materials found to have damage unacceptable to the Inspector, shall be cut out and replaced at the expense of the Contractor.

3.08 PROCEDURES FOR COATING JOINTS AND FITTINGS AND REPAIRING ALL AREAS OF COATING DAMAGE ON STEEL PIPE

A. Pipe shall be jeeped and holidays repaired prior to lowering into trench. Clean the outside of the area to be protected of all foreign substances such as dirt, scale or rust. Remove oil or grease by a solvent. Coat the area per Construction Standards or as otherwise indicated on the plans. Allow coated areas to air dry completely before being backfilled.

B. All pipe coatings shall be applied in accordance with manufacturer's recommended procedure, specifically including the recommended use of primers.

C. Field applied polymer concrete shall be used to coat joints on polymer concrete coated steel pipe for uncased bores. Coating shall be allowed to cure completely prior to insertion through the bore hole. Coating may not be applied to welds that have been made within the previous fifteen hours.

3.09 LOWERING-IN

A. Steel pipeline shall be lowered into the ditch following field coating of weld joints and after pipe and coating have been inspected and approved by Inspector for lowering in. Adequacy of equipment used for lowering-in shall be subject to the approval of the Inspector.

B. During lowering-in, pipe shall be handled by use of rubber tire rollers or lowering-in belts of proper design to prevent damage to the coating.

C. Lowering-in must be done gradually and uniformly so as to allow even distribution of the total weight of the pipe to avoid undue stress on the pipe and to prevent damage to the pipe coating. Do not drop or subject the pipe to impact.

D. Remove all debris, skids, welding rods, etc. from the bottom of trench before lowering the pipe.

E. After lowering-in, the pipe coating shall be inspected for possible damage. If the pipe coating has been damaged, the pipe shall be raised again, inspected by jeeping, and the coating repaired.

3.10 PLASTIC PIPE JOINING METHODS:

A. Polyethylene pipe shall be joined by heat fusion, electrofusion or approved mechanical couplings as specified in the Construction Standards.

B. All joints shall be made by competent joiners who shall have been tested and approved in advance by City Utilities, and who have properly maintained this qualification. The test shall comply with the requirements of the Missouri Public Service Commission Regulations. The test shall include destructive test of joints of each type to be made on the project.

C. HEAT FUSION

1. Contractor shall make all fusions in accordance with ASTM F2620.

2. Contractor shall provide all tools and an acceptable butt fusion machine capable of fusing all sizes of piping for the project. All tools shall be electrically heated only. Fuel-fired tools shall not be acceptable. Only tools specifically designed for the joining of polyethylene gas pipe shall be used. All tools shall be kept clean.

3. Data loggers shall be used when performing butt fusions with a hydraulic machine. City Utilities Inspector will provide the data logger. Hydraulic butt fusion equipment shall be McElroy or pre-approved equal. When equipment other than McElroy is proposed, the Contractor will be required to supply an equivalent data logger or other approved means of capturing fusion data and providing the fusion data to City Utilities Inspector.

D. ELECTROFUSION

1. Contractor shall provide all tools and an acceptable electrofusion machine capable of fusing all sizes of piping for the project.

2. The pipe shall be prepared using an approved scraper designed for use with medium density polyethylene piping. Paint-type scrapers will not be allowed.

E. MECHANICAL

1. Contractor shall provide all tools capable of installing mechanical fittings in the sizes depicted in the Construction Standards.

2. The fittings shall be installed per the manufacturer's specifications.

E. DESTRUCTIVE TESTING

1. City Utilities reserves the right to perform destructive testing on up to 10% of the joints installed by the Contractor on the project. Contractor is responsible for cutting out the joint identified by the Inspector or Resident Engineer and replacing the section removed with a new section of pipe.

2. The pipe joint shall be tested using industry standards tests. If the pipe joint fails, the Contractor shall be responsible for additional testing.

3.11 VALVE AND FITTING INSTALLATION

A. Contractor shall set valves and fittings and join to pipe as shown on the Drawings and Construction Standards.

B. Contractor shall install a valve box for every valve. The valve box shall not transmit shock or stress to the valve and shall be centered and plumb over the operating nut of the valve. The box cover shall be flush with the surface of the finished grade or as directed by the Inspector.

3.12 BENDING OF POLYETHYLENE (PLASTIC) PIPE

A. Install fittings at all locations as specified in the Drawings.

B. At locations where fittings are not specifically called for, plastic pipe may be bent to route the line as required; however, bends which would produce excessive stress on the pipe shall not be allowed. The bending radius shall adhere to the manufacturer's recommendations and the gas Construction Standards. Where bend radius will not conform to the Construction Standards and manufacturer's recommendations, an appropriate fitting (elbow) shall be installed as necessary.

3.13 CUTTING OF POLYETHYLENE (PLASTIC) PIPE

A. Cut pipe square and remove all burrs and cuttings prior to joining.

B. Pipe may be cut with a hacksaw or carpenter's saw, or a specifically designed plastic pipe cutter may be used.

C. Standard metal pipe wheel-cutters are not acceptable.

3.14 SQUEEZE-OFF OF POLYETHYLENE (PLASTIC) PIPE

A. Where available, City Utilities personnel shall utilize valves to control the flow of gas in plastic pipes. When valve isolation is not possible, City Utilities personnel shall squeeze off plastic mains, and Contractor shall squeeze off service lines.

B. Contractor shall squeeze-off pipe per the Construction Standards.

3.15 LOCATOR WIRE

A. Contractor shall install locator wire with all plastic main and service piping per the Construction Standards. Plastic service lines that do not have existing locator wire shall be replaced with a new service line with locator wire.

B. Contractor shall connect wire to existing locator wire where present. Do not connect wire to any existing steel gas mains or services. Connect wire utilizing a direct bury splice kit.

3.16 CATHODIC PROTECTION, ANODES AND TEST STATIONS

A. Contractor shall replace damaged anodes and test stations and install new magnesium anodes and test stations at points designated on the Drawings per City Utilities Standards. The Inspector shall be present when test stations are installed.

B. Contractor shall connect test wires and anode wires to the gas line by thermite welding (cadwelding) in accordance with City Utilities Construction Standards. Maximum charge to be utilized in the thermite welding procedure shall be 15 grams. Any procedure which is deemed harmful to the gas line will not be permitted. Fast quenching with water to achieve a quick cool down is not permitted.

C. Cutting of the steel portion of "Anodeless" risers is not allowed.

D. Contractor shall coat the thermite welded area per City Utilities Construction Standards.

3.17 PRESSURE TESTING

A. NEW INSTALLATIONS

1. Contractor shall subject all new piping installed to an air or nitrogen pressure test unless otherwise specified in the Contract Documents. Contractor shall provide all material and equipment required for pressure testing.

2. Contractor shall provide a liquid filled or digital gauge that has increments of 2 psi or less. The gauge shall be calibrated and accurate to within one percent. Contractor shall provide pressure gauge calibration logs upon request of the Inspector.

3. Contractor shall test all mains to be operated at 60 psig or less at 90 psig for a minimum of one hour or as directed on the Drawings or standards.

4. Contractor shall test all services at 90 psig for a minimum of fifteen minutes. Long or larger services may require additional time, per Construction Standards.

5. Inspector shall determine acceptability of all pressure tests.

B. FINAL TIE-INS: Soap test all final connections which cannot be air-pressure tested after the tie-in section is pressurized with gas.

C. Inspector may also test any of the work after it is pressurized with gas leak detecting equipment.

D. LEAKAGE: If any of the above described tests on new installations result in leakage, the defective pipe, joint or fitting shall be located and repaired, and tests shall be made again after the correction is made.

3.18 PRESSURE CONTROL WORK:

A. TAPPING AND STOPPING OF STEEL MAINS

1. All steel mains shall be tapped or stopped using the appropriate pressure control fitting.

2. Contractor shall furnish all equipment and labor required to place equipment and materials in advance of and as needed by City Utilities Pressure Control personnel, including digging, hoisting, bolting and welding. City Utilities shall be responsible for welding on all pressure control fittings unless indicated otherwise in the Bid Documents.

3. City Utilities Pressure Control personnel shall provide labor and equipment to make the tap or stoppling on 12" diameter and smaller piping with pressure 150 psig or less. When tapping or stoppling work is to be performed on mains larger than 12" or on mains operating above 150 psig, Contractor shall secure the services of an approved company to perform the operations. A list of approved companies is available from Resident Engineer.

B. SQUEEZE-OFF OF POLYETHYLENE (PLASTIC) MAINS AND SERVICES

Contractor shall provide all necessary tools and labor to squeeze-off new and existing plastic mains and service, utilizing procedures as prescribed in Section 3.14.

C. Operations of Main Line Gas Valves:

City Utilities shall operate all main line gas valves as required in coordination with Contractor's work.

D. PURGING

1. All mains shall be purged of air after a satisfactory pressure test is completed.

2. Contractor shall install all necessary fittings for purging.

3. City Utilities shall provide all necessary labor for purging all mains.

E. NOTICE REQUIRED

1. Contractor shall coordinate the sequencing of all required Pressure Control work with the Inspector.

2. A 48-hour advance notice is required for any Pressure Control operation.

3. All tapping and stoppling operations shall be scheduled to commence in the morning hours so that work can be completed during the normal City Utilities work day. Tapping and stoppling operations will not begin after 12:00 noon.

3.19 CONTINUITY OF SERVICE

A. Contractor shall follow direction of the Inspector to maintain a maximum degree of continuous service to City Utilities' customers.

B. Service shall not be interrupted overnight unless special arrangements are made with the involved customers by Contractor.

C. Once Contractor has begun a specific procedure which requires an interruption of service, Inspector shall have the authority to require the Contractor to work continuously until said service is restored at no additional charge.

D. Contractor shall notify customers 24 hours in advance of service interruptions.

3.20 RESTORATION OF SERVICE

City Utilities will be responsible for relighting of all gas services. Contractor shall coordinate this work and give immediate notice to the Inspector whenever a service is ready to be relighted.

3.21 RETIRED GAS MAIN AND SERVICES

A. Other than minimum lengths as shown on the drawing and where retired gas main conflicts with the installation of this projects' improvements, Contractor may leave retired gas main in place. All retired gas mains shall have the ends plugged or sealed with caps or foam sealant, as approved by the Inspector.

B. When necessary to complete installation of this project's improvements, or otherwise at Contractor's discretion, Contractor shall remove and dispose of retired gas mains and services. The affected area shall be backfilled and restored per Contract requirements and meet all jurisdictional agency requirements. No additional charge shall be made by Contractor for any work associated with removal of pipe.

C. All other retired valves and fittings shall be retired below grade per the Construction Standards, unless noted for removal.

3.22 PIPING WITH ASBESTOS COATING REPAIRS, DEMOLITION, AND DISPOSAL

Contractor is being made aware that work on piping with asbestos material within the coating of the pipe is governed by OSHA regulations and that compliance with OSHA regulations is the sole responsibility of the Contractor. Work on pipe with asbestos coating shall only be performed by OSHA trained personnel overseen by a "competent person" as defined by OSHA. Contractor shall be or retain a Registered Asbestos Contractor with the Missouri Department of Natural Resources. Additionally, all work shall be in accordance with EPA's *National Emission Standards for Hazardous Air Pollutants (NESHAP),* EPA's *Governmental Employee Worker Protection Rule, and Missouri DNR's Air Asbestos Rule*.

A. EXCAVATION: When excavating a gas pipe with asbestos coating, take precautions to prevent the backhoe teeth from scraping or gouging the pipe. Use a spotter to warn when the pipe is first exposed. Use heavy equipment to excavate laterally down to and around the pipe, then complete the job by hand. This is especially important if the pipe is to be retired and removed.

B. PIPE PREPARATION: Piping with asbestos coatings must be kept wet at all times while cutting, scraping, chipping, or otherwise abrading the pipe coating. Water mixed with a surfactant (soap, detergent or other agent, designed to reduce surface tension of the water) must be used to wet the pipe. A Hudson type sprayer shall be used to apply the solution. The solution shall be applied frequently to areas of the pipe coating being removed.

C. CUTTING: Piping with asbestos coating shall ***never*** be cut using a high-speed mechanical saw without first removing the coating.

D. CORING: When tapping or coring pipe with asbestos containing coating, remove all coating from the affected area prior to installing any tapping fittings on piping. A hammer or similar tool shall be used to break away large chunks of the coating from the pipe. A putty knife or similar tool shall be used to remove any remaining layers of the asphaltic coating. Plastic sheeting shall be placed beneath or beside the pipe to collect all

coating as it is removed. Treat all collected coating, dust, crumbs as asbestos waste. Once coating removal is complete, ensure that all pieces of coating are retained on the plastic sheeting, placed in plastic bags and properly disposed.

E. RETIREMENT: Unless otherwise indicated on the Drawings, all existing piping with asbestos containing coating shall be abandoned in place. "Abandon in place" pertains only to those sections that have not been moved from their location of original installation. All abandoned-in-place AC pipe shall be made locatable per one of the approved methods specified in the Construction Standards.

F. REMOVAL: Pipe sections that have been removed or disconnected from their installed position must be removed from the trench and properly disposed of. Pipe sections and fragments of coating removed from the trench must be immediately packaged for disposal and moved to a secure location. This may entail placing directly into a lined roll-off containing and/or double wrapping or bagging individual pieces of pipe and/or pipe fragments and/or coating fragments in 6-mil plastic bags or sheeting. All cost for the proper disposal of pipe and/or coatings which is removed without direction and written authorization of the Resident Engineer, shall be borne by the Contractor.

G. DECONTAMINATION: All tools and equipment used during the maintenance of piping with asbestos coating shall be thoroughly cleaned with soap, water, and disposable towels. All materials such as towels used for cleaning, gloves, or plastic sheeting that becomes contaminated with asbestos containing material shall be packaged and disposed of properly.

H. DISPOSAL: Contractor is responsible for ensuring all sections and pieces of piping with asbestos containing coating that cannot be abandoned in place are properly packaged and disposed of at a licensed solid waste landfill approved by City Utilities. This also includes any coating debris collected. Prevent damage to the coating when transporting pipe sections. Frayed coating edges must be wrapped in plastic or secured with duct tape. The pipe length should be limited to 20 feet, or as dictated by the disposal Contractor. Do not transport pipe with loose coating unless it is adequately wrapped in plastic. If desired, City Utilities will provide guidance to the Contractor on the landfill's waste approval process. However, costs for disposal are borne by the Contractor, unless otherwise indicated on the Drawings or in these Specifications. Contractor will document disposal by providing to City Utilities the waste manifest(s) signed and returned to the Contractor by the landfill representative.

I. REPORTING: Contractor is responsible to report to City Utilities information necessary for reporting compliance to Missouri Department of Natural Resources. Contractor shall supply the name of the competent person who is performing any work on the pipe or any pipe removal, transport and disposal. The contractor shall provide the name and location of the disposal facility. This information shall be submitted to City Utilities Environmental Affairs at least 20 days prior to work on the pipe.

END OF SECTION

SECTION 02700

PAVING AND SURFACING

PART I GENERAL

1.01 DESCRIPTION: Includes, but is not limited to, pavement replacement in streets, driveways and sidewalks. Pavement repairs required due to potholing for utilities are to be performed per this Specification and are considered inclusive in the per foot pipe prices established in the contract.

1.02 RELATED WORK SPECIFIED ELSEWHERE: Excavation and Backfilling; Section 02315.

PART II MATERIALS AND EQUIPMENT

2.01 Meet appropriate jurisdictional agency paving standards.

PART III EXECUTION

3.01 GENERAL PAVING REPLACEMENT

A. All paving replacements and associated costs are the sole responsibility of the Contractor. Paving must be restored according to the appropriate jurisdictional agency's requirements and be performed to their satisfaction.

B. When trench excavations are made on private property, parking lots or driveways, backfill immediately with compacted granular material according to excavation Specifications to restore access. Install a smooth final repair of like material within 30 days of the trench backfill.

C. Install a smooth temporary patch across streets the same day as the trench is backfilled. Final repair shall be completed within 30 days of the trench being backfilled.

3.02 PAVING AND SURFACING

Existing sidewalks, sidewalk ramps or driveways shall be removed to the nearest contraction or isolation joint, unless otherwise approved by the appropriate jurisdictional agency. The curb and gutter section in front of a driveway (radius point to radius point) shall be saw cut full depth and removed before the driveway is constructed. Any curb and gutter damaged by Contractor's operation outside the radius points during this removal and/or reconstruction shall also be removed and replaced accordingly at the Contractor's expense. Any damage to the existing street shall be the responsibility of the Contractor.

3.3 REGULATORY COMPLIANCE

Comply with all applicable jurisdictional requirements.

END OF SECTION

SECTION 02900

LANDSCAPING

PART 1 GENERAL

1.01 DESCRIPTION: Includes, but is not limited to, the items listed below.

A. Performing preliminary cleanup.

B. Planting bushes, trees or plants.

C. Applying topsoil to disturbed areas on right-of-way and easements.

D. Hydraulic seeding of disturbed areas.

E. Cultivation and drilling of disturbed pasture or cropland areas.

F. Re-seeding during specified seeding windows.

G. All disturbed areas to be restored to as good as or better than original condition.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Excavation and Backfilling; Section 02315.

B. Demolition and Clearing; Section 02220.

PART II MATERIALS AND EQUIPMENT

2.01 TOPSOIL

A. Fertile, friable soil of loamy character, free of sub-soil, stumps, refuse and other foreign material.

B. Normal amount of natural humus and reasonably free of roots, hard dirt, heavy or stiff clay, coarse sand, noxious weeds, noxious weed seeds, sticks, brush and other litter.

C. Obtained from well-drained, arable land and be of an even texture.

D. Not infested with nematodes or with any other noxious animal life or toxic substances.

E. Sandy loam of low fertility, even though mixed with leaf mold, manure or other fertilizers is not acceptable.

2.02 GRASS SEED

A. Clean, dry new crop seed.

B. Provide grass seed for established areas in a blend as specified below, unless directed otherwise by the landowner or Inspector:

1. 75% by weight of a three-way blend (equal parts) of turf fescues, consisting of any three of the following varieties: Olympic, Falcon, Bonanza, Rebel, Hound Dog, Astro 2000, Eldorado, Wrangler, FineLawn One, Anthem or Apache.

2. 15% by weight of Perennial Rye, consisting of one or more of the following varieties: Affinity, Derby, Regal, Manhattan or Chateau.

3. 10% by weight of Bluegrass, consisting of either Kentucky Bluegrass, Park Bluegrass or both.

4. Purity 98%.

5. Germination 85%.

C. Complies with standards of the Official Seed Analysis of North America.

D. Recommended for full sun exposure in Springfield, Missouri.

E. Seed shall be free from Johnson Grass, Canadian Thistle or field bind weed seed.

2.03 FERTILIZER

Provide a mixture containing 13 pounds each of soluble nitrogen, phosphate and potash per 100 pounds.

2.04 MULCH FOR HYDRAULICALLY SEEDED AREAS

Provide a mixture of 50% recycled slick paper mulch and 50% ground corrugated paper mulch by weight. The recycled slick paper mulch shall be produced from printers' slick paper containing wood cellulose and kaolin clay. Newsprint is not allowed. The slick paper mulch shall have a maximum moisture content of 8% by weight and shall have a pH of 4.5 to 6.5. The corrugated paper mulch shall have a moisture capacity of 700 grams water per 100 grams dry mulch minimum, a dry moisture content of 12% maximum, and a pH of 5.0 to 8.0. All mulch materials must be free of any germination or growth-inhibiting substances, green in color, and have the property of being evenly dispersed and suspended when agitated in water.

Clean wheat straw shall be applied over the hydraulic mulch.

2.05 SOD

Sod shall be placed at the locations indicated on the plans. At locations where sod is not indicated, seeding and/or landscaping shall be placed, as indicated herein. In the event the CU inspector designates an area is required to be sodded that has not been indicated on the plans to be sodded, the Contractor shall be compensated for sodding per the alternate unit bid item indicated.

The first row of sod shall be laid in a straight line, with subsequent rows placed parallel to and tightly against each other. Lateral joints shall be staggered to promote more uniform growth and strength. Care shall be exercised to avoid stretching or overlapping the sod and to ensure that all joints are butted tight in order to prevent voids which would cause air drying of the roots.

During periods of higher than optimal temperature and after all unevenness in the soil surface has been corrected, the soil shall be lightly moistened immediately prior to laying the sod. The Contractor shall water sod immediately after transplanting to prevent excessive drying. As sodding is completed in any one section, the entire area shall be rolled. It shall then be watered to a sufficient depth to thoroughly wet the underside of the new sod pad and the soil immediately below the sod. Staking of sod on slopes will be optional; however, the Contractor shall be solely responsible for replacing sod displaced by erosion or other causes.

Upon meeting the requirements previously indicated for placement of sod, the Contractor shall utilize the Long-Term Care Agreement in Attachment B and obtain acceptance and signature from the respective property owner. A copy of the signed form shall be submitted to City Utilities.

PART III EXECUTION

3.01 PRELIMINARY CLEANUP

Clear disturbed areas, including those disturbed by trenching, storing of dirt, pipe laying, pipe storage, movement of equipment and other work of all rubbish, brush, rock, trash and excess dirt in a timely manner as soon as the ditch is backfilled, depending upon existing conditions and level of public concern. This may be required as often as daily. Rake surface as necessary to remove all above items, including all rock measuring two inches or more in its greatest dimension. In pasture and cropland areas, remove all above items in a timely fashion. Tractor-drawn equipment, including rock rakes and steel roller drum are allowed.

Project Construction Phasing: Each project, section, and/or area shall be worked in manageable segments, to minimize the duration of neighborhood inconvenience. The project shall be constructed per the phasing plan indicated on the drawings. In the absence of a phasing plan, these segments should be discussed with, and agreed upon with the CU Inspector at the onset of the Project and will end at normal breaking points in the flow of work, such as tie-ins and blow-offs when possible."

3.02 PLANTING

Contractor shall replace individual trees, plants and shrubs as necessary or as directed by the Inspector. Plant in accordance with "Planting Trees and Shrubs" by the University of Missouri - Columbia Extension Division (Publication No. 6850). Replacement trees, plants and shrubs shall be nursery grown and of the same type, strain, size and value as those removed. Plant replacement trees, plants and shrubs as soon as possible after installation of mains, with due consideration given to optimal times of the year to plant the given species.

3.03 APPLICATION OF TOPSOIL

Established lawn and parkway areas

After preliminary cleanup has been performed, apply topsoil meeting the requirements of PART II, MATERIALS AND EQUIPMENT to a minimum depth of four inches to disturbed areas. Pulverize topsoil and grade to match existing terrain. Rake surface smooth for sod or to provide a good seedbed for hydraulic seeding as specified below.

3.04 SEEDING

Perform initial seeding as soon as practical after preliminary cleanup and application of topsoil. Restore all disturbed areas, except for pasture and cropland, by hydraulic seeding. Seeding windows are specified as follows: Perform autumn seeding between August 15 and October 15, and spring seeding between March 15 and May 15. If initial seeding is performed within either of the specified seeding windows, the only additional work required of the Contractor shall be warranty work. When seeding outside a normal seeding window quick germinating seed shall be used such as winter wheat or perennial rye to establish ground cover. Contractor may be required to provide and install erosion control blankets to protect these areas. Re-seeding during the next earliest seeding window shall be considered part of the work if initial seeding falls outside either of the specified seeding windows. The Inspector will determine if re-seeding is required.

A. HYDRAULIC SEEDING: Mix seed, fertilizer and mulch with water and constantly agitate so that a uniform mixture can be applied hydraulically to the specified areas. Do not add the

seed to the water more than four hours before application. Calculate ratios of seed, fertilizer, mulch and water so that seed will be applied at the rate of twelve pounds minimum per 1000 square feet of area, fertilizer will be applied at the rate of eight pounds minimum per 1000 square feet of area, and mulch will be applied at the rate of 1000 pounds minimum dry weight per acre. Wet application rate of the mixture shall be 2000 pounds per acre minimum. Blow wheat straw mulch onto the hydraulic mulch within one hour of application of the hydraulic mulch.

B. RESTORATION OF DISTURBED PASTURE AND CROPLAND AREAS

1. SEED BED PREPARATION: Tillage - prepare a seed bed by use of tillage operations that leaves a seed bed free of weeds. Leave the vegetative material destroyed by such operations on the surface. Several diskings or harrowings over same area may be required to provide a satisfactory seedbed.

2. SEEDING METHOD: DRILLING: Plant the recommended seed with a grass drill equipped with double coulter furrow openers with depth bands and press wheels. Seed should be planted 1/4" to 1/2" deep. Cultipacking is required following seeding.

3. FERTILIZER REQUIREMENTS: Apply fertilizer at the rate 8 pounds minimum per 1,000 square feet.

4. SEEDING RATES AND MIXTURE: Apply seed grass(es) at the rate (pure live seed or bulk seed per acre) of 30 lb/acre, or as recommended by the seed supplier.

5. Where permanent seeding must be delayed due to seasonal seeding or climate conditions, quick germinating seed such as winter wheat or perennial rye will be applied. Contractor may be required to provide erosion control blanket to provide protection to the disturbed areas until vegetation can be established. Subsequently drill temporary cover with no-till methods to establish permanent crop cover.

C. RESTORATION OF SLOPES: When areas with slopes 3:1 or greater are restored a biodegradable erosion control blanket shall be installed over the seedbed to protect the slope (Propex CS2 or approved equal). Contractor shall supply the fabric and staples and install per manufacturer’s recommendations.

END OF SECTION

SECTION 03200

CONCRETE REINFORCEMENT

PART I GENERAL

1.01 Furnish all labor, materials and equipment necessary to complete the work as specified in this Section.

1.02 Comply with the provisions of the Concrete Reinforcing Steel Institutes "Manual of Standard Practice" unless more stringent requirements are shown.

PART II MATERIALS AND EQUIPMENT

2.01 Reinforcing bars will be sized according to the plans and will be ASTM A615, Grade 60, deformed bars.

2.02 Steel wire will be plain, cold-drawn and will conform to ASTM A82.

2.03 Use bolsters, chairs, spacers or other devices for spacing, supporting and fastening the reinforcing bars in place.

PART III EXECUTION

3.01 The reinforcement will be fabricated to the shapes and dimensions shown and placed where indicated. Lap splices will be made in conformance with ACI Standard 318.

3.02 The reinforcement will be free from all substances that would reduce or destroy the bond. After a substantial delay, steel left exposed will be inspected and cleaned.

3.03 Reinforcement detailing and placement, including concrete protection for steel reinforcement, unless otherwise indicated, will conform to ACI Standards 318 and 315 and will match reinforcement as shown on the Drawings.

3.04 Wire mesh reinforcement will be continuous between crack-control joints in slabs-on-grade. Laps will be at least one full mesh, staggered in both directions, and secured with wire or standard clips. Wire mesh will extend to within 2 inches of joints but not through joints.

3.05 Supports will be installed and intersections of reinforcement securely tied with steel wire to limit displacement to the tolerances permitted by ACI Standard 315. The number, type and spacing of supports will conform to ACI Standard 315, unless otherwise indicated.

3.06 Reinforcement for slabs-on-grade will be supported on precast concrete blocks. Size and spacing of blocks will be as required to provide firm support and the clearance specified or indicated. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces.

3.07 Reinforcement and other fixed metal items shall not be continuous through expansion or control joints.

END OF SECTION

SECTION 03300

CONCRETE

PART I GENERAL

1.01 DESCRIPTION

This Section covers all cast-in-place concrete, including reinforcing steel, forms, finishing and other appurtenant work for thrust blocks, thrust collars and other items shown on the Drawings. Also see Section 03200, Concrete Reinforcement.

1.02 RELATED WORK DESCRIBED ELSEWHERE

Water Piping, Section 02510.

PART II MATERIALS AND EQUIPMENT

2.01 MATERIALS

Cement	ASTM C150, Type I or ASTM C715, Type IA.
Fine Aggregate	Clean natural sand, ASTM C33.
Coarse Aggregate	Crushed rock, washed gravel or other inert granular material conforming to ASTM C33.
Water	Potable
Reinforcing Steel Bars	ASTM A615, Grade 60

2.02 PRELIMINARY REVIEW

Submit the source and quality of concrete materials and the concrete mix along with test data proposed for the work to the Inspector for review, before any concrete is placed.

2.03 SLUMP

Keep concrete slump as low as possible consistent with proper handling and thorough compaction. Unless otherwise authorized by the Inspector, slump shall not exceed 4 inches except for flowable fill. Add no water to mix after the slump test without approval by Resident Engineer.

2.04 STRENGTH

The minimum acceptable compressive strengths as determined by ASTM C39 shall be as follows:

Age	Minimum Strength
7 days	2500 psi
28 days	3750 psi

Very high early strength concrete shall achieve a 2500 psi compressive strength within 3 hours. Contractor shall submit mix design for high early strength concrete to Inspector for review prior to placement along with compressive strength documentation.

Flowable fill compressive strength shall be demonstrated by failure to deform or crush under foot traffic.

2.05 STORAGE OF MATERIALS

Store cement in suitable moisture proof enclosures. Do not use cement which has become caked or lumpy. Store aggregates so that segregation and the inclusion of foreign materials are prevented. Do not use the bottom 6 inches of aggregate piles in contact with the ground.

Reinforcing steel shall be carefully handled and shall be stored on supports which will keep the steel from contact with the ground.

2.06 REINFORCEMENTS

Reinforcements shall be accurately formed and shall be free from loose rust, scale and contaminants which reduce bond.

PART III EXECUTION

3.01 BATCHING AND MIXING

Furnish concrete from an acceptable ready-mix concrete supplier or mix at the site. Concrete shall at a minimum conform to ASTM C94.

3.02 PLACING CONCRETE

Thrust blocks and thrust collars shall be placed between solid, undisturbed earth and the fitting or piping to be anchored. Thrust blocks shall be so placed that the pipe and joints will be accessible for repair and installed per Construction Standards. The minimum compressive strength for the concrete shall be achieved prior to relying on the concrete for any thrust restraint. The use of very high early strength concrete is permissible for installations where time constraints exist.

When the Drawings call for flowable fill or Contractor wishes to utilize flowable fill in lieu of compacted backfill, no additional payment will be made. Contractor shall make requests to utilize flowable fill to the Resident Engineer. Flowable fill mix and placement shall conform to Specifications of local jurisdictional agency or at a minimum the Missouri Standards Specifications for Highway Construction latest edition.

3.03 FINISHING

No surface treatment will be required for buried concrete not forming an integral part of a structure except that required to obtain the surface elevations or contours and surfaces free of laitance.

3.04 INSPECTION

No concrete shall be covered until installation has been approved by City Utilities.

3.05 REPAIR OF DEFECTIVE WORK

In the event that concrete installation is found to be sub-standard, the Contractor shall be required to remove and replace installation with proper materials and execution.

END OF SECTION

ATTACHMENT A

REQUIRED FORMS & AFFIDAVITS

- NATURAL GAS PIPE FUSION AFFIDAVIT (1 page)

Revision Date: June 28, 2019

STATE OF MISSOURI)
) SS.
COUNTY OF GREENE)

NATURAL GAS PIPE FUSION AFFIDAVIT

Before me, the undersigned authority, personally appeared _____ who, being by me duly sworn, deposed as follows:
(Name)

1. I am of sound mind, capable of making this affidavit, and personally acquainted with the facts herein stated.

2. I am the _____of _____;
(Title) (Name of Company)

3. All requirements of Section 02550 of City Utilities Technical Specifications have been fully satisfied with regard to this company's work on _____;
(Name of Project)

4. I have reviewed and am familiar with City Utilities requirements for verifying that all equipment used for heat fusion of polyethylene pipe has been maintained in accordance with PHMSA part 192.756; Based on my knowledge of these requirements per the federal statute, I have validated that full and accurate maintenance has been performed per the manufacturer's guidelines or validated written procedure attached for all heat fusion equipment used on this project.

5. 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 570.090, 575.040, 575.050, 575.060, RSMo.

_____
Affiant

In witness whereof, I have hereunto subscribed my name and affixed my official seal this _____ day of _____, 201__.

_____
Notary Public

My commission expires:

ATTACHMENT B

OTHER FORMS

- CROSS BORE VERIFICATION FORM (3 pages)
- LONG-TERM SOD CARE AGREEMENT (1 page)

CITY UTILITIES' SEWER CROSS BORE VERIFICATION FORM

PROJECT NAME _____

CONTRACTOR _____

JOBSITE SUPERINTENDANT _____

CAMERA INSPECTIONS PREFORMED BY _____

City Utilities℠
Connecting Our Community

		VISUAL INSPECTION		CAMERA INSPECTION			
Property Address	Bore Depth (ft./in.)	Sewer Depth (ft./in.) or N/A	Sewer Depth > 2' Below Bore Depth or N/A	Date of Pre-Inspection (Optional)	Date of Post-Inspection	Inspection & Confirmation Results	Confirmed By Intialed

		VISUAL INSPECTION		CAMERA INSPECTION			
Property Address	Bore Depth (ft./in.)	Sewer Depth (ft./in.) or N/A	Sewer Depth > 2' Below Bore Depth or N/A	Date of Pre-Inspection (Optional)	Date of Post-Inspection	Inspection & Confirmation Results	Confirmed By Intialed

STATE OF MISSOURI)
) SS.
COUNTY OF GREENE)

AFFIDAVIT

Before me, the undersigned authority, personally appeared _____ who, being by me duly sworn, deposed as follows:
(Name)

1. I am of sound mind, capable of making this affidavit, and personally acquainted with the facts herein stated.

2. I am the_____of _____;
(Title) (Name of Company)

3. All requirements of 319.037 RSMo and Section 02410 of City Utilities Technical Specifications have been fully satisfied with regard to this company's work on _____;
(Name of Project)

4. I have reviewed and am familiar with City Utilities requirements for verifying that cross bores are prevented; Based on my knowledge of these requirements and state statute, I have completed full and accurate records on the City Utilities Cross Bore Verification Form clearly indicating the visual or camera inspection results of all sewer locations crossed by tunneling during this project.

5. 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 570.090, 575.040, 575.050, 575.060, RSMo.

_____
Affiant

In witness whereof, I have hereunto subscribed my name and affixed my official seal this _____ day of _____, 201__.

_____
Notary Public

My commission expires:

Revision Date: June 28, 2019

LONG-TERM SOD CARE AGREEMENT

_____ ("Contractor"), under contract to City Utilities of Springfield, Missouri, agrees that it will sod the areas of my property at _____ (Address) disturbed by City Utilities' construction project instead of seeding those areas, as is typically done. In exchange, I agree that I will be solely responsible for taking care of the sod and I accept the state upon which the sod was installed. This will include, but not be limited to, watering and fertilizing the sodded areas. I agree that if the sod dies or weeds grow in the restored areas, that neither City Utilities of Springfield nor Contractor, will be responsible for replacement of sod, re-sodding, re-seeding, or any other corrective action.

Date_____ _____

Signature

_____

Name (please print)

ATTACHMENT A

GENERAL CONDITIONS

Revised 8-2016

CITY UTILITIES OF SPRINGFIELD MISSOURI
GENERAL CONDITIONS

TABLE OF CONTENTS

CITY UTILITIES OF SPRINGFIELD, MISSOURI

ARTICLE 1 - DEFINITIONS

Whenever used in these General Conditions or in the other Contract Documents, the following terms have the meanings indicated which are applicable to both the singular and plural thereof:

AGREEMENT - The written agreement between CITY UTILITIES and CONTRACTOR covering the Work to be performed; other Contract Documents are attached to and made a part of the Agreement, including these General Conditions.

APPLICATION FOR PAYMENT - The form furnished by RESIDENT ENGINEER which is to be used by CONTRACTOR in requesting progress payments and which is to include the schedule of values required by paragraph 14.1 and an affidavit of CONTRACTOR that progress payments theretofore received on account of the Work have been applied by CONTRACTOR to discharge in full all of CONTRACTOR'S obligations reflected in prior Applications for Payment.

BAFO—The best and final offer of the Contractor that is in response to the Request for BAFO.

BID - The offer or proposal of the Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

BIDDER - Any person, firm or corporation submitting a Bid for the Work.

BONDS - Bid, performance and payment bonds and other instruments of security, furnished by CONTRACTOR and his surety in accordance with the Contract Documents.

CITY UTILITIES - The City Utilities of Springfield, Missouri, 301 East Central, Springfield, Missouri; the Board of Public Utilities of the City of Springfield, Missouri; the City of Springfield, Missouri, a municipal corporation; also referred to as OWNER.

CHANGE ORDER - A written order to CONTRACTOR signed by CITY UTILITIES authorizing an addition, deletion or revision in the Work, or an adjustment in the Contract Price or the Contract Time issued after execution of the Agreement.

CONTRACT DOCUMENTS – The entire agreement shall consist of the Contract Documents. The Contract Documents are the Modifications, Agreement, BAFO, Request for BAFO, Addenda, Special Conditions, Specifications, Drawings, Document Submittals, Bid Form, General Conditions, Performance Labor and Materials Bond, Instructions to Bidders, Invitation to Bid, and the Response to the RFP (but not the exceptions). There will not be a BAFO or Request for BAFO if City Utilities accepts the Response to RFP without change. There will be no contract between the parties unless and until City Utilities issues a Notice of Award accepting the BAFO or Response to RFP and the parties sign the Agreement. **EXCEPTIONS IN THE RFP WILL NOT BE PART OF THE CONTRACT DOCUMENTS UNLESS INCORPORATED INTO THE AGREEMENT OR A MODIFICATION.**

CONTRACT PRICE - The total moneys payable to CONTRACTOR under the Contract Documents.

CONTRACT TIME - The number of days stated in the Contract Documents for the completion of the Work.

CONTRACTOR - The person, firm or corporation with whom CITY UTILITIES has executed the Agreement.

DAY - A calendar day of twenty-four hours measured from midnight to the next midnight.

DRAWINGS - The drawings which show the character and scope of the Work to be performed and are referred to in the Contract Documents.

ENGINEER - See "RESIDENT ENGINEER"

FIELD ORDER - A written order issued by RESIDENT ENGINEER which clarifies or interprets the Contract Documents in accordance with paragraph 9.3 or orders minor changes in the Work in accordance with paragraph 10.2.

INSPECTOR - The City Utilities representative who reports to the Resident Engineer as to whether the Work performed by the CONTRACTOR meets the requirements of the Contract Documents.

MODIFICATION - (a) A written amendment of the Contract Documents signed by both parties, (b) a Change Order, (c) a written clarification or interpretation issued by RESIDENT ENGINEER in accordance with paragraph 9.3 or (d) a written order for a minor change or alteration in the Work issued by RESIDENT ENGINEER pursuant to paragraph 10.2. A Modification may only be issued after execution of the Agreement.

NOTICE OF AWARD - The written notice by CITY UTILITIES to the apparent successful Bidder stating that upon compliance with the conditions precedent to be fulfilled by him within the time specified, CITY UTILITIES will execute and deliver the Agreement to him.

NOTICE TO PROCEED - A written notice given by CITY UTILITIES to CONTRACTOR fixing the date on which the Contract Time will commence to run and on which CONTRACTOR shall start to perform his obligations under the Contract Documents. The Purchase Order shall serve as the Notice to Proceed.

OWNER - See CITY UTILITIES.

PROJECT - The entire Work to be performed by CONTRACTOR as provided in the Contract Documents.

PROJECT MANAGER - CITY UTILITIES' representative, responsible for the preparation of the Contract Documents, Contract Administration and Contract Close-out.

PROPOSAL - See BID.

REQUEST FOR BAFO—The document issued by City Utilities that incorporates the terms negotiated by the parties following the opening of the Response to RFP and requests Contractor to make his best and final offer.

RESIDENT ENGINEER - The person, usually a Registered Professional Engineer, designated by CITY UTILITIES as its representative for all contractual dealings with the CONTRACTOR as set forth in Article 9.

SHOP DRAWINGS - All drawings, diagrams, illustrations, brochures, schedules and other data which are prepared by CONTRACTOR, a Subcontractor, manufacturer, supplier or distributor and which illustrate the equipment, material or some portion of the Work.

SPECIFICATIONS - Those portions of the Contract Documents consisting of written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the Work.

SUBCONTRACTOR - An individual, firm or corporation having a direct contract with CONTRACTOR or with any other Subcontractor for the performance of a part of the Work at the site.

SUBSTANTIAL COMPLETION - The date as certified by RESIDENT ENGINEER when the construction of the Project or a specified part thereof is sufficiently completed, in accordance with the Contract Documents, so that the Project or specified part can be utilized for the purposes for which it was intended; or if there be no such certification, the date when final payment is due in accordance with paragraph 14.10.

SUPPLIER - An individual, firm or corporation having a direct contract with CONTRACTOR for the supply of any equipment or materials used in performance of the Work.

WARRANTY REPAIR ITEMS - Items which have been installed and become functional but have subsequently failed. Also, items which have performed in accordance with the provisions of the plans and specifications but require remedial action within the terms of the warranty period herein.

WORK - Any and all obligations, duties, and responsibilities necessary to the successful completion of the Project assigned to or undertaken by CONTRACTOR under the Contract Documents, including all labor, materials, equipment and incidentals, and the furnishing thereof.

ARTICLE 2 - PRELIMINARY MATTERS

EXECUTION OF AGREEMENT:

2.1 At least three counterparts of the Agreement and such other Contract Documents as practicable will be executed and delivered by CONTRACTOR to CITY UTILITIES within ten (10) days of the Notice of Award and CITY UTILITIES will execute and deliver one counterpart to CONTRACTOR within ten (10) days of receipt of the executed Agreement from CONTRACTOR.

DELIVERY OF BONDS:

2.2 When he delivers the executed Agreements to CITY UTILITIES, CONTRACTOR shall also deliver to CITY UTILITIES such Bonds and certificates of insurance as he may be required to furnish in accordance with paragraph 5.1.

COPIES OF DOCUMENTS:

2.3 CITY UTILITIES shall furnish to CONTRACTOR up to ten (10) copies (unless otherwise provided) of the Contract Documents as are reasonably necessary for the execution of the Work. Additional copies will be furnished, upon request, at the cost of reproduction.

CONTRACTOR'S PRE-START REPRESENTATIONS:

2.4 CONTRACTOR represents that he has familiarized himself with, and assumes full responsibility for having familiarized himself with, the nature and extent of the Contract Documents, Work, locality, and with all local conditions and federal, State, and local laws, ordinances, rules and regulations that may in any manner affect performance of the Work, and represents that he has correlated his study and observations with the requirements of the Contract Documents. CONTRACTOR also represents that he has studied all surveys and investigation reports of subsurface and latent physical conditions referred to in the General Requirements (Division 1) of the Specifications and made such additional surveys and investigations as he deems necessary for the performance of the Work at the Contract Price in accordance with the requirements of the Contract Documents and that he has correlated the results of all such data with the requirements of the Contract Documents.

NOTICE TO PROCEED; COMMENCEMENT OF CONTRACT TIME:

2.5 The Contract Time will commence to run on the day indicated in the Notice to Proceed. The Notice to Proceed will be issued after acceptable certificates of insurance and performance bonds have been received and after the Agreement is executed by CITY UTILITIES. A copy of the executed Agreement will be furnished to the CONTRACTOR with the Notice to Proceed.

STARTING THE PROJECT:

2.6 CONTRACTOR shall start to perform his obligations under the Contract Documents within ten (10) calendar days after Notice to Proceed.

BEFORE STARTING CONSTRUCTION:

2.7 Before undertaking each part of the Work, CONTRACTOR shall carefully study and compare the Contract Documents and check and verify pertinent figures shown thereon and all applicable field measurements. He shall at once report in writing to RESIDENT ENGINEER any conflict, error or discrepancy which he may discover.

2.8 Within ten (10) days after delivery of the executed Agreement by CITY UTILITIES to CONTRACTOR, CONTRACTOR shall submit to RESIDENT ENGINEER for review, an

estimated progress schedule indicating the starting and completion dates of the various stages of the Work, and a preliminary schedule of Shop Drawing submissions.

2.9 Before starting the Work at the site, CONTRACTOR shall furnish CITY UTILITIES certificates of insurance as required by Article 5.

ARTICLE 3 - CORRELATION, INTERPRETATION; AND INTENT OF CONTRACT DOCUMENTS

3.1 It is the intent of the Specifications and Drawings to describe a complete Project to be constructed in accordance with the Contract Documents. The Contract Documents comprise the entire Agreement between CITY UTILITIES and CONTRACTOR. They may be altered only by a Modification.

3.2 The Contract Documents are complementary; what is called for by one is as binding as if called for by all. If CONTRACTOR finds a conflict, error or discrepancy in the Contract Documents, he shall call it to RESIDENT ENGINEER's attention in writing at once and before proceeding with the Work affected thereby; however, he shall not be liable to CITY UTILITIES for his failure to discover any conflict, error or discrepancy in the Specifications or Drawings. In resolving such conflicts, error or discrepancies, the documents shall be given precedence in the following order (listed in order from highest to lowest precedence): Modifications, Agreement, BAFO, Request for BAFO, Addenda, Special Conditions, Specifications, Drawings, Document Submittals, Bid Form, General Conditions, Performance Labor and Materials Bond, Instructions to Bidders, Invitation to Bid, and Response to RFP (but not the exceptions). There will not be a BAFO or Request for BAFO if City Utilities issues a Notice of Award accepting the Response to RFP without change. Figure dimensions on Drawings shall govern over scale dimensions, and detailed Drawings shall govern over general Drawings. Any Work that may reasonably be inferred from the Specifications or Drawings as being required to produce the intended result shall be supplied whether or not it is specifically called for. Work, materials or equipment described in words which so applied have a well-known technical or trade meaning shall be deemed to refer to such recognized standards.

ARTICLE 4 - AVAILABILITY OF LANDS; PHYSICAL CONDITIONS; AND REFERENCE POINTS

4.1 CITY UTILITIES shall furnish, as indicated in the Contract Documents and not later than the date when needed by CONTRACTOR, the lands upon which the Work is to be done, rights-of-way for access thereto, and such other lands which are designated for the use of CONTRACTOR. Easements for permanent structures or permanent changes in existing facilities will be obtained and paid for by CITY UTILITIES unless otherwise specified in the Contract Documents. If CONTRACTOR believes that any delay in CITY UTILITIES furnishing these lands or easements entitles him to an extension of the Contract Time, he may make a claim therefore as provided in Article 12. CONTRACTOR shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

PHYSICAL CONDITIONS - SURVEYS AND REPORTS:

4.2 Reference is made to the General Requirements (Division 1) of the specifications for identification of those surveys and investigation reports of subsurface and latent physical conditions at the Project site or otherwise affecting performance of the Work which have been relied upon by CITY UTILITIES in preparation of the Drawings and Specifications.

UNFORESEEN PHYSICAL CONDITIONS:

4.3 CONTRACTOR shall promptly notify RESIDENT ENGINEER in writing of any subsurface or latent physical conditions at the site differing materially from those indicated in the Contract Documents. RESIDENT ENGINEER will promptly investigate those conditions. Promptly thereafter, CITY UTILITIES shall obtain the necessary additional surveys and tests and furnish copies to CONTRACTOR. If the results of such surveys or tests indicate that there are subsurface or latent physical conditions which differ materially from those intended in the Contract Documents, and which could not reasonably have been anticipated by CONTRACTOR, a Change Order shall be issued incorporating the necessary revisions. If CONTRACTOR fails to obtain a Change Order before proceeding with the Work, then CONTRACTOR waives all claims for an increase in the Contract Price.

REFERENCE POINTS:

4.4 CITY UTILITIES shall provide engineering surveys for construction to establish reference points which in its judgment are necessary to enable CONTRACTOR to proceed with the Work. CONTRACTOR shall be responsible for surveying and laying out the Work (unless otherwise stated herein), and protect and preserve the established reference points and shall make no changes or relocations without the prior written approval of CITY UTILITIES. He shall report to RESIDENT ENGINEER whenever any reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations. CONTRACTOR shall replace and accurately relocate all reference points so lost, destroyed or moved.

ARTICLE 5 - BONDS AND INSURANCE

PERFORMANCE, PAYMENT, AND OTHER BONDS:

5.1 CONTRACTOR shall furnish performance and payment Bonds as security for the faithful performance and payment of all his obligations under the Contract Documents. These Bonds shall be in amounts at least equal to the Contract Price, and in the form provided herein and with such sureties as are licensed to conduct business in the state of Missouri and are named in the current list of “Surety Companies Acceptable on Federal Bonds” as published in the Federal Register by the Audit Staff Bureau of Accounts, U.S. Treasury Department.

5.2 If the surety on any Bond furnished by CONTRACTOR is declared bankrupt or becomes insolvent or its right to do business is terminated or revoked in any state where any part of

the Project is located, CONTRACTOR shall within five days thereafter substitute another Bond and surety, both of which shall be acceptable to CITY UTILITIES.

CONTRACTOR'S INSURANCE REQUIREMENTS

5.3 Without limiting any of the other obligations or liabilities, the CONTRACTOR shall secure and maintain at its own cost and expense, throughout the duration of this Contract and until the Work is complete and accepted by CITY UTILITIES, insurance of such types and in such amounts as may be necessary to protect it and the interests of CITY UTILITIES 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 CITY UTILITIES. Any such insurance shall apply as primary insurance with respects to CONTRACTOR and with respects to CITY UTILITIES.

5.4 The minimum insurance coverage amounts and certificate requirement shall be as provided in DIVISION 1--GENERAL REQUIREMENTS of the Technical Specifications.

ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES

SUPERVISION AND SUPERINTENDENCE:

6.1 CONTRACTOR shall supervise and direct the Work efficiently and with his best skill and attention. He shall be solely responsible for the means, methods, techniques, sequences and procedures of construction. CONTRACTOR shall be responsible to see that the finished Work complies accurately with the Contract Documents.

6.2 CONTRACTOR shall keep on the Work at all times during its progress a competent resident superintendent, who shall not be replaced without written notice to CITY UTILITIES except under extraordinary circumstances. The superintendent will be CONTRACTOR'S representative at the site and shall have authority to act on behalf of CONTRACTOR. All communications given to the superintendent shall be as binding as if given to CONTRACTOR.

LABOR, MATERIALS, AND EQUIPMENT:

6.3 CONTRACTOR shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. He shall at all times maintain good discipline and order at the site.

6.4 CONTRACTOR shall furnish all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water and sanitary facilities and all other facilities and incidentals necessary for the execution, testing, initial operation and completion of the Work.

6.5 All materials and equipment shall be new, except as otherwise provided in the Contract Documents. If required by RESIDENT ENGINEER, CONTRACTOR shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

6.6 All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the instructions of the applicable manufacturer, fabricator or processors, except as otherwise provided in the Contract Documents.

SUBSTITUTE MATERIALS OR EQUIPMENT:

6.7 If the Specifications, law, ordinance or applicable rules or regulations permit CONTRACTOR to furnish or use a substitute that is equal to any material or equipment specified, and if CONTRACTOR wishes to furnish or use a proposed substitute, he shall make written application to CITY UTILITIES for approval of such a substitute certifying in writing that the proposed substitute will perform adequately the functions called for by the general design, be similar and of equal substance to that specified and be suited to the same use and capable of performing the same function as that specified; stating whether or not its incorporation in or use in connection with the Project is subject to the payment of any license fee or royalty; and identifying all variations of the proposed substitute from that specified and indicating available maintenance service. No substitute shall be ordered or installed without the written approval of CITY UTILITIES who will be the judge of quality and may require CONTRACTOR to furnish such other data about the proposed substitute as he considers pertinent. No substitute shall be ordered or installed without such performance guarantee and bonds as CITY UTILITIES may require which shall be furnished at CONTRACTOR'S expense.

CONCERNING SUBCONTRACTORS:

6.8 CONTRACTOR shall not employ any Subcontractor or other person or organization (including those who are to furnish the principal items of materials or equipment), whether initially or as a substitute, against whom CITY UTILITIES may have reasonable objection. A Subcontractor or other person or organization identified in writing to CITY UTILITIES by CONTRACTOR prior to the Notice of Award and not objected to in writing by CITY UTILITIES prior to the Notice of Award will be deemed acceptable to CITY UTILITIES. Acceptance of any Subcontractor, other person or organization by CITY UTILITIES shall not constitute a waiver of any right of CITY UTILITIES to reject-defective Work or Work not in conformance with the Contract Documents. If CITY UTILITIES after due investigation has reasonable objection to any Subcontractor, other person or organization proposed by CONTRACTOR after the Notice of Award, CONTRACTOR shall submit an acceptable substitute and the Contract Price shall be increased or decreased by the difference in cost occasioned by such substitution, and an appropriate Change Order shall be issued. CONTRACTOR shall not be required to employ any Subcontractor, other person or organization against whom he has reasonable objection. CONTRACTOR shall not without the consent of CITY UTILITIES make any substitution for any Subcontractor, other person or organization who has been accepted by CITY UTILITIES unless CITY UTILITIES determines that there is good cause for doing so.

6.9 CONTRACTOR shall be fully responsible for all acts and omissions of his Subcontractors and of persons and organizations directly or indirectly employed by them and of persons and organizations for whose acts any of them may be liable to the same extent that he is responsible for the acts and omissions of persons directly employed by him. Nothing in the Contract Documents shall create any contractual relationship between CITY UTILITIES and any Subcontractor or other person or organization having a direct contract with CONTRACTOR, nor shall it create any obligation on the part of CITY UTILITIES to pay or to see to the payment of any moneys due any Subcontractor or other person or organization except as may otherwise be required by law. CITY UTILITIES may furnish to any Subcontractor or other person or organization, to the extent practicable, evidence of amount paid to CONTRACTOR on account of specific Work done in accordance with the schedule of values.

6.10 The divisions and sections of the specifications and the identifications of any Drawings shall not control CONTRACTOR in dividing the Work among subcontractors or delineating the Work to be performed by any specific trade.

6.11 CONTRACTOR agrees to bind specifically every Subcontractor to the applicable terms and conditions of the Contract Documents for the benefit of CITY UTILITIES.

PATENT FEES AND ROYALTIES:

6.12 CONTRACTOR shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work of any invention, design, process, product or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product or device is specified in the Contract Documents for use in the performance of the Work and if to the actual knowledge of CITY UTILITIES its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by CITY UTILITIES in the Contract Documents. CONTRACTOR shall indemnify and hold harmless CITY UTILITIES and anyone directly or indirectly employed by either of them from and against all claims, damages, losses and expenses (including attorneys' fees) arising out of any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product or device not specified in the Contract Documents, and shall defend all such claims in connection with any alleged infringement of such rights.

PERMITS:

6.13 Unless otherwise stated in these Specifications, CONTRACTOR shall obtain and pay for all construction permits and licenses and shall pay all governmental charges and inspection fees necessary for the prosecution of the Work, which are applicable at the time of his Bid. CITY UTILITIES shall assist CONTRACTOR, when necessary, in obtaining such permits and licenses. CONTRACTOR shall also pay all utility charges.

LAWS AND REGULATIONS:

6.14 CONTRACTOR shall give all notices and comply with all laws, ordinances, rules and regulations applicable to the Work, including, without limitation, the Occupational Safety and Health Act of 1970 (OHSA) and applicable regulations of the Missouri Public Service Commission. If CONTRACTOR observes that the Specifications or Drawings are at variance therewith, he shall give CITY UTILITIES prompt written notice thereof, and any necessary changes shall be adjusted by an appropriate Modification. If CONTRACTOR performs any Work knowing it to be contrary to such laws, ordinances, rules and regulations, and without such notice to CITY UTILITIES he shall bear all costs arising therefrom; however, it shall not be his primary responsibility to make certain that the Specifications and Drawings are in accordance with such laws, ordinances, rules and regulations.

TAXES:

6.15 CONTRACTOR shall pay all sales, consumer, use and other similar taxes required to be paid by him in accordance with the law of the place where the Work is to be performed.

USE OF PREMISES:

6.16 CONTRACTOR shall confine his equipment, the storage of materials and equipment and the operations of his workmen to areas permitted by law, ordinances, permits, or the requirements of the Contract Documents, and shall not unreasonably encumber the premises with materials or equipment.

6.17 CONTRACTOR shall not load nor permit any part of any structure to be loaded with weights that will endanger the structure, nor shall he subject any part of the Work to stresses or pressures that will endanger it.

RECORD DRAWINGS:

6.18 CONTRACTOR shall keep one (1) record copy of all Specifications, Drawings, Addenda, Modifications, and Shop Drawings at the site in good order and annotated to show all changes made during the construction process. These shall be available to CITY UTILITIES and shall be delivered to the Resident Engineer upon completion of the Project. [Note: Further provisions in respect of such record drawings may be included in the General Requirements (Division 1).]

SAFETY AND PROTECTION:

6.19 CONTRACTOR shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. He shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

6.19.1 all employees on the Work and other persons who may be affected thereby,

6.19.2 all the Work and all materials or equipment to be incorporated therein, whether in storage on or off the site, and

6.19.3 other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement of property in the course of construction. CONTRACTOR shall comply with all applicable laws, ordinances, rules, regulations and orders of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury, or loss. He shall erect and maintain, as required by the conditions and progress of the Work, all necessary safeguards for its safety and protection. He shall notify owners of adjacent utilities when prosecution of the Work may affect them. All damage, injury, or loss to any property referred to in paragraph 6.19.2 or 6.19.3 caused, directly or indirectly, in whole or in part, by CONTRACTOR, any Subcontractor or anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, shall be remedied by CONTRACTOR. CONTRACTOR'S duties and responsibilities for the safety and protection of the Work shall continue until such time as all the Work is completed and CITY UTILITIES has notified CONTRACTOR in accordance with paragraph 14.10 that the Work is acceptable.

6.20 CONTRACTOR shall designate a responsible member of his organization at the site whose duty shall be the prevention of accidents. This person shall be CONTRACTOR'S superintendent unless otherwise designated in writing by CONTRACTOR to CITY UTILITIES.

EMERGENCIES:

6.21 In emergencies affecting the safety of persons or the Work or property at the site or adjacent thereto, CONTRACTOR, without special instruction or authorization from CITY UTILITIES, is obligated to act, at his discretion, to prevent threatened damage, injury, or loss. He shall give CITY UTILITIES prompt written notice of any significant changes in the Work or deviations from the Contract Documents caused thereby, and a Change Order shall thereupon be issued covering the changes and deviations involved. If CONTRACTOR believes that additional work done by him in an emergency which arose from causes beyond his control entitles him to an increase in the Contract Price or an extension of the Contract Time, he may make a claim therefore as provided in Articles 11 and 12.

SHOP DRAWINGS AND SAMPLES:

6.22 After checking and verifying all field measurements, CONTRACTOR shall submit to CITY UTILITIES for approval, in accordance with the accepted schedule of Shop Drawing submissions (see paragraph 2.8) five copies (or at CITY UTILITIES' option, one reproducible copy) of all Shop Drawings, which shall have been checked by and stamped with the approval of CONTRACTOR and identified as CITY UTILITIES may require.

The data shown on the Shop Drawings will be complete with respect to dimensions, design criteria, materials of construction and the like to enable CITY UTILITIES to review the information as required.

6.23 CONTRACTOR shall also submit to CITY UTILITIES for approval with such promptness as to cause no delay in Work, all samples required by the Contract Documents. All samples will have been checked by and stamped with the approval of CONTRACTOR, identified clearly as to material, manufacturer, any pertinent catalog numbers and the use for which intended.

6.24 At the time of each submission, CONTRACTOR shall in writing call CITY UTILITIES' attention to any deviations that the Shop Drawing or sample may have from the requirements of the Contract Documents.

6.25 CITY UTILITIES will review and approve with reasonable promptness Shop Drawings and samples, but its review and approval shall be only for conformance with the design concept of the Project and for compliance with the information given in the Contract Documents. The approval of a separate item as such will not indicate approval of the assembly in which the item functions. CONTRACTOR shall make any corrections required by CITY UTILITIES and shall return the required number of corrected copies of Shop Drawings and resubmit new samples until approved. CONTRACTOR shall direct specific attention in writing or on resubmitted Shop Drawings to revisions other than the corrections called for by CITY UTILITIES on previous submission. CONTRACTOR's stamp of approval on any Shop Drawing or sample shall constitute a representation to CITY UTILITIES that CONTRACTOR has either determined and verified all quantities, dimensions, field construction criteria, materials catalog numbers, and similar data, or he assumes full responsibility for doing so, and that he has reviewed or coordinated each Shop Drawing or sample with the requirements of the Work and the Contract Documents.

6.26 Where a Shop Drawing or sample submission is required by the Specifications, no related Work shall be commenced until the submission has been approved by CITY UTILITIES. A copy of each approved Shop Drawing and each approved sample shall be kept in good order by CONTRACTOR at the site and shall be available to CITY UTILITIES.

6.27 CITY UTILITIES' approval of Shop Drawings or samples shall not relieve CONTRACTOR from his responsibility for any deviations from the requirements of the Contract Documents unless CONTRACTOR has in writing called CITY UTILITIES' attention to such deviation at the time of submission and CITY UTILITIES has given written approval to the specific deviation, nor shall any approval by CITY UTILITIES relieve CONTRACTOR from responsibility for errors or omissions in the Shop Drawings.

[Note: Further provisions in respect to Shop Drawings and samples may be included in the General Requirements (Division 1).]

CLEANING:

6.28 CONTRACTOR shall keep the premises free from accumulations of waste materials, rubbish and other debris resulting from the Work, and at the completion of the Work he shall remove all waste materials, rubbish and debris from and about the premises as well as all tools, construction equipment and machinery, and surplus materials, and shall leave the site clean and ready for occupancy by CITY UTILITIES. CONTRACTOR shall restore to their original condition those portions of the site not designated for alteration by the Contract Documents.

[Note: Further provisions in respect of cleaning may be included in the General Requirements (Division 1).]

CONTRACTOR shall be fully responsible for properly removing and/or disposing of all hazardous substances and hazardous waste (as defined by federal or state regulations, ordinances, statutes or rules) brought to the Work site, used, or generated during Work provided to City Utilities. Removal of hazardous substances and hazardous waste must occur before CONTRACTOR demobilizes from the Work site. CONTRACTOR shall provide written proof of disposal upon the request of CITY UTILITIES or federal or state enforcement authority.

INDEMNIFICATION:

6.29 CONTRACTOR shall indemnify, defend, and hold harmless CITY UTILITIES, its agents, board members, directors, officers, and employees, from and against all claims, damages, losses, and expenses, including attorney's fees, arising out of the performance of the Work caused by the negligent or wrongful acts or omissions of CONTRACTOR, any Subcontractor, any Supplier, or anyone for whose acts or omissions any of them may be liable. In cases of concurring fault, each party shall bear its share of the loss.

6.30 In any and all claims against CITY UTILITIES or any of its agents, board members, directors, officers, and employees, the indemnification obligation under paragraph 6.29 shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for CONTRACTOR or any Subcontractor under Worker's Compensation Acts, disability benefit acts or other employee benefit acts. Nothing contained herein shall be considered a waiver of the defenses of sovereign immunity, official immunity, or the public duty doctrine. This indemnification agreement shall survive termination or expiration of the Contract Documents.

ARTICLE 7 - WORK BY OTHERS

7.1 CITY UTILITIES may perform additional work related to the Project or may let other direct contracts therefore, which shall contain General Conditions similar to these. CONTRACTOR shall afford the other contractors who are parties to such direct contracts (or CITY UTILITIES if it is performing the additional work) reasonable opportunity for the introduction and storage of materials and equipment and execution of Work, and shall properly connect and coordinate his Work with theirs.

7.2 If any part of CONTRACTOR's Work depends for proper execution or results upon the work of any such other contractor (or CITY UTILITIES), CONTRACTOR shall inspect and promptly report to CITY UTILITIES in writing any defects or deficiencies in such work that render it unsuitable for such proper execution and results. His failure to so report shall constitute an acceptance of the other work as fit and proper for the relationship of his Work except as to defects and deficiencies which may appear in the other work after the execution of his Work.

7.3 CONTRACTOR shall do all cutting, fitting and patching of his Work that may be required to make its several parts come together properly and fit it to receive or be received by such other work. CONTRACTOR shall not endanger any work of others by cutting, excavating or otherwise altering their work and will only cut or alter their work with the written consent of CITY UTILITIES and of the other contractors whose work will be affected.

7.4 If the performance of additional work by other contractors or CITY UTILITIES is not noted in the Contract Documents prior to the execution of the contract, written notice thereof shall be given to CONTRACTOR prior to starting any such additional work. If CONTRACTOR believes that the performance of such additional work by CITY UTILITIES or others involves him in additional expense or entitles him to an extension of the Contract Time, he may make a claim therefore as provided in Articles 11 and 12.

ARTICLE 8 - CITY UTILITIES' RESPONSIBILITIES

8.l CITY UTILITIES shall issue all communications to CONTRACTOR through RESIDENT ENGINEER.

8.2 In case of termination of the employment of RESIDENT ENGINEER, CITY UTILITIES shall appoint an engineer against whom CONTRACTOR makes no reasonable objection, whose status under the Contract Documents shall be that of the former RESIDENT ENGINEER.

8.3 CITY UTILITIES shall furnish the data required of him under the Contract Documents promptly and shall make payments to CONTRACTOR promptly after they are due as provided in paragraphs 14.4 and 14.10.

8.4 CITY UTILITIES' duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in paragraphs 4.1 and 4.4. Paragraph 4.2 refers to CITY UTILITIES, identifying and making available to CONTRACTOR copies of surveys and investigation reports of subsurface and latent physical conditions at the site or otherwise affecting performance of the Work which have been relied upon by him in preparing the Drawings and Specifications.

8.5 In addition to his rights to request changes in the Work in accordance with Article 10, CITY UTILITIES (especially in certain instances as provided in paragraph 10.4) shall be obligated to execute Change Orders.

8.6 CITY UTILITIES' responsibility in respect of certain inspections, tests and approvals is set forth in paragraph 13.2.

8.7 In connection with CITY UTILITIES' right to stop Work or suspend Work, see paragraphs 13.8 and 15.1. Paragraph 15.2 deals with CITY UTILITIES' right to terminate services of CONTRACTOR under certain circumstances.

ARTICLE 9 - RESIDENT ENGINEER'S STATUS DURING CONSTRUCTION AND CITY UTILITIES' REPRESENTATIVE

9.1 RESIDENT ENGINEER will be CITY UTILITIES' representative during the construction period and is responsible to the Project Manager.

VISITS TO SITE:

9.2 RESIDENT ENGINEER will observe the progress and quality of the executed Work and determine, in general, if the work is proceeding in accordance with the Contract Documents. He will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. His efforts will be directed toward providing assurance for CITY UTILITIES that the completed Project will conform to the requirements of the Contract Documents. A recommendation for payment by RESIDENT ENGINEER shall not relieve CONTRACTOR of his obligation to perform the Work in accordance with the Contract Documents.

CLARIFICATIONS AND INTERPRETATIONS:

9.3 RESIDENT ENGINEER will issue with reasonable promptness, at his option or upon Contractor's request, such written clarification or interpretations of the Contract Documents (in the form of drawings or otherwise) as he may determine necessary, which shall be consistent with or reasonably inferable from the overall intent of the Contract Documents.

REJECTING DEFECTIVE WORK:

9.4 RESIDENT ENGINEER will have authority to disapprove or reject work which is “defective” (which term is hereinafter used to describe Work that is unsatisfactory, faulty, defective, does not conform to the requirements of the Contract Documents, does not meet the requirements of any inspection, test or approval referred to in paragraph 13.2, or has been damaged by fault of Contractor prior to approval of final payment). He will also have authority to require special inspection or testing of the Work as provided in paragraph 13.7, whether or not the Work is fabricated, installed or completed.

LIMITATIONS ON RESIDENT ENGINEER'S RESPONSIBILITIES:

9.5 Neither RESIDENT ENGINEER's authority to act under this Article 9 or elsewhere in the Contract Documents nor any decision made by him in good faith either to exercise or not exercise such authority shall give rise to any duty or responsibility of RESIDENT ENGINEER to CONTRACTOR, any Subcontractor, any materialman, fabricator, supplier or any of their agents or employees or any other person performing any of the Work.

9.6 RESIDENT ENGINEER will not be responsible for CONTRACTOR's means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto, and he will not be responsible for CONTRACTOR's failure to perform the Work in accordance with the Contract Documents.

9.7 RESIDENT ENGINEER will not be responsible for the acts or omissions of CONTRACTOR, or any Subcontractor, or any of his or their agents or employees, or any other persons at the site or otherwise performing any of the Work:

9.8 The Inspectors have no authority to do any of the following: approve or disapprove Work (except as expressly stated in the Specifications); clarify or interpret the Contract Documents; direct CONTRACTOR'S means, methods, techniques, sequences, or procedures of construction; resolve disputes or claims of CONTRACTOR; or advise CONTRACTOR on safety precautions and programs incident thereto. Inspectors shall not be responsible for CONTRACTOR'S failure to perform the Work in accordance with the Contract Documents. Inspectors shall not be responsible for the acts or omissions of CONTRACTOR, or any Subcontractor, or any of their agents or employees, or any other persons at the site or otherwise performing any of the Work.

9.9 If CONTRACTOR disagrees with an Inspector's determination as to whether or not the Work is in compliance with the Contract Documents or disagrees with any other determination or approval made by an Inspector, then CONTRACTOR shall notify the Resident Engineer who will make the determination. If CONTRACTOR disagrees with Resident Engineer's determination, then CONTRACTOR shall make a claim in accordance with Articles 10-12.

ARTICLE 10 - CHANGES IN THE WORK

10.1 Without invalidating the Agreement, CITY UTILITIES may, at any time or from time to time, order additions, deletions or revisions in the Work; these will be authorized by Change Orders. Upon receipt of a duly signed Change Order, the Contractor shall proceed with the Work involved. The following persons shall have authority to sign Change Orders on behalf of CITY UTILITIES, as stated below:

	Contract Price	Contract Time
General Manager	Unlimited	Unlimited
Director-Management Services	Up to $5 million*	Unlimited
Manager—Purchasing	Up to $1 million*	Unlimited

Department Manager	Up to $10,000**	None
Designated Representative	Up to $5,000**	None

*These limits apply to the total Contract Price, including all Change Orders.
**These limits apply to the amount of the Change Order.

All such Work shall be executed under the applicable conditions of the Contract Documents. **ANY CHANGE IN THE CONTRACT PRICE OR CHANGE IN THE CONTRACT TIME MUST BE INCLUDED IN THE CHANGE ORDER AND SIGNED BY CITY UTILITIES BEFORE THE WORK IS PERFORMED. CONTRACTOR SHALL NOT BE ENTITLED TO A CHANGE IN THE CONTRACT PRICE OR CONTRACT TIME FOR ADDITIONAL WORK THAT IS DONE WITHOUT A CHANGE ORDER. CONTRACTOR WAIVES ALL CLAIMS FOR A CHANGE IN THE CONTRACT PRICE AND/OR CONTRACT TIME DUE TO ADDITIONAL WORK PERFORMED WITHOUT A CHANGE ORDER THAT WAS SIGNED BY CITY UTILITIES BEFORE THE WORK WAS PERFORMED.**

10.2 RESIDENT ENGINEER may authorize minor changes or alterations in the Work not involving extra cost and not inconsistent with the overall intent of the Contract Documents. These may be accomplished by a Field Order. If CONTRACTOR believes that any minor change or alteration authorized by RESIDENT ENGINEER entitles him to an increase in the Contract Price or an extension of time, then CONTRACTOR shall not proceed with the changes or alterations without a signed Change Order.

10.3 Additional Work performed by CONTRACTOR without authorization of a Change Order will not entitle him to an increase in the Contract Price or an extension of the Contract Time, except in the case of an emergency as provided in paragraph 6.21 and except as provided in paragraph 13.7.

10.4 CITY UTILITIES shall execute appropriate Change Orders prepared by RESIDENT ENGINEER covering changes in the Work to be performed as provided in paragraph 4.3, and Work performed in an emergency as provided in paragraph 6.21 and any other claim of CONTRACTOR for a change in the Contract Time or the Contract Price which is approved by the GENERAL MANAGER.

10.5 It is CONTRACTOR'S responsibility to notify his Surety of any changes affecting the general scope of the Work or change in the Contract Price and the amount of the applicable Bonds shall be adjusted accordingly. CONTRACTOR shall furnish proof of such adjustment to CITY UTILITIES.

ARTICLE 11 - CHANGE OF CONTRACT PRICE

11.1 The Contract Price constitutes the total compensation payable to CONTRACTOR for performing the Work. All duties, responsibilities and obligations assigned to or undertaken by CONTRACTOR shall be at his expense without change in the Contract Price.

11.2 CITY UTILITIES may from time to time request CONTRACTOR to furnish a cost proposal for a possible future Change Order. Such a request for a proposal does not constitute a Change Order and does not authorize CONTRACTOR to proceed with the work described in the request. If requested by the RESIDENT ENGINEER the CONTRACTOR shall submit an itemized breakdown of material, equipment, labor, subcontractors, overhead, and profit, including supporting data, to substantiate his proposal. Any amount claimed for subcontractors shall be supported by a similar price breakdown. The itemized cost shall be in sufficient detail to enable the RESIDENT ENGINEER to verify the reasonableness of the CONTRACTOR'S proposal. If the proposal includes a time extension, a justification therefore shall also be furnished.

11.3 The Contract Price may only be changed by a Change Order. **CHANGE ORDERS FOR ADDITIONAL WORK THAT INCREASE THE CONTRACT PRICE MUST BE SIGNED BY THE PARTIES BEFORE THE ADDITIONAL WORK IS PERFORMED. CLAIMS FOR AN INCREASE IN THE CONTRACT PRICE DUE TO EMERGENCIES, WORK UNDER SECTION 13.7, OR DELAYS OR INTERFERENCE WITH THE WORK BY CITY UTILITIES, MUST BE MADE IN WRITING AND DELIVERED TO CITY UTILITIES WITHIN FIFTEEN (15) DAYS OF THE OCCURRENCE OF THE EVENT GIVING RISE TO THE CLAIM.** The claim must state in detail the circumstances giving rise to the claim and all reasons that the Contractor believes justify an increase in the Contract Price. Within 45 days of such occurrence, Contractor must deliver to City Utilities a written statement of the amount of the claim with supporting data unless City Utilities grants an extension of the time period in writing **THERE SHALL BE NO OTHER CLAIMS FOR AN INCREASE IN THE CONTRACT PRICE. FAILURE TO FOLLOW THE ABOVE PROCEDURE SHALL CONSTITUTE A WAIVER OF CONTRACTOR'S CLAIM FOR AN INCREASE IN THE CONTRACT PRICE.**

11.4 When the value of any Work covered by a Change Order is not expressed in money in the Order itself, changes in the Contract Price shall be determined in one of the following ways at the discretion of CITY UTILITIES:

11.4.1 Where the Work involved is covered by unit prices contained in the Contract Documents, by application of the appropriate unit prices to the quantities of the items involved,

11.4.2 By mutual acceptance of a lump sum determined from an agreed upon formula in the Change Order,

11.4.3 On the basis of the Cost of the Work plus a percentage for the Contractor's overhead and profit. The method of determining costs of the Work and the percentage shall be established prior to starting any Work under the Change Order. On Projects which are funded or partially funded by an agency of the Federal Government, this method of pricing shall not be used.

COST OF THE WORK:

11.5 The term Cost of the Work means the sum of all costs necessarily incurred and paid by the CONTRACTOR in the proper performance of the Work. Except as otherwise may be agreed to in writing by CITY UTILITIES, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items and shall not include any of the costs itemized in paragraph 11.6

11.5.1 Payroll costs for employees in the direct employ of CONTRACTOR in the performance of the Work under schedules of job classifications agreed upon by CITY UTILITIES and CONTRACTOR. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits which shall include social security contributions, unemployment, excise and payroll taxes, Workers' Compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. Such employees shall include superintendents and foremen at the site. The expenses of performing work after regular working hours, on Sunday or legal holidays shall be included in the above to the extent authorized by CITY UTILITIES.

11.5.2 Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and manufacturers' field services required in connection therewith. All cash discounts shall accrue to CONTRACTOR unless CITY UTILITIES deposits funds with CONTRACTOR with which to make payments, in which case the cash discounts shall accrue to CITY UTILITIES. All trade discounts, rebates and refunds, and all returns from sale of surplus materials and equipment shall accrue to CITY UTILITIES and CONTRACTOR shall make provisions so that they may be obtained.

11.5.3 Payments made by CONTRACTOR to the Subcontractors for Work performed by Subcontractors. If required by CITY UTILITIES, CONTRACTOR shall obtain competitive bids from Subcontractors acceptable to him and shall deliver such bids to CITY UTILITIES which will then determine with the advice of RESIDENT ENGINEER, which bids will be accepted. If a subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work Plus a Fee, the Cost of the Work shall be determined in accordance with paragraphs 11.5 and 11.6. All subcontracts shall be subject to the other provisions of the Contract Documents insofar as applicable.

11.5.4 Costs of special consultants (including, but not limited to, engineers, architects, testing laboratories, surveyors, lawyers and accountants) employed for services specifically related to the Work.

11.5.5 Supplemental costs including the following:

11.5.5.1 The proportion of necessary transportation, traveling and sub-sistence expenses of CONTRACTOR's employees incurred in discharge of duties connected with the Work.

11.5.5.2 Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office and temporary facilities at the site and hand tools not owned by the workmen, which are consumed in the performance of the Work, and cost less market value of such items used but not consumed which remain the property of CONTRACTOR.

11.5.5.3 Rentals of all construction equipment and machinery and the parts thereof whether rented from CONTRACTOR or others in accordance with rental agreements approved by CITY UTILITIES with the advice of RESIDENT ENGINEER, and the costs of transportation, loading, unloading, installation, dismantling and removal thereof--all in accordance with terms of said rental agreements. The rental of any such equipment, machinery or parts shall cease when the use thereof is no longer necessary for the Work.

11.5.5.4 Sales, use or similar taxes related to the Work, and for which CONTRACTOR is liable, imposed by any governmental authority.

11.5.5.5 Deposits lost for causes other than CONTRACTOR's negligence, royalty payments and fees for permits and licenses.

11.5.5.6 Losses, damages and expenses, not compensated by insurance or otherwise, sustained by CONTRACTOR in connection with the execution of, and to, the Work, provided they have resulted from causes other than the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of CITY UTILITIES. No such losses, damages and expenses shall be included in the Cost of Work for the purpose of determining Contractor's fee. If, however, any such loss or damage required reconstruction and CONTRACTOR is placed in charge thereof, he shall

be paid for his services a fee proportionate to that stated in paragraph 11.6.2.

11.5.5.7 The cost of utilities, fuel and sanitary facilities at the site.

11.5.5.8 Minor expenses such as telegrams, long distance telephone calls, telephone service at the site, expressage and similar petty cash items in connection with the Work.

11.5.5.9 Cost of premiums for bonds and insurance which CITY UTILITIES is required to pay in accordance with Article 5.

11.6 The term "Cost of the Work" shall not include any of the following:

11.6.1 Roll costs and other compensation of CONTRACTOR's officers, executives, principals (of partnership and sole proprietorships), general managers, engineers, architects, estimators, lawyers, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks and other personnel employed by CONTRACTOR whether at the site or in his principal or a branch office for general administration of the Work and not specifically included in the schedule referred to in subparagraph 11.5.1--all of which are to be considered administrative costs covered by the Contractor's Fee.

11.6.2 Expenses of CONTRACTOR's principal and branch offices other than his office at the site.

11.6.3 Any part of CONTRACTOR's capital expenses, including interest on CONTRACTOR's capital employed for the Work and charges against CONTRACTOR for delinquent payments.

11.6.4 Cost of Premiums for all bonds and for all insurance policies whether or not CONTRACTOR is required by the Contract Documents to purchase and maintain the same (except as otherwise provided in subparagraph 11.5.5.9.).

11.6.5 Cost due to the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective work, disposal of materials or equipment wrongly supplied and making good any damage to property.

11.6.6 Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in paragraph 11.5.

CONTRACTOR'S FEE:

11.7 The Contractor's Fee which shall be allowed to CONTRACTOR for his overhead and profit shall be determined as follows:

11.7.1 A mutually acceptable fixed fee; or if none can be agreed upon,

11.7.2 a fee based on the following percentages of the various portions of the Cost of the Work:

11.7.2.1 for costs incurred under paragraphs 11.5.1 and 11.5.2, the Contractor's Fee shall be ten percent;

11.7.2.2 for costs incurred under paragraph 11.5.3, the Contractor's Fee shall be five percent; and if a subcontract is on the basis of Cost of the Work Plus a Fee, the maximum allowable to the Subcontractor as a fee for overhead and profit shall be ten percent; and

11.7.2.3 no fee shall be payable on the basis of costs itemized under paragraphs 11.5.4, 11.5.5, and 11.6.

11.8 The amount of credit to be allowed by CONTRACTOR to CITY UTILITIES for any such change which results in a net decrease in costs, will be the amount of the actual net decrease. When both additions and credits are involved in any one change, the combined overhead and profit shall be figured on the basis of the net increase, if any.

ARTICLE 12 - CHANGE OF THE CONTRACT TIME

12.1 The Contract Time may only be changed by a Change Order. **CLAIMS FOR AN INCREASE IN THE CONTRACT TIME DUE TO EMERGENCIES, WORK UNDER SECTION 13.7, DELAYS OR INTERFERENCE WITH THE WORK BY CITY UTILITIES, OR CAUSES BEYOND THE CONTRACTOR'S REASONABLE CONTROL, MUST BE MADE IN WRITING AND DELIVERED TO CITY UTILITIES WITHIN FIFTEEN (15) DAYS OF THE OCCURRENCE OF THE EVENT GIVING RISE TO THE CLAIM.** Notice of the extent of the claim with supporting data shall be delivered within forty-five (45) days of such occurrence unless CITY UTILITIES allows an additional period of time to ascertain more accurate data. Any change in the Contract Time resulting from any such claim shall be incorporated in a Change Order. **THERE SHALL BE NO OTHER CLAIMS FOR AN INCREASE IN THE CONTRACT TIME. FAILURE TO FOLLOW THE ABOVE PROCEDURE SHALL CONSTITUTE A WAIVER OF CONTRACTOR'S CLAIM FOR AN INCREASE IN THE CONTRACT TIME.**

12.2 The Contract Time will be extended in an amount equal to time lost due to delays beyond the control of CONTRACTOR if he makes a claim therefore as provided in paragraph 12.1. Such delays shall include, but not be restricted to, acts or neglect by any separate contractor employed by CITY UTILITIES, fires, floods, labor disputes, epidemics, abnormal weather conditions, or acts of God, unless provided otherwise.

12.3 All time limits stated in the Contract Documents are of the essence of the Agreement. The provisions of this Article 12 shall not exclude recovery for damages (including compensation for additional professional services) for delay by either party.

ARTICLE 13 - WARRANTY AND GUARANTEE, TESTS AND INSPECTIONS, CORRECTION; REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

WARRANTY AND GUARANTEE:

13.1 CONTRACTOR warrants and guarantees to CITY UTILITIES that all materials and equipment will be new unless otherwise specified and that all Work will be of good quality and free from faults or defects and in accordance with the requirements of the Contract Documents and of any inspections, tests or approvals referred to in paragraph 13.2. All unsatisfactory Work, all faulty or defective Work, and all Work not conforming to the requirements of the Contract Documents at the time of acceptance thereof or of such inspections, test or approvals, shall be considered defective. Prompt notice of all defects shall be given to CONTRACTOR. Any defective Work, whether or not in place, may be rejected, corrected or accepted as provided in this Article 13.

TESTS AND INSPECTIONS:

13.2 If the Contract Documents, laws, ordinances, rules, regulations or orders of any public authority having jurisdiction require any Work to be specifically inspected, tested, or approved by some public body, CONTRACTOR shall assume full responsibility therefore, pay all costs in connection therewith and furnish CITY UTILITIES the required certificates of inspection, testing or approval. All other inspections, tests and approvals required by the Contract Documents shall be borne by CITY UTILITIES unless otherwise specified.

13.3 CONTRACTOR shall give RESIDENT ENGINEER timely notice of readiness of the Work for all inspections, tests or approvals. If any such work required so to be inspected, tested or approved is covered without written approval of engineer, it must, if requested by RESIDENT ENGINEER, be uncovered for observation, and such uncovering shall be at CONTRACTOR's expense unless CONTRACTOR has given RESIDENT ENGINEER timely notice of his intention to cover such work and RESIDENT ENGINEER has not acted with reasonable promptness in response to such notice.

13.4 Neither observations by RESIDENT ENGINEER nor inspections, tests, or approvals by persons other than CONTRACTOR shall relieve CONTRACTOR from his obligations to perform the Work in accordance with the requirements of the Contract Documents.

ACCESS TO WORK:

13.5 RESIDENT ENGINEER will at reasonable times have access to the Work. CONTRACTOR shall provide proper and safe facilities for such access and observation of the Work and also for any inspection or testing thereof by others.

UNCOVERING WORK:

13.6 If any Work is covered contrary to the written request of RESIDENT ENGINEER, it must, if requested by RESIDENT ENGINEER, be uncovered for his observation and replaced at CONTRACTOR's expense.

13.7 If any Work has been covered which RESIDENT ENGINEER has not specifically requested to observe prior to its being covered, or if RESIDENT ENGINEER considers it necessary or advisable that covered Work be inspected or tested by others, CONTRACTOR, at RESIDENT ENGINEER's request, shall uncover, expose or otherwise make available for observation, inspection or testing as RESIDENT ENGINEER may require, that portion of the Work in question, furnishing all necessary labor, material and equipment. If it is found that such Work is defective, CONTRACTOR shall bear all the expenses of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction, including compensation for additional professional services. If, however, such Work is not found to be defective, CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction if he makes a claim therefore as provided in Articles 11 and 12.

OWNER MAY STOP THE WORK:

13.8 If the Work is defective, or CONTRACTOR fails to supply sufficient skilled workmen or suitable materials or equipment, or if CONTRACTOR fails to make prompt payments to Subcontractors or for labor, materials or equipment, CITY UTILITIES may order CONTRACTOR to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of CITY UTILITIES to stop the Work shall not give rise to any duty on the part of CITY UTILITIES to exercise this right for the benefit of CONTRACTOR or any other party.

CORRECTION OR REMOVAL OP DEFECTIVE WORK:

13.9 If required by RESIDENT ENGINEER prior to approval of final payment, CONTRACTOR shall promptly, without cost to OWNER, either correct any defective Work, whether or not fabricated, installed or completed, or, if the Work has been rejected by RESIDENT ENGINEER, remove it from the site and replace it with non-defective Work. If CONTRACTOR does not correct such defective Work or remove and replace such rejected Work within a reasonable time, all as specified in a written notice from RESIDENT ENGINEER, CITY UTILITIES may have the deficiency corrected or the rejected Work removed and replaced. All direct and indirect costs of such correction or removal and replacement, including compensation for additional professional services, shall be paid by CONTRACTOR, and an appropriate deductive Change Order shall be issued. CONTRACTOR shall also bear the expenses of making good all Work of others destroyed or damaged by his correction, removal or replacement of his defective Work.

ONE YEAR CORRECTION PERIOD:

13.10 If, after the approval of final payment and prior to the expiration of one year after date of Substantial Completion or such longer period of time as may be prescribed by law or by the terms of any applicable special guarantee required by the Contract Documents, any Work is found to be defective, CONTRACTOR shall promptly, without cost to CITY UTILITIES and in accordance with CITY UTILITIES' written instructions, either correct such defective Work, or, if it has been rejected by CITY UTILITIES, remove it from the site and replace it with non-defective Work. If CONTRACTOR does not promptly comply with the terms of such instructions, CITY UTILITIES may have the defective Work corrected or the rejected Work removed and replaced, and all direct and indirect costs of such removal and replacement, including compensation for additional professional ser- vices, shall be paid by CONTRACTOR.

ACCEPTANCE OF DEFECTIVE WORK:

13.11 If, instead of requiring correction or removal and replacement of defective Work, CITY UTILITIES prefers to accept it, it may do so. In such case, if acceptance occurs prior to approval of final payment, a Change Order shall be issued incorporating the necessary revisions in the Contract Documents, including appropriate reduction in the Contract Price; or, if the acceptance - occurs after approval of final payment, an appropriate amount shall be paid by CONTRACTOR to CITY UTILITIES.

NEGLECTED WORK BY CONTRACTOR:

13.12 If CONTRACTOR should fail to prosecute the Work in accordance with the Contract Documents, including any requirements of the progress schedule, CITY UTILITIES, after seven (7) days' written notice to CONTRACTOR may, without prejudice to any other remedy it may have, make good such deficiencies and the cost thereof (including compensation for additional professional services) shall be charged against CONTRACTOR. In such case a Change Order shall be issued incorporating the necessary revisions in the Contract Documents including an appropriate reduction in the Contract Price. If the payments then or thereafter due CONTRACTOR are not sufficient to cover such amount, CONTRACTOR shall pay the difference to CITY UTILITIES.

ARTICLE 14 - PAYMENTS AND COMPLETION

SCHEDULES:

14.1 At least ten (10) days prior to submitting the first Application for a progress payment, CONTRACTOR shall submit a progress schedule, a final schedule of Shop Drawing submission and a schedule of values of the Work. These schedules shall be satisfactory in form and substance to CITY UTILITIES. The schedule of values shall include quantities and unit prices aggregating the Contract Price, and shall subdivide the Work into component parts in sufficient detail to serve as the basis for progress payments during construction. Items listed as lump sum in the schedules of values shall be paid as lump sum only upon completion of all work included under that item. Upon approval of the schedules of values by CITY UTILITIES it shall be incorporated into the form of application for payment furnished to CONTRACTOR.

APPLICATION FOR PROGRESS PAYMENT:

14.2 At least ten (10) days before each progress payment falls due (but not more often than once a month, CONTRACTOR shall submit to CITY UTILITIES for review an Application for Payment filled out and signed by CONTRACTOR covering the Work completed as of the date of the Application and accompanied by such data and schedules as CITY UTILITIES' may reasonably require. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the site or at another location agreed to in writing, the Application for Payment shall also be accompanied by such data, satisfactory to CITY UTILITIES as will establish CITY UTILITIES' title to the material and equipment and protect its interest therein, including applicable insurance. No payment will be made for mobilization, demobilization, or other such costs including bonds and insurance expenses without invoices documenting such costs from non-captive companies unless they do not exceed the 4% figure as stated in paragraph 14.2.1 below. Each subsequent application for Payment shall include an affidavit of CONTRACTOR stating that all previous progress payments received on account of the work have been applied to discharge in full all of CONTRACTOR's obligations reflected in prior Applications of Payment.

PAYMENT FOR MOBILIZATION AND PREPARATORY WORK:

14.2.1 Contractor shall be reimbursed for actual costs incurred for mobilization and preparatory work. All mobilization costs are to be contained in the base bid. No additional reimbursements will be made. Only items described below are eligible for this payment.

If the total amount requested exceeds 4% of the Contract Price, the Contractor must then submit to the Resident Engineer certified accounts of the actual payments made by him. Requests for reimbursement must be accompanied by certificate of the Contractor, supported by receipted bills or certified copies of payrolls and freight bills, showing that he has acquired said construction plant and material free from all encumbrances and agree that it will not be removed from the site and that structures and facilities prepared or erected for the prosecution of the contract work will be maintained and not dismantled prior to the completion and acceptance of the entire work without the written permission of the Resident Engineer. If the Resident Engineer finds that said construction plant, material, equipment and the mobilization and preparatory work performed are suitable and necessary to the efficient prosecution of the contract and that the said preparatory work has been done with proper economy and efficiency; payment, less the prescribed retained percentage, will be made therefore to the Contractor. Reimbursement for the construction plant, material and structures and facilities prepared or erected for prosecution of the contract work shall not exceed the cost thereof to the Contractor less the estimated value upon the completion of the contract as determined by the Resident Engineer. In no event shall such payment exceed 100% of

the cost to the Contractor of such items which have no appreciable salvage value and 75% of the cost to the Contractor of such items which have appreciable salvage value. The findings of the Resident Engineer as to the suitability and value of the construction plant, equipment, materials, structures or facilities shall not be subject to appeal.

Mobilization and preparatory work shall include construction plant at the site of the work, acquired for the execution of the work; the transportation of all plant and work equipment to the site; material purchased for the execution of the work not to be incorporated into the work; the transportation of all plant and work equipment to the site; material purchased for the prosecution of the contract, but not to be incorporated in the work; construction of access roads, field headquarters facilities and construction items for which payment is provided under the terms of the contract. This section number 14.2.1 shall not apply to electric, gas or water line or main distribution or service contracts bid as unit price work.

CONTRACTOR'S WARRANTY OF TITLE:

14.3 CONTRACTOR warrants and guarantees that title to all Work, materials and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to CITY UTILITIES at the time of payment free and clear of all liens, claims, security interests and encumbrances (hereafter in these General Conditions referred to as "Liens").

APPROVAL OF PAYMENTS:

14.4 CITY UTILITIES will, within thirty (30) days after receipt of each Application for Payment, either make such progress payment to CONTRACTOR or return the application to CONTRACTOR indicating in writing its reasons for disapproval. CITY UTILITIES may withhold a percentage of not more than 5% (10% if no Bond is required) from each progress payment as retainage. CITY UTILITIES may also refuse to approve any payment or nullify payments previously approved to adequately protect itself from loss because:

14.4.1 the Work is defective, or completed Work has been damaged requiring correction or replacement,

14.4.2 claims or Liens have been filed or there is reasonable cause to believe such may be filed,

14.4.3 the Contract Price has been reduced because of Modifications,

14.4.4 CITY UTILITIES has been required to correct defective Work or complete the Work in accordance with paragraph 13.11, or

14.4.5 of unsatisfactory prosecution of the Work, including failure to furnish acceptable submittals or to clean up.

SUBSTANTIAL COMPLETION:

14.5 Prior to final payment, CONTRACTOR may, in writing to CITY UTILITIES, certify that the entire Project is substantially complete and request that CITY UTILITIES issue a certificate of Substantial Completion. Within a reasonable time thereafter, CITY UTILITIES and CONTRACTOR shall make an inspection of the Project to determine the status of completion. If CITY UTILITIES does not consider the Project substantially complete, it will notify CONTRACTOR in writing giving its reasons therefore within 14 days. If CITY UTILITIES considers the Project substantially complete, it will prepare and deliver to CONTRACTOR a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion and the responsibilities between CITY UTILITIES and CONTRACTOR for maintenance, heat and utilities. There shall be attached to the certificate a tentative list (punch list) of items to be completed or corrected before final payment, and the certificate shall fix the time within which such items shall be completed or corrected, said time to be within the Contract Time. An additional list consisting of warranty repair items will also be provided to the CONTRACTOR. These warranty repair items will not be a sole basis to withhold final payment.

14.6 CITY UTILITIES shall have the right to exclude CONTRACTOR from the Project after the date of Substantial Completion, but CITY UTILITIES shall allow CONTRACTOR reasonable access to complete or correct items on the tentative list.

PARTIAL UTILIZATION:

14.7 Prior to final payment, CITY UTILITIES may request CONTRACTOR in writing to permit it to use a specified part of the project which it believes it may use without significant interference with construction of the other parts of the Project. If CONTRACTOR agrees, he will certify to CITY UTILITIES that said part of the Project is substantially complete and request CITY UTILITIES to issue a certificate of Substantial Completion for that part of the Project. Within a reasonable time thereafter CITY UTILITIES, and CONTRACTOR shall make an inspection of that part of the Project to determine its status of completion. If CITY UTILITIES does not consider that it is substantially complete, it will notify CONTRACTOR in writing giving its reasons therefore. If CITY UTILITIES considers that part of the Project to be substantially complete, it will execute and deliver to CONTRACTOR a certificate to that effect, fixing the date of Substantial Completion as to that part of the Project, attaching thereto a tentative list of items to be completed or corrected before final payment and fixing the responsibility between CITY UTILITIES and CONTRACTOR for maintenance, heat and utilities as to that part of the Project. CITY UTILITIES shall have the right to exclude CONTRACTOR from any part of the Project which it has so certified to be substantially complete, but CITY UTILITIES shall allow CONTRACTOR reasonable access to complete or correct items on the tentative list.

FINAL INSPECTION:

14.8 Upon written notice from CONTRACTOR that the Project is complete, CITY UTILITIES will make a final inspection with CONTRACTOR and will notify CONTRACTOR in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. CONTRACTOR shall immediately take such measures as are necessary to remedy such deficiencies.

FINAL APPLICATION FOR PAYMENT:

14.9 After CONTRACTOR has completed all such corrections to the satisfaction of CITY UTILITIES and delivered all maintenance and operating instructions, schedules, guarantees, Bonds certificates of inspection, and other documents as required by the Contract Documents, he may make application for final payment following the procedure for progress payments. The final Application for Payment shall be accompanied by such data and schedules as CITY UTILITIES may reasonably require, together with complete and legally effective releases or waivers of all Liens arising out of the Contract Documents and the labor and services performed and the material and equipment furnished thereunder. In lieu thereof and as approved by CITY UTILITIES CONTRACTOR may furnish receipts or releases in full; an affidavit of CONTRACTOR that the releases and receipts include all labor, services, material and equipment for which a Lien could be filed, and that all payrolls, material and equipment bills, and other indebtedness connected with the Work for which CITY UTILITIES or its property might in any way be responsible, have been paid or otherwise satisfied; and consent of the Surety, if any, to final payment. If any Subcontractor materialman, fabricator or supplier fails to furnish a release or receipt in full, CONTRACTOR may furnish a Bond or other collateral satisfactory to CITY UTILITIES to indemnify him against any Lien.

APPROVAL OF FINAL PAYMENT:

14.10 Approval of Final Payment will be processed as described in paragraph 14.4. If, on the basis of its observation and review of the Work during construction and its final inspection and review of the final Application for Payment - all as required by the Contract Documents, CITY UTILITIES is satisfied that the Work has been completed and CONTRACTOR has fulfilled all of its obligations under the Contract Documents, it will within thirty (30) days after receipt of the final Application for Payment make final payment to CONTRACTOR. Thereupon CITY UTILITIES will give written notice to CONTRACTOR that the Work is acceptable subject to the provisions of paragraph 14.13. Otherwise, CITY UTILITIES will return the Application to CONTRACTOR, indicating in writing its reasons for refusing to approve final payment, in which case CONTRACTOR shall make the necessary corrections and resubmit the Application.

DELAY OF FINAL COMPLETION

14.11 If after Substantial Completion of the Work final completion thereof is materially delayed through no fault of CONTRACTOR, CITY UTILITIES shall, without terminating the Agreement, make payment of the balance due or that portion of the Work fully completed

and accepted. If the remaining balance for work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if Bonds have been furnished as required in paragraph 5.1, the written consent of the Surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the CONTRACTOR to the CITY UTILITIES prior to certification of such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

CONTRACTOR'S CONTINUING OBLIGATION:

14.12 CONTRACTOR's obligation to perform the Work and complete the Project in accordance with the Contract Documents shall be absolute. Neither approval or recommendation of any progress or final payment by CITY UTILITIES or RESIDENT ENGINEER, nor the issuance of a certificate of Completion, nor any payment by CITY UTILITIES to CONTRACTOR under the Contract Documents, nor any use or occupancy of the Work or any part thereof by CITY UTILITIES, nor any act of acceptance by CITY UTILITIES nor any failure to do so, nor any review and acceptance of any Shop Drawing or any sample submission, nor any correction of defective work by CITY UTILITIES shall constitute an acceptance of Work not in accordance with the Contract Documents.

WAIVER OF CLAIMS:

14.13 The making and acceptance of final payment shall constitute:

14.13.1 a waiver of all claims by CITY UTILITIES against CONTRACTOR other than those arising from unsettled Liens, from defective work appearing after final inspection pursuant to paragraphs 14.8 and 14.12 or from failure to comply with the requirements of the Contract Documents or the terms of any special guarantees specified therein; however, it will not constitute a waiver by CITY UTILITIES of any rights in respect of CONTRACTOR'S continuing obligations under the Contract Documents; and

14.13.2 a waiver of all claims by CONTRACTOR against CITY UTILITIES other than those previously made in writing and still unsettled.

ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION; CITY UTILITIES MAY SUSPEND WORK

15.1 CITY UTILITIES may, at any time without cause, suspend the Work or any portion thereof for a period of not more than ninety (90) days by notice in writing to CONTRACTOR which shall fix the date on which Work shall be resumed. CONTRACTOR shall resume the Work on the date so fixed. CONTRACTOR will be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to any suspension if he makes a claim therefore as provided in Articles 11 and 12.

OWNER MAY TERMINATE:

15.2 If CONTRACTOR is adjudged a bankrupt or insolvent, or if he makes a general assignment for the benefit of his creditors, or if a trustee or receiver is appointed for CONTRACTOR or for any of his property, or if he files a petition to take advantage of any debtor's act, or to reorganize under the bankruptcy or similar laws, or if he repeatedly fails to supply sufficient skilled workmen or suitable materials or equipment, or if he repeatedly fails to make prompt payments to Subcontractors or for labor, materials or equipment or if he disregards laws, ordinances, rules, regulations or orders of any public body having jurisdiction, or if he disregards the authority of RESIDENT ENGINEER, or if he otherwise violates any provision of the Contract Documents, then CITY UTILITIES may, without prejudice to any other right or remedy and after giving CONTRACTOR and his Surety seven (7) days' written notice, terminate the services of CONTRACTOR and take possession of the Project and of all materials, equipment, tools, construction equipment and machinery thereon owned by CONTRACTOR, and finish the Work by whatever method it may deem expedient. In such case CONTRACTOR shall not be entitled to received any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds the direct and indirect costs of completing the Project, including compensation for additional professional services, such excess shall be paid to CONTRACTOR. If such costs exceed such unpaid balance, CONTRACTOR shall pay the difference to CITY UTILITIES. Such costs incurred shall be determined by CITY UTILITIES and incorporated in a Change Order.

15.3 Where CONTRACTOR'S services have been so terminated by CITY UTILITIES, said terminations shall not affect any rights of CITY UTILITIES against CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of moneys by CITY UTILITIES due CONTRACTOR will not release CONTRACTOR from liability.

15.4 Upon seven (7) days' written notice to CONTRACTOR, CITY UTILITIES may, without cause and without prejudice to any other right or remedy, elect to abandon the Project and terminate the Agreement. In such case, CONTRACTOR shall be paid for all Work executed and any expense sustained plus a reasonable profit.

CONTRACTOR MAY STOP WORK OR TERMINATE:

15.5 If, through no act or fault of CONTRACTOR, the Work is suspended for a period of more than ninety (90) days by CITY UTILITIES or under an order of court or other public authority, or if CITY UTILITIES fails to act on any Application for Payment within thirty (30) days after it is submitted, then CONTRACTOR may, upon seven (7) days' written notice to CITY UTILITIES terminate the Agreement and recover from CITY UTILITIES payment for all Work executed and any expense sustained plus a reasonable profit. In addition, and in lieu of terminating the Agreement, if CITY UTILITIES has failed to make any payment as aforesaid, CONTRACTOR may upon seven (7) days' notice to CITY UTILITIES stop the Work until he has been paid all amounts then due.

ARTICLE 16 - MISCELLANEOUS - GIVING NOTICE

16.1 Whenever any provision of the Contract Documents requires the giving of written notice it shall be deemed to have been validly given if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to him who gives the notice.

COMPUTATION OF TIME:

16.2 When any period of time is referred to in the Contract Documents by days, it shall be computed to exclude the first and include the last day of such period.

GENERAL:

16.3 All specifications, Drawings and copies thereof furnished by CITY UTILITIES shall remain its property. They shall not be used on another Project, and, with the exception of those sets which have been signed in connection with the execution of the Agreement, shall be returned to CITY UTILITIES on request upon completion of the Project.

16.4 The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder, and, in particular but without limitation, the warranties, guarantees and obligations imposed upon CONTRACTOR by paragraphs 6.30, 13.1, 13.10 and 14.3 and the rights and remedies available to CITY UTILITIES thereunder, shall be in addition to, and shall not be construed in any way as a limitation of, any rights and remedies available to them which are otherwise imposed or available by law, by special guarantee or by other provisions of the Contract Documents.

16.5 The Contract Documents shall be governed by the laws of the State of Missouri. The venue for all actions arising out of the Contract Documents shall be the state and federal courts of Greene County, Missouri.

16.6 Provisions which, by their nature, are intended to survive termination or expiration of the Contract Documents, including, without limitation, Sections 5.3, 5.4, 6.12, 6.29, 6.30, and 14.13 and Articles 16 and 17, shall survive termination or expiration of the Contract Documents.

OWNERSHIP OF DRAWINGS AND OTHER DATA AND DOCUMENTATION:

16.7 Any designs, drawings, specifications, notes and other record documents developed as a result of the award of this Bidding Event shall become the sole property of City Utilities of Springfield, Missouri, and may be used on any other design or construction and be utilized in future Bidding Events issued by City Utilities of Springfield, Missouri. Any exception to this requirement must be in writing and agreed by City Utilities authorized representative. City Utilities requires full rights and ability to utilize the documents as determined necessary by City Utilities to construct, repair, reconstruct or modify the project without additional approvals, including copying and modification of documents,

and execution of Contract Documents by bidder/vendor grants City Utilities such rights. At the completion or termination of the project, vendor/bidder will comply with City Utilities contract closeout requirements, which includes providing to City Utilities the following Electronic Documentation: In addition to paper copies, provide electronic versions of record documents showing "as constructed" conditions, "as-constructed" construction progress schedule, master field drawing list showing final revisions, instruction books, and operating manuals in Adobe PDF and AutoCAD format.

ARTICLE 17 - RESOLUTION OF DISPUTES

Any controversy or claim arising out of or relating to this contract, or the breach thereof, shall be settled by arbitration administered by the American Arbitration Association in accordance with its rules and judgment on the award rendered by the arbitrator(s) may be entered in any court having jurisdiction thereof. The arbitrator(s) shall give a reasoned opinion and submit a finding of facts and conclusions of law. The venue for all such arbitrations shall be Springfield, Missouri.

JOB SPECIAL PROVISIONS
KANSAS EXPRESSWAY EXTENSION
PHASE 1
Gas and Water Relocations

Includes the following attachments:

C1 – Job Special Provisions
C2 – Project Gas Material List (Contractor Furnished Material)
C3 – CU Acceptable Gas Material Specifications
C4 – Project Water Material List (Contractor Furnished Material)
C5 – CU Acceptable Water Material Specifications

ATTACHMENT C1
Job Special Provisions

ATTACHMENT C1
JOB SPECIAL PROVISIONS

TECHNICAL SPECIFICATIONS - NATURAL GAS & WATER WORK

These Special Conditions amend or supplement the "City Utilities Technical Specifications Natural Gas & Water Work," included in this Contract Document, in conjunction with Greene County's Kansas Expressway Extension Phase 1 and other provisions of the Contract Documents as indicated below. All provisions that are not so amended or supplemented remain in full force and effect.

MATERIALS AND EQUIPMENT, SECTION 00820, PART II, 2.01 and 2.02 are hereby amended as follows:

A. The contractor shall provide all materials necessary for a complete installation of the water and gas mains and services as shown on the contract documents. This includes compliance with all "Buy America" requirements such as certification letters, due diligence and maintaining documentation for all iron and steel products. All such documentation shall be submitted to City Utilities Project Engineer. For more information on the "Buy America" requirements, the contractor should visit and review Category 643.2.16 (Buy America for Utilities) of MoDOT's Engineering Policy Guide available online at:

http://epg.modot.mo.gov/index.php?title=643.2_Local_Utility_Adjustments_-_Public_and_Private

B. **The contractor shall utilize Attachments C2 and C4 for a list of materials designed to be furnished by the contractor. This list may not be all inclusive and changes may occur which require the contractor to furnish additional materials at his own expense. All materials installed on this project must be approved by CU prior to installation and must meet "Buy America" requirements.** To ease the material approval process, CU's material specifications have been provided by stock item number – see the link shown Attachments C3 and C5. Each stock item shows CU's pre-approved suppliers for that particular item. CU makes no guarantee that the items in Attachments C3 and C5 meet the "Buy America" requirements; therefore, it is the contractor's responsibility to provide certifications for all materials requiring compliance with "Buy America". The contractor may submit equivalent materials to the Project Engineer for approval; however, these materials must be approved prior to installation.

The Job Special Provisions referenced above were prepared under my direct supervision for CU Drawing 78554 and the affixed seal applies only to that design.

ATTACHMENT C2
Project Gas Materials by Stock Item Number,
Sorted by CU Activity Number

The following pages contain a list of the gas materials as designed on CU's Water and Gas Relocation drawing #78554 and is provided for the contractor's use and information. The contractor should use the Stock Item Number to reference the appropriate material specification within Attachment C3 to find the Acceptable Brands OR AN APPROVED EQUAL MATERIAL.

As noted in the Job Special Provisions, the contractor is responsible for meeting "Buy America" requirements. City Utilities does not guarantee that the items on the following pages meet the "Buy America" requirements; therefore, it is the contractor's responsibility to provide certification of all materials requiring compliance with "Buy America".

For more information on the "Buy America" requirements, the contractor should visit and review Category 643.2.16 (Buy America for Utilities) of MoDOT's Engineering Policy Guide available online at:

http://epg.modot.mo.gov/index.php?title=643.2_Local_Utility_Adjustments_-_Public_and_Private

CITY UTILITIES OF SPRINGFIELD, MISSOURI
PROJECT GAS MATERIAL LIST (CONTRACTOR FURNISHED)
CU DRAWING: 78554
KANSAS EXPRESSWAY EXTENSION - PHASE 1

ACTIVITY NUMBER	STOCK ITEM	QTY DESIGNED	UOM	DESCRIPTION
784682	210995	2	EA	MARKER GAS MIDRANGE (ROUND WHEEL TYPE)
784682	203111	2	EA	ELL,PLASTIC,4 IN,45 DEG,BUTT FUSION,SDR11/11.5
784682	201235	1058	FT	PIPE,PLASTIC,4 IN,.391 WALL,SDR 11.5,40 FT
784682	203155	1	EA	TRANSITION,4 IN,SDR11.5
784682	206285	1	EA	SHORTSTOP,STEEL,2 IN,WELDING
784682	205010	1	EA	CAP WELDING 4"
784682	202784	1	EA	CAP,PLASTIC,4 IN,BUTT FUSION,SDR11/11.5
784682	203244	2	EA	BAG SAND WITH DRAW STRINGS
784682	204485	2	EA	VALVE 4" POLYETHYLENE
784682	202577	2	EA	SPLICE DIRECT BURY-NATURAL GAS YELLOW CONNECTORS
784682	202015	1	EA	ANODE,MAGNESIUM,17 LB
784682	212506	1	EA	CARTRIDGE CADWELD PLUS-15 GRAM
784682	203073	8	EA	COUPLING,PLASTIC,4 IN,ELECTROFUSION
784682	205334	1	EA	TEE,3-WAY,4 IN,WELDING
784682	202830	2	EA	TEE,PLASTIC,4 IN,BUTT FUSION, SDR11/11.5
784682	211804	2	EA	SPLICE, DIRECT BURYLUG NATURAL GAS
784682	203152	6	EA	ELL,PLASTIC,4 IN,90 DEG,BUTT FUSION,SDR11/11.5
784682	202876	1	EA	REDUCER,PLASTIC,4 IN X 2 IN,BUTT FUSION,SDR11/11.5
784682	2500105	5	EA	TAPE,4 IN WAX,COLD APPLIED COATING
784682	204037	1	EA	BOX HEAVY DUTY FOR TESTLEAD OR END OF MAIN
784682	2500869	141	FT	PIPE, PLASTIC, 8 IN., .750 WALL, SDR 11.5, 40 FT.
784682	2509067	1	EA	PATCH CATHODIC PROTECTION FOR EXOTHERMIC GROUNDING CONN
784682	207913	2	EA	BOX, VALVE, FOR 6" AND 8" VALVES, 43-68 IN. LONG
784682	211571	1060	FT	WIRE 10 LDPE SOLID COPPER YELLOW
784682	213312	1060	FT	TAPE NATURAL GAS WARNING 6" X 1000'
784684	201235	150	FT	PIPE,PLASTIC,4 IN,.391 WALL,SDR 11.5,40 FT
784684	201220	380	FT	PIPE,PLASTIC,2 IN,.216 WALL,SDR11,500 FT
784684	201222	30	FT	PIPE,PLASTIC,2 IN,.216 WALL,SDR 11,40 FT
784684	203145	1	EA	TRANSITION,2 IN,SDR11
784684	206285	1	EA	SHORTSTOP,STEEL,2 IN,WELDING
784684	206484	1	EA	PLUG,EXPANDER,2 IN
784684	204466	3	EA	VALVE 2" POLYETHYLENE
784684	210995	3	EA	MARKER GAS MIDRANGE (ROUND WHEEL TYPE)
784684	203244	6	EA	BAG SAND WITH DRAW STRINGS
784684	202577	3	EA	SPLICE DIRECT BURY-NATURAL GAS YELLOW CONNECTORS
784684	202015	1	EA	ANODE,MAGNESIUM,17 LB
784684	212506	1	EA	CARTRIDGE CADWELD PLUS-15 GRAM
784684	204039	3	EA	BOX, VALVE, 4" FULL PORT AND SMALLER VALVES 43-68 IN. LONG
784684	203063	11	EA	COUPLING,PLASTIC,2 IN,ELECTROFUSION
784684	205322	1	EA	TEE,3-WAY,2 IN,WELDING
784684	203143	3	EA	ELL,PLASTIC,2 IN,90 DEG,BUTT FUSION,SDR11/11.5
784684	2500105	4	EA	TAPE,4 IN WAX,COLD APPLIED COATING

ACTIVITY NUMBER	STOCK ITEM	QTY DESIGNED	UOM	DESCRIPTION
784684	211804	3	EA	SPLICE, DIRECT BURYLUG NATURAL GAS
784684	2509067	1	EA	PATCH CATHODIC PROTECTION FOR EXOTHERMIC GROUNDING CONN
784684	2509485	1	EA	CAP,FORGED STEEL, 2 IN SOCKET WELD 3000#
784684	2508843	1	EA	CLAMP, REINFORCMENT 2 IN PLASTIC PIPE
784684	203460	3	EA	TEE,PLASTIC,6 IN X 2 IN,ELECTROFUSION
784684	211571	410	FT	WIRE 10 LDPE SOLID COPPER YELLOW
784684	213312	410	FT	TAPE NATURAL GAS WARNING 6" X 1000'
794273	203078	34	EA	COUPLING,PLASTIC,6 IN,ELECTROFUSION
794273	205521	2	EA	TEE,PLASTIC,6 IN,BUTT FUSION,SDR11/11.5
794273	206395	3	EA	VALVE 6" POLYETHYLENE
794273	203244	3	EA	BAG SAND WITH DRAW STRINGS
794273	205429	17	EA	ELL,PLASTIC,6 IN,90 DEG,BUTT FUSION, IPS,SDR11/11.5
794273	205498	8	EA	ELL,PLASTIC,6 IN,45 DEG,BUTT FUSION,SDR11/11.5
794273	201240	4892	FT	PIPE,PLASTIC,6 IN,.576 WALL,SDR 11.5,40 FT
794273	207913	3	EA	BOX, VALVE, FOR 6" AND 8" VALVES, 43-68 IN. LONG
794273	203073	1	EA	COUPLING,PLASTIC,4 IN,ELECTROFUSION
794273	208580	4	EA	REDUCER,PLASTIC,6 IN X 4 IN,BUTT FUSION,SDR11/11.5
794273	202577	3	EA	SPLICE DIRECT BURY-NATURAL GAS YELLOW CONNECTORS
794273	211804	2	EA	SPLICE, DIRECT BURYLUG NATURAL GAS
794273	210995	3	EA	MARKER GAS MIDRANGE (ROUND WHEEL TYPE)
794273	2500870	395	FT	PIPE, PLASTIC, 12 IN., 1.109 WALL, SDR 11.5, 40 FT.
794273	2508845	1	EA	CLAMP, REINFORCMENT 4 IN PLASTIC PIPE
794273	210926	400	FT	WIRE 12 HDPE SOLID YELLOW (DIRECTIONAL BORING) 1000' REEL
794273	211571	4500	FT	WIRE 10 LDPE SOLID COPPER YELLOW
794273	213312	4900	FT	TAPE NATURAL GAS WARNING 6" X 1000'
794292	201215	130	FT	PIPE,PLASTIC,1-1/4 IN,.166 WALL,SDR 10, 500 FT
794292	211804	2	EA	SPLICE, DIRECT BURYLUG NATURAL GAS
794292	203048	4	EA	COUPLING,PLASTIC,3/4 IN,ELECTROFUSION
794292	203435	2	EA	TEE,PLASTIC,4 IN X 3/4 IN,ELECTROFUSION
794292	203244	2	EA	BAG SAND WITH DRAW STRINGS
794292	201205	435	FT	PIPE,PLASTIC,3/4 IN,.095 WALL,SDR 11,500 FT
794292	2509169	4	EA	COUPLING, 3/4 INCH IPS SDR 11 LYCOFIT
794292	207959	2	EA	VALVE 3/4" IPS EXCESS FLOW
794292	202577	2	EA	SPLICE DIRECT BURY-NATURAL GAS YELLOW CONNECTORS
794292	207432	2	EA	RISER 3/4" X 24" X 18" PREBENT ANODELESS METER
794292	207065	2	EA	REGULATOR,GAS,3/4 IN X 1 IN,HP,RESIDENTIAL,1/8 IN ORIFICE,TH
794292	207005	2	EA	BAR METER MOUNTING - 6" RESIDENTIAL
794292	213019	2	EA	COCK METER WITH INSULATED UNION 3/4" HP
794292	206195	2	EA	ELL,BLACK MI,1 IN,THREADED,90 DEG,SCH 40,150 LB
794292	206394	2	EA	NIPPLE,BLACK STEEL,3/4 IN X 6 IN,THREADED,SCH 40
794292	206404	4	EA	NIPPLE,BLACK STEEL,1 IN X 4 IN,THREADED,SCH 40
794292	211571	450	FT	WIRE 10 LDPE SOLID COPPER YELLOW
794292	213312	450	FT	TAPE NATURAL GAS WARNING 6" X 1000'

ATTACHMENT C3
CU Approved Gas Materials
Sorted by Stock Item Number

The link below will allow access to a list of all approved gas materials and acceptable brands for use on City Utilities gas relocation work. The contractor should use the Stock Item Number from the project material report provided in Attachment C2 to find the Acceptable Brands OR AN APPROVED EQUAL MATERIAL.

https://www.cityutilities.net/purchasing/forms/CU_INV_GW_SO_Gas.pdf

As noted in the Special Conditions, the contractor is responsible for meeting "Buy America" requirements. City Utilities does not guarantee that the items on the following pages meet the "Buy America" requirements; therefore, it is the contractor's responsibility to provide certification of all materials requiring compliance with "Buy America".

For more information on the "Buy America" requirements, the contractor should visit and review Category 643.2.16 (Buy America for Utilities) of MoDOT's Engineering Policy Guide available online at:

http://epg.modot.mo.gov/index.php?title=643.2_Local_Utility_Adjustments_-_Public_and_Private

ATTACHMENT C4
Water Project Materials by Stock Item Number,
Sorted by CU Activity Number

The following pages contain a list of the water materials as designed on CU's Water and Gas Relocation drawing #78554 and is provided for the contractor's use and information. The contractor should use the Stock Item Number to reference the appropriate material specification within Attachment C5 to find the Acceptable Brands OR AN APPROVED EQUAL MATERIAL.

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CITY UTILITIES OF SPRINGFIELD, MISSOURI
PROJECT WATER MATERIAL LIST (CONTRACTOR FURNISHED)
CU DRAWING: 78554
KANSAS EXPRESSWAY EXTENSION - PHASE 1

ACTIVITY NUMBER	STOCK ITEM	QTY DESIGNED	UOM	DESCRIPTION
784683	211804	6	EA	SPLICE, DIRECT BURYLUG NATURAL GAS
784683	301016	30	FT	PIPE,PVC,1 IN,WATER,PE,SCH 40,20 FT L.
784683	301121	1	EA	SLEEVE,TAPPING,12 IN X 12 IN,200 PSI PVC,MJ
784683	301266	2	EA	NIPPLE,DUCTILE IRON,4 IN X 48 IN,FLANGE X PE,CEMENT MORTAR
784683	301801	2	EA	LID BLOW-OFF
784683	302020	3	EA	VALVE AIR RELIEF 2" INLET X 2" OUTLET
784683	302022	37	FT	PIPE,PVC,8 IN,WATER,PUSH-ON,C900,20 FT LENGTH
784683	302039	2099	FT	PIPE,PVC,12 IN,WATER,PUSH-ON,C900,20 FT L.
784683	302060	3	EA	VALVE GATE 2" FIP THREAD NUT OPERATED RESILIENT SEAT
784683	302277	6	EA	SADDLE TAPPING 12" C900 PVC X 1" AWWA OUTLET
784683	302325	4	EA	VALVE GATE 12" MJ NUT OPERATED RESILIENT SEAT
784683	302515	50	EA	GLAND RETAINER 12" C900 PVC PIPE
784683	302549	34	EA	RESTRAINT BELL JOINT 12" C900 PVC
784683	302566	3	EA	RING MONITER COVER 6 INCH
784683	303088	5	EA	BEND,DUCTILE IRON,12 IN,11.25 DEG,MJ X MJ,350 PSI
784683	303091	5	EA	BEND,DUCTILE IRON,12 IN,22.5 DEG,MJ X MJ,350 PSI
784683	303094	8	EA	BEND,DUCTILE IRON,12 IN,45 DEG,MJ X MJ,350 PSI
784683	303097	5	EA	BEND,DUCTILE IRON,12 IN,90 DEG,MJ X MJ,350 PSI
784683	303182	2	EA	GLAND RETAINER 4" MJ
784683	303224	1	EA	PLUG,DI,12 IN, MJ,FLAT
784683	303417	1	EA	SLEEVE,SOLID,12 IN,12 IN LONG,MJ X MJ
784683	303433	1	EA	SLEEVE,TAPPING,12 IN X 12 IN,CI/DI/C900,MJ SPIGOT,18-8 S/S
784683	303960	6	EA	PLUG, 1" PLASTIC MIPT
784683	304122	12	EA	ELL,BRASS,2IN,90 DEG
784683	304185	9	EA	NIPPLE,BRASS,2 IN X 4 IN
784683	304187	3	EA	NIPPLE,BRASS,2 IN X 6 IN
784683	304188	3	EA	NIPPLE,BRASS,2 IN X 8 IN
784683	304194	3	EA	NIPPLE,BRASS,2 IN X 30 IN
784683	305332	2	EA	COUPLING 4" MALE CAM FITTING X FLANGE, MALLABLE IRON
784683	307348	6	EA	STOP CORPORATION 1" AWWA X 1" PVC PJ
784683	307350	3	EA	STOP CORPORATION 2" MIP
784683	307369	6	EA	STOP CURB 1" FIP X 1" PVC PJ
784683	310056	3	EA	BOX,METER TILE 30 IN X 36 IN,PLASTIC
784683	310060	8	EA	BOX,METER,TILE 18 IN X 36 IN,PLASTIC
784683	310128	3	EA	ADAPTER, FLANGE, 30" METER BOX MONITOR COVER
784683	312106	16	EA	BOLT COATED SS HEX 5/8" X 3" WITH COATED SS HEX NUT
784683	312120	8	EA	BOLT,MJ,3/4 IN X 3-1/2 IN,W/NUT
784683	312122	424	EA	BOLT,MJ,3/4 IN X 4 IN,W/NUT
784683	312263	2	EA	GASKET,FLANGE (FULL FACE),4 IN
784683	312275	2	EA	GASKET MJ 4"
784683	312280	53	EA	GASKET MJ 12"
784683	2501346	2100	FT	TAPE, 6 IN. X 1,000 FT. WATER WARNING
784683	2501475	6	EA	STIFFENER, INSERT, 1 IN, IPS, SDR11, HDPE
784683	2504423	2100	FT	WIRE 10 LDPE SOLID COPPER BLUE TRACER

ACTIVITY NUMBER	STOCK ITEM	QTY DESIGNED	UOM	DESCRIPTION
784683	2507775	4	EA	ADAPTER, 12 INCH MJ X MJ
784683	2507854	2	EA	REDUCER, DUCTILE IRON, 12 IN. X 4 IN., MJ X MJ
784683	2507954	6	EA	COVER, 18" METER BOX RING, PLASTIC TYPE A STYLE
784683	2507955	6	EA	RING, 18 INCH METER BOX TYPE A STYLE
784683	2507999	3	EA	COVER, MONITOR PLASTIC
784683	2508796	7	EA	BOX, VALVE, CAST IRON LID (2017 REVISION)
784683	2508797	7	EA	BOX, VALVE, CAST IRON BODY (2017 REVISION)
794267	303110	1889	FT	PIPE,POLYETHYLENE,12 IN, 50 FT. LENGHTS,SDR13.5,HDPE
794267	301004	40	FT	CASING,STEEL,16 IN,.250 WALL,20 FT L.
794267	303331	11	EA	COUPLING, POLYETHYLENE, 12 IN. ELECTROFUSION
794267	303484	4	EA	ADAPTER 12" DIPS MJ X HDPE W/ MJ KITS
794267	303960	2	EA	PLUG, 1" PLASTIC MIPT
794267	307369	2	EA	STOP CURB 1" FIP X 1" PVC PJ
794267	310060	2	EA	BOX,METER,TILE 18 IN X 36 IN,PLASTIC
794267	2501346	1500	FT	TAPE, 6 IN. X 1,000 FT. WATER WARNING
794267	2501449	2	EA	CAP, 1 IN, IPS, SDR11, HDPE, ELECTROFUSION
794267	2504423	1500	FT	WIRE 10 LDPE SOLID COPPER BLUE TRACER
794267	2504424	400	FT	WIRE BORE 12 HDPE SOLID BLUE (FOR DIRECTIONAL DRILLING)
794267	2504993	3	EA	ELL, POLYETHYLENE, 12" 90 DEGREE
794267	2505493	2	EA	TEE, TAP, 12 IN DIPS X 1 IN, IPS, SDR11 HDPE, ELECTROFUSION
794267	2505852	2	EA	ELL,POLYETHYLENE,1 IN IPS,90 DEG.,SDR 11,160 PSI,HDPE SOCKET
794267	2505897	12	FT	PIPE, POLYETHYLENE, 1 IN., IPS, STICK, SDR11, HDPE, 20 FT.
794267	2507954	2	EA	COVER, 18" METER BOX RING, PLASTIC TYPE A STYLE
794267	2507955	2	EA	RING, 18 INCH METER BOX TYPE A STYLE
794268	211804	1	EA	SPLICE, DIRECT BURYLUG NATURAL GAS
794268	301016	5	FT	PIPE,PVC,1 IN,WATER,PE,SCH 40,20 FT L.
794268	302022	215	FT	PIPE,PVC,8 IN,WATER,PUSH-ON,C900,20 FT LENGTH
794268	301004	120	FT	CASING,STEEL,16 IN,.250 WALL,20 FT L.
794268	302532	6	EA	RESTRAINT BELL JOINT 8" C900 PVC
794268	301223	14	EA	SPACER 8" DI & C900 PVC X 16" STEEL CASING
794268	302243	1	EA	SADDLE TAPPING 8" C900 PVC X 1" AWWA OUTLET
794268	302275	1	EA	VALVE GATE 8" MJ NUT OPERATED RESILIENT SEAT
794268	302515	4	EA	GLAND RETAINER 12" C900 PVC PIPE
794268	303070	2	EA	BEND,DUCTILE IRON,8 IN,45 DEG,MJ X MJ
794268	303216	1	EA	PLUG,DI,8 IN, MJ,FLAT
794268	303381	1	EA	SLEEVE,SOLID,8 IN,12 IN LONG,MJ X MJ
794268	303562	2	EA	TEE,DUCTILE IRON,12 IN X 8 IN,MJ X MJ
794268	303600	12	EA	GLAND RETAINER 8" C900 PVC PIPE
794268	303960	1	EA	PLUG, 1" PLASTIC MIPT
794268	307348	1	EA	STOP CORPORATION 1" AWWA X 1" PVC PJ
794268	307369	1	EA	STOP CURB 1" FIP X 1" PVC PJ
794268	310060	1	EA	BOX,METER,TILE 18 IN X 36 IN,PLASTIC
794268	312120	60	EA	BOLT,MJ,3/4 IN X 3-1/2 IN,W/NUT
794268	312122	44	EA	BOLT,MJ,3/4 IN X 4 IN,W/NUT
794268	312271	1	EA	GASKET TRANSITION 8" MJ X PVC
794268	312278	11	EA	GASKET MJ 8"
794268	2501346	215	FT	TAPE, 6 IN. X 1,000 FT. WATER WARNING
794268	2501475	1	EA	STIFFENER, INSERT, 1 IN, IPS, SDR11, HDPE
794268	2501751	1	EA	RESTRAINT, BELL JOINT, 8" IPS CLASS 200 PVC

ACTIVITY NUMBER	STOCK ITEM	QTY DESIGNED	UOM	DESCRIPTION
794268	2504423	215	FT	WIRE 10 LDPE SOLID COPPER BLUE TRACER
794268	2507954	1	EA	COVER, 18" METER BOX RING, PLASTIC TYPE A STYLE
794268	2507955	1	EA	RING, 18 INCH METER BOX TYPE A STYLE
794268	2508796	1	EA	BOX, VALVE, CAST IRON LID (2017 REVISION)
794268	2508797	1	EA	BOX, VALVE, CAST IRON BODY (2017 REVISION)
794269	211804	3	EA	SPLICE, DIRECT BURYLUG NATURAL GAS
794269	302022	8	FT	PIPE,PVC,8 IN,WATER,PUSH-ON,C900,20 FT LENGTH
794269	302060	1	EA	VALVE GATE 2" FIP THREAD NUT OPERATED RESILIENT SEAT
794269	302294	1	EA	SADDLE TAPPING 12" C900 PVC PIPE X 2" IP OUTLET
794269	303059	200	FT	PIPE,POLYETHYLENE,2 IN,500 FT,SDR11,HDPE
794269	303076	5	EA	COUPLING,POLYETHYLENE,2 IN,ELECTROFUSION
794269	303144	2	EA	TRANSITION, 2 IN HDPE X MIP STAINLESS STEEL
794269	303960	2	EA	PLUG, 1" PLASTIC MIPT
794269	307218	1	EA	COUPLING,ADAPTER,2 IN X 2 IN,MIP X PVC PJ,STRAIGHT
794269	307350	1	EA	STOP CORPORATION 2" MIP
794269	307369	2	EA	STOP CURB 1" FIP X 1" PVC PJ
794269	310060	3	EA	BOX,METER,TILE 18 IN X 36 IN,PLASTIC
794269	2501416	2	EA	ELL, 90 DEGREE, 2 IN, IPS, SDR11, HDPE, ELECTROFUSION
794269	2501449	2	EA	CAP, 1 IN, IPS, SDR11, HDPE, ELECTROFUSION
794269	2504423	208	FT	WIRE 10 LDPE SOLID COPPER BLUE TRACER
794269	2501346	200	FT	TAPE, 6 IN. X 1,000 FT. WATER WARNING
794269	2505013	1	EA	VALVE GATE 2" WITH PE STUBS NUT OPERATED RESILIENT SEAT
794269	2505710	2	EA	TEE, TAP, 2 IN IPS X 1 IN, IPS, SDR11, HDPE, ELECTROFUSION
794269	2505843	1	EA	ELL, POLYETHYLENE, 2" IPS, 90 DEG., SDR 11, 160 PSI, HDPE
794269	2505851	2	EA	COUPLING, 1 IN., IPS, SDR11, HDPE, SOCKET FUSION
794269	2505852	2	EA	ELL,POLYETHYLENE,1 IN IPS,90 DEG.,SDR 11,160 PSI,HDPE SOCKET
794269	2505897	12	FT	PIPE, POLYETHYLENE, 1 IN., IPS, STICK, SDR11, HDPE, 20 FT.
794269	2505898	4	FT	PIPE, POLYETHYLENE, 2 IN., IPS, STICK, SDR11, HDPE 20 FT
794269	2507954	3	EA	COVER, 18" METER BOX RING, PLASTIC TYPE A STYLE
794269	2507955	3	EA	RING, 18 INCH METER BOX TYPE A STYLE
794269	2508796	2	EA	BOX, VALVE, CAST IRON LID (2017 REVISION)
794269	2508797	2	EA	BOX, VALVE, CAST IRON BODY (2017 REVISION)
794293	301988	54	FT	PIPE,DUCTILE IRON,6 IN,PUSH-ON,CLASS 350,18 FT L.,CEMENT MOT
794293	302022	36	FT	PIPE,PVC,8 IN,WATER,PUSH-ON,C900,20 FT LENGTH
794293	302192	8	EA	VALVE GATE 6" MJ NUT OPERATED RESILIENT SEAT
794293	302515	14	EA	GLAND RETAINER 12" C900 PVC PIPE
794293	303184	32	EA	GLAND RETAINER 6" MJ
794293	303536	1	EA	TEE,DUCTILE IRON,8 IN X 6 IN,MJ X MJ
794293	303556	7	EA	TEE,DUCTILE IRON,12 IN X 6 IN,MJ X MJ
794293	303600	2	EA	GLAND RETAINER 8" C900 PVC PIPE
794293	304058	2	EA	COUPLING,POLYETHYLENE,6 IN,ELECTROFUSION
794293	312120	204	EA	BOLT,MJ,3/4 IN X 3-1/2 IN,W/NUT
794293	312122	112	EA	BOLT,MJ,3/4 IN X 4 IN,W/NUT
794293	312276	32	EA	GASKET MJ 6"
794293	312278	2	EA	GASKET MJ 8"
794293	312280	14	EA	GASKET MJ 12"
794293	2505010	1	EA	HYDRANT FIRE 5 FT BURY DEPTH WITH HDPE STUB
794293	2505015	1	EA	VALVE GATE 6" WITH PE STUBS NUT OPERATED RESILIENT SEAT
794293	2505841	1	EA	SADDLE, 12" DIPS X 6" DIPS HDPE ELECTROFUSION BRANCH

ACTIVITY NUMBER	STOCK ITEM	QTY DESIGNED	UOM	DESCRIPTION
794293	2506575	8	EA	HYDRANT FIRE 5' WITH 5 1/4" VALVE
794293	2507773	8	EA	ADAPTER, 6 INCH MJ X MJ
794293	2508796	9	EA	BOX, VALVE, CAST IRON LID (2017 REVISION)
794293	2508797	9	EA	BOX, VALVE, CAST IRON BODY (2017 REVISION)

ATTACHMENT C5
CU Approved Water Materials
Sorted by Stock Item Number

The link below will allow access to a list of all approved water materials and acceptable brands for use on City Utilities water relocation work. The contractor should use the Stock Item Number from the project material report provided in Attachment C4 to reference the appropriate material specification to find the Acceptable Brands OR AN APPROVED EQUAL MATERIAL.

https://www.cityutilities.net/purchasing/forms/CU_INV_GW_SO_Water.pdf

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ATTACHMENT D

APPROVED NATURAL GAS AND WATER CONTRACTORS

City Utilities Prequalified Gas Contractors*
Kansas Expressway Extension – Phase 1 NG&W Relocations
May 7, 2021

Company	Address	City	State	Zip	Phone	Prequal. Area	Prequal Contr. Status
Conklin Trucking & Excavation, LLC	3920 E. Ridgeview St.	Springfield	MO	65809	(417) 225-2429	G/W	Approved
D & E Plumbing, Inc.	1112 N. Falcon Crest Ct.	Nixa	MO	65714	(417) 866-4200	ET/G/W	Approved
Emery Sapp & Sons	5350 E State Hwy AA	Springfield	MO	65803	(417) 833-9915	ET/G/W	Approved
Excel Utility Contractors, LLC	PO Box 129	St. James	MO	65559	(573) 265-0888	G/W	Approved
Gillespie Excavating Co.	2068 N. Farm Road 227	Strafford	MO	65757	(417) 736-3774	ET/G/W	Approved
Hamilton & Dad, Inc.	12390 W Faith Lane	Republic	MO	65738	(417) 732-8796	G/W	Approved
Hartman & Company	1200 E. Woodhurst Dr., Suite J200	Springfield	MO	65804	(417) 882-2062	ET/G/W/General	Approved
Hogan Mechanical, Inc	24339 Lawrence 2020	Ash Grove	MO	65604	(417) 224-3688	ET/G/W	Approved
Howald, LLC	366 Haynes Dr.	Sparta	MO	65753	(417) 988-5603	G/W	Approved
Kenny Singer Construction	503 W. Olive	Aurora	MO	65605	(417) 678-3871	G/W	Approved
L&B Services	1214 W Ridgecrest St	Ozark	MO	65721	(417) 848-7269	G/W	Approved
MP Technologies, LLC	9938 State Highway 55 NW	Annandale	MN	55302	(320) 963-2499	G	Approved
Q3 Contracting LLC	3066 Spruce St.	Little Canada	MN	55117	(651) 224-2424	G	Approved
Seven Valleys Construction Co, Inc.	PO Box 88	Cassville	MO	65625-0088	(417) 847-2355	G/W	Approved
Show Me Utilities	4762 North State Highway NN	Ozark	MO	65721	(417) 224-3647	G/W	Restricted
TJS Excavating LLC	2060 W. Haseltine Rd.	Brookline	MO	65619	(417) 844-7191	G/W	Approved
Underground Utility Systems, LLC	14050 E Hwy 215	Stockton	MO	65785	(417) 818-8796	G/W	Approved

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City Utilities Prequalified Water Contractors*
Kansas Expressway Extension – Phase 1 NG&W Relocations
May 7, 2021

Company	Address	City	State	Zip	Phone	Prequal. Area	Prequal Contr. Status
Branco Enterprises, Inc.	12033 E. Highway 86	Neosho	MO	64850	(417) 451-5250	W	Approved
Conklin Trucking & Excavation, LLC	3920 E. Ridgeview St.	Springfield	MO	65809	(417) 225-2429	G/W	Approved
D & E Plumbing, Inc.	1112 N. Falcon Crest Ct.	Nixa	MO	65714	(417) 866-4200	ET/G/W	Approved
Emery Sapp & Sons	5350 E State Hwy AA	Springfield	MO	65803	(417) 833-9915	ET/G/W	Approved
Ewing Signal Construction, LLC	1730 N. Gregory Dr	Nixa	MO	65714	(417) 724-9405	E1/ET/W	Approved
Excel Utility Contractors, LLC	PO Box 129	St. James	MO	65559	(573) 265-0888	G/W	Approved
Flat Creek Excavating	14843 Business State Hwy 13, Ste1	Branson West	MO	65737	(417) 739-2099	W	Approved
Gillespie Excavating Co.	2068 N. Farm Road 227	Strafford	MO	65757	(417) 736-3774	ET/G/W	Approved
Hamilton & Dad, Inc.	12390 W Faith Lane	Republic	MO	65738	(417) 732-8796	G/W	Approved
Hartman & Company	1200 E. Woodhurst Dr., Suite J200	Springfield	MO	65804	(417) 882-2062	ET/G/W/General	Approved
Hogan Mechanical, Inc	24339 Lawrence 2020	Ash Grove	MO	65604	(417) 224-3688	ET/G/W	Approved
Howald, LLC	366 Haynes Dr.	Sparta	MO	65753	(417) 988-5603	G/W	Approved
Jeff Asbell Excavating and Trucking	9400 Hwy 171	Carl Junction	MO	64834	417-649-1269	W	Approved
Kenny Singer Construction	503 W. Olive	Aurora	MO	65605	(417) 678-3871	G/W	Approved
L&B Services	1214 W Ridgecrest St	Ozark	MO	65721	(417) 848-7269	G/W	Approved
Lehman Construction LLC	900 Russellville Rd	California	MO	65018	(573) 796-8101	W	Approved
Rosetta Construction, LLC	PO Box 14024	Springfield	MO	65814	(417) 886-2094	W	Approved
Seven Valleys Construction Co, Inc.	PO Box 88	Cassville	MO	65625-0088	(417) 847-2355	G/W	Approved
Show Me Utilities	4762 North State Highway NN	Ozark	MO	65721	(417) 224-3647	G/W	Restricted
TJS Excavating LLC	2060 W. Haseltine Rd.	Brookline	MO	65619	(417) 844-7191	G/W	Approved
Underground Utility Systems, LLC	14050 E Hwy 215	Stockton	MO	65785	(417) 818-8796	G/W	Approved

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