CALL NO. 328

CONTRACT ID. 211041

MORGAN COUNTY

FED/STATE PROJECT NUMBER FD04 088 0460 017-018

DESCRIPTION WEST LIBERTY(US-460)

WORK TYPE GRADE & DRAIN WITH ASPHALT SURFACE

PRIMARY COMPLETION DATE 10/31/2021

LETTING DATE: July 23,2021

Sealed Bids will be received electronically through the Bid Express bidding service until 10:00 am EASTERN DAYLIGHT TIME July 23,2021. Bids will be publicly announced at 10:00 a.m. EASTERN DAYLIGHT TIME.

NO PLANS ASSOCIATED WITH THIS PROJECT.

REQUIRED BID PROPOSAL GUARANTY: Not less than 5% of the total bid.

TABLE OF CONTENTS

PART I

SCOPE OF WORK

ADMINISTRATIVE DISTRICT - 10

CONTRACT ID - 211041

FD04 088 0460 017-018

COUNTY - MORGAN

PCN - DE08804602141
FD04 088 0460 017-018

WEST LIBERTY(US-460) (MP 17.0) DRAINAGE SYSTEM REPAIRS ON US-460 IN WEST LIBERTY (MP 18.0), A DISTANCE OF 0.11 MILES.GRADE & DRAIN WITH ASPHALT SURFACE SYP NO. 10-00293.20.

GEOGRAPHIC COORDINATES LATITUDE 37:55:18.00 LONGITUDE 83:15:36.00

COMPLETION DATE(S):

COMPLETED BY 10/31/2021 APPLIES TO ENTIRE CONTRACT

CONTRACT NOTES

PROPOSAL ADDENDA

All addenda to this proposal must be applied when calculating bid and certified in the bid packet submitted to the Kentucky Department of Highways. Failure to use the correct and most recent addenda may result in the bid being rejected.

BID SUBMITTAL

Bidder must use the Department's electronic bidding software. The Bidder must download the bid file located on the Bid Express website (www.bidx.com) to prepare a bid packet for submission to the Department. The bidder must submit electronically using Bid Express.

JOINT VENTURE BIDDING

Joint venture bidding is permissible. All companies in the joint venture must be prequalified in one of the work types in the Qualifications for Bidders for the project. The bidders must get a vendor ID for the joint venture from the Division of Construction Procurement and register the joint venture as a bidder on the project. Also, the joint venture must obtain a digital ID from Bid Express to submit a bid. A joint bid bond of 5% may be submitted for both companies or each company may submit a separate bond of 5%.

UNDERGROUND FACILITY DAMAGE PROTECTION

The contractor shall make every effort to protect underground facilities from damage as prescribed in the Underground Facility Damage Protection Act of 1994, Kentucky Revised Statute KRS 367.4901 to 367.4917. It is the contractor's responsibility to determine and take steps necessary to be in compliance with federal and state damage prevention directives. When prescribed in said directives, the contractor shall submit Excavation Locate Requests to the Kentucky Contact Center (KY811) via web ticket entry. The submission of this request does not relieve the contractor from the responsibility of contacting non-member facility owners, whom shall be contacted through their individual Protection Notification Center. Non-compliance with these directives can result in the enforcement of penalties.

REGISTRATION WITH THE SECRETARY OF STATE BY A FOREIGN ENTITY

Pursuant to KRS 176.085(1)(b), an agency, department, office, or political subdivision of the Commonwealth of Kentucky shall not award a state contract to a person that is a foreign entity required by KRS 14A.9-010 to obtain a certificate of authority to transact business in the Commonwealth ("certificate") from the Secretary of State under KRS 14A.9-030 unless the person produces the certificate within fourteen (14) days of the bid or proposal opening. If the foreign entity is not required to obtain a certificate as provided in KRS 14A.9-010, the foreign entity should identify the applicable exception. Foreign entity is defined within KRS 14A.1-070.

For all foreign entities required to obtain a certificate of authority to transact business in the Commonwealth, if a copy of the certificate is not received by the contracting agency within the time frame identified above, the foreign entity's solicitation response shall be deemed non-responsive or the awarded contract shall be cancelled.

Businesses can register with the Secretary of State at https://secure.kentucky.gov/sos/ftbr/welcome.aspx .

SPECIAL NOTE FOR PROJECT QUESTIONS DURING ADVERTISEMENT

Questions about projects during the advertisement should be submitted in writing to the Division of Construction Procurement. This may be done by fax (502) 564-7299 or email to kytc.projectquestions@ky.gov. The Department will attempt to answer all submitted questions. The Department reserves the right not to answer if the question is not pertinent or does not aid in clarifying the project intent.

The deadline for posting answers will be 3:00 pm Eastern Daylight Time, the day preceding the Letting. Questions may be submitted until this deadline with the understanding that the later a question is submitted, the less likely an answer will be able to be provided.

The questions and answers will be posted for each Letting under the heading "Questions & Answers" on the Construction Procurement website (www.transportation.ky.gov/contract). The answers provided shall be considered part of this Special Note and, in case of a discrepancy, will govern over all other bidding documents.

HARDWOOD REMOVAL RESTRICTIONS

The US Department of Agriculture has imposed a quarantine in Kentucky and several surrounding states, to prevent the spread of an invasive insect, the emerald ash borer. Hardwood cut in conjunction with the project may not be removed from the state. Chipping or burning on site is the preferred method of disposal.

INSTRUCTIONS FOR EXCESS MATERIAL SITES AND BORROW SITES

Identification of excess material sites and borrow sites shall be the responsibility of the Contractor. The Contractor shall be responsible for compliance with all applicable state and federal laws and may wish to consult with the US Fish and Wildlife Service to seek protection under Section 10 of the Endangered Species Act for these activities.

ACCESS TO RECORDS

The contractor, as defined in KRS 45A.030 (9) agrees that the contracting agency, the Finance and Administration Cabinet, the Auditor of Public Accounts, and the Legislative Research Commission, or their duly authorized representatives, shall have access to any books, documents, papers, records, or other evidence, which are directly pertinent to this contract for the purpose of financial audit or program review. Records and other prequalification information confidentially

disclosed as part of the bid process shall not be deemed as directly pertinent to the contract and shall be exempt from disclosure as provided in KRS 61.878(1)(c). The contractor also recognizes that any books, documents, papers, records, or other evidence, received during a financial audit or program review shall be subject to the Kentucky Open Records Act, KRS 61.870 to 61.884.

In the event of a dispute between the contractor and the contracting agency, Attorney General, or the Auditor of Public Accounts over documents that are eligible for production and review, the Finance and Administration Cabinet shall review the dispute and issue a determination, in accordance with Secretary's Order 11-004.

SPECIAL NOTE FOR RECIPROCAL PREFERENCE

RECIPROCAL PREFERENCE TO BE GIVEN BY PUBLIC AGENCIES TO RESIDENT BIDDERS

By reference, KRS 45A.490 to 45A.494 are incorporated herein and in compliance regarding the bidders residency. Bidders who want to claim resident bidder status should complete the Affidavit for Claiming Resident Bidder Status along with their bid in the electronic bidding software. Submittal of the Affidavit should be done along the bid in Bid Express.

April 30, 2018

EXPEDITE PROJECT WORK ORDER

The Contractor may request that the Department expedite the work order for this project to allow for maximization of time to complete the work. In order for the Department to accomplish this task, the Contractor may be required to "hand carry" all required project documentation to facilitate the process. Immediately UPON NOTIFICATION OF AWARD OF THE CONTRACT, deliver required project documentation to:

Division of Construction Procurement
200 Mero St.
Frankfort, KY 40602

ASPHALT MIXTURE

Unless otherwise noted, the Department estimates the rate of application for all asphalt mixtures to be 110 lbs/sy per inch of depth.

DGA BASE

Unless otherwise noted, the Department estimates the rate of application for DGA Base to be 115 lbs/sy per inch of depth.

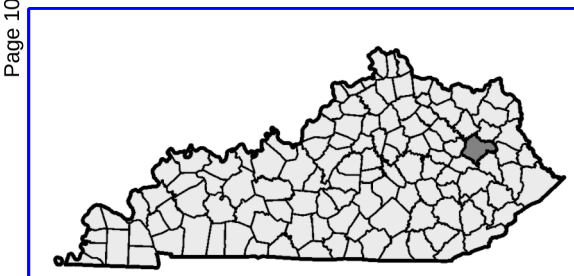
DGA BASE FOR SHOULDERS

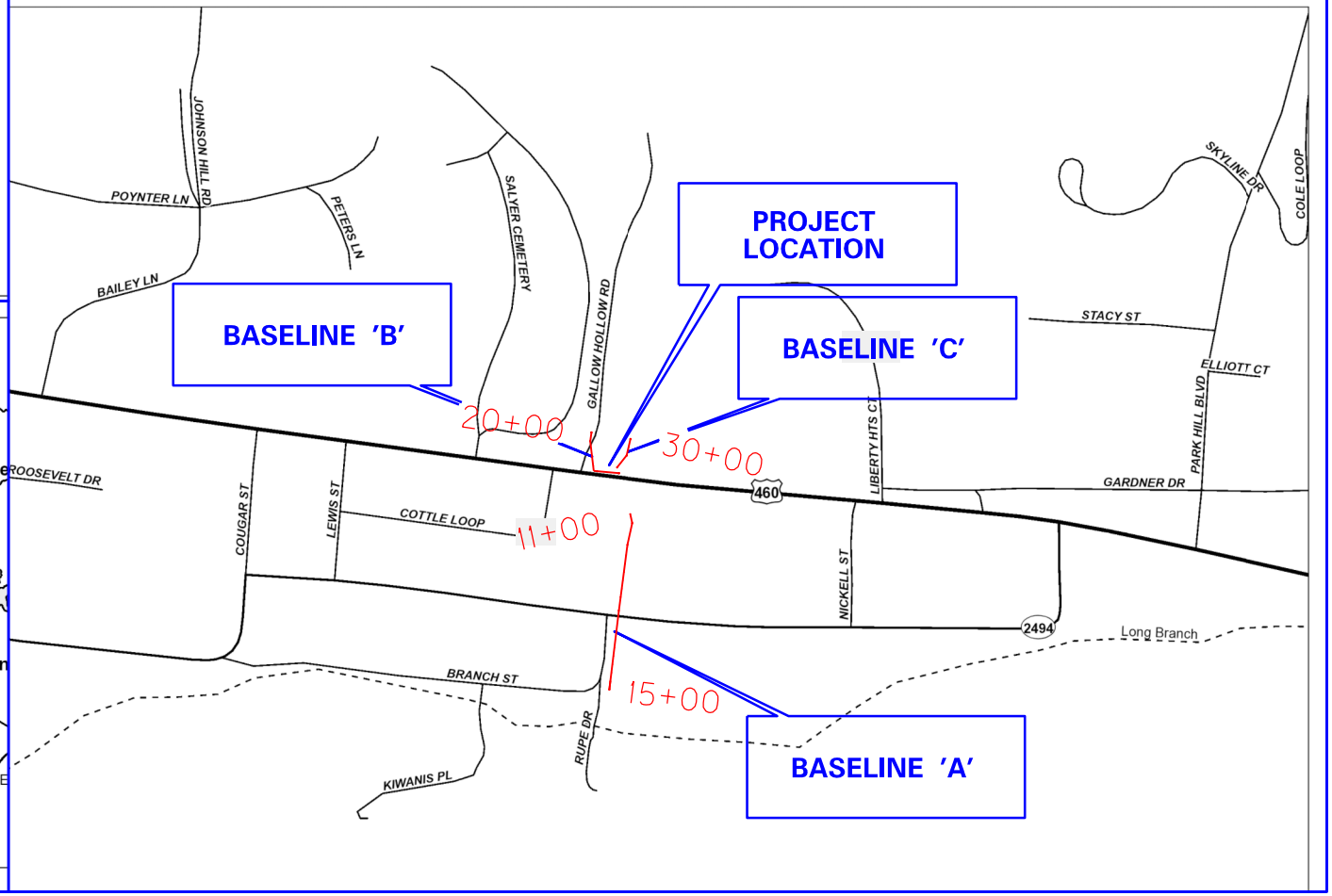
Unless otherwise noted, the Department estimates the rate of application for DGA Base for Shoulders to be 115 lbs/sy per inch of depth. The Department will not measure necessary grading and/or shaping of existing shoulders prior to placing of DGA Base, but shall be incidental to the Contract unit price per ton for DGA Base.

Accept payment at the Contract unit price per ton as full compensation for all labor, materials, equipment, and incidentals for grading and/or shaping of existing shoulders and furnishing, placing, and compacting the DGA Base.

INCIDENTAL SURFACING

The Department has included in the quantities of asphalt mixtures established in the proposal estimated quantities required for resurfacing or surfacing mailbox turnouts, farm field entrances, residential and commercial entrances, curve widening, ramp gores and tapers, and road and street approaches, as applicable. Pave these areas to the limits as shown on Standard Drawing RPM-110-06 or as directed by the Engineer. In the event signal detectors are present in the intersecting streets or roads, pave the crossroads to the right of way limit or back of the signal detector, whichever is the farthest back of the mainline. Surface or resurface these areas as directed by the Engineer. The Department will not measure placing and compacting for separate payment but shall be incidental to the Contract unit price for the asphalt mixtures.





PROJECT NUMBER: _____

ITEM NUMBER: 10–293.20 **LETTING DATE:** _____

RECOMMENDED BY: DARREN BACK, P.E. **DATE:** _____
Project Manager

PLAN APPROVED BY: _____ **DATE:** _____
State Highway Engineer

FHWA APPROVED BY: _____ **DATE:** _____

3 HMB Circle, U.S. 460
Frankfort, KY 40601
502-695-9800

MORGAN COUNTY
ITEM NO 10-293.20
West Liberty Drainage Repair
GENERAL SUMMARY

ITEM NUMBER	ITEM	UNIT	QUANTITY
00001	DGA BASE	TON	38
00212	CL2 ASPH BASE 1.00D PG64-22	TON	36
00301	CL2 ASPH SURF 0.38D PG64-22	TON	18
00356	ASPHALT MATERIAL FOR TACK	TON	0.1
02677	ASPHALT PAVE MILLING & TEXTURING	TON	4
02562	TEMPORARY SIGNS	SQFT	150
02650	MAINTAIN & CONTROL TRAFFIC	LS	1
02726	STAKING	LS	1
00020	TRAFFIC BOUND BASE	TON	24
06514	PAVE STRIPING-PERM PAINT-4 IN	LF	70
02545	CLEARING AND GRUBBING (1)	LS	1
02701	TEMP SILT FENCE	LF	275
05985	SEEDING AND PROTECTION	SQYD	2,000
05963	INITIAL FERTILIZER	TON	0.3
05952	TEMP MULCH	SQYD	3,000
05964	MAINTENANCE FERTILIZER	TON	0.2
05992	AGRICULTURAL LIMESTONE	TON	3.1
05953	TEMP SEEDING AND PROTECTION	SQYD	2,500
00524	STORM SEWER PIPE-24 IN	LF	123
00528	STORM SEWER PIPE-36 IN	LF	354
01212	PIPE CULVERT HEADWALL-36 IN	EACH	1
01434	SLOPED BOX OUTLET TYPE 1-24 IN	EACH	2
01499	DROP BOX INLET TYPE 4	EACH	1
01500	DROP BOX INLET TYPE 4 MOD	EACH	2
01756	MANHOLE TYPE A	EACH	1
01761	MANHOLE TYPE B	EACH	1
02483	CHANNEL LINING CLASS II	TON	71
02607	FABRIC-GEOTEXTILE CLASS 2 FOR PIPE	SQYD	2,538
23948EC	RESET MANHOLE AND LID (TY 2)	EACH	2
14057	W PIPE PVC 03 INCH	LF	50
14094	W TIE-IN 06 INCH	EACH	2
16016	G PIPE POLYETHYLENE/PLASTIC 03 INCH	LF	90
16042	G TIE-IN POLYETHYLENE/PLASTIC 03 INCH	EACH	4
02569	DEMOBILIZATION	LS	1

(1) FOR CLEARING EXISTING BASIN

COUNTY OF	ITEM NO.	SHEET
MORGAN	10-293.20	R1

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

PLANS OF
PROPOSED PROJECT
WEST LIBERTY
US460 / KY 7
IMPROVEMENTS
MORGAN COUNTY

FD04 088 0460 017-018

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
R1	LAYOUT SHEET
R2-3	PLAN AND PROFILE SHEETS
R4	UTILITY RELOCATION SHEET
R5	RIGHT OF WAY SUMMARY SHEET
R6	RIGHT OF WAY STRIP MAP SHEET
R7	COORDINATE CONTROL SHEET

SHEETS NOT INCLUDED IN TOTAL SHEETS

N/A

STANDARD DRAWINGS

NUMBER

RDB-004-10
RDB-100-05
RDB-101-05

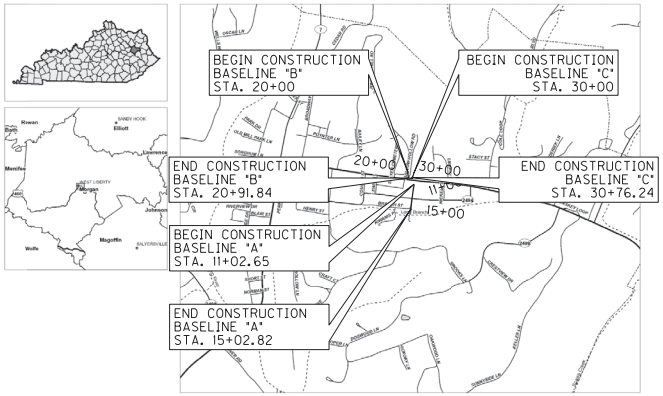
RDD-040-05

RDI-001-10
RDI-002-05
RDI-020-10
RDI-021-01
RDI-025-06
RDI-026-01

RDM-001-07
RDM-005-06
RDM-055
RDM-105-03

TTC-100-05
TTC-135-03

TOTAL STANDARD DRAWINGS : 16



THE CONTROL OF ACCESS ON THIS PROJECT SHALL BE BY PERMIT

LAYOUT MAP

0' 1000' 2000' 4000'

SCALE 1"=1000'

DESIGN CRITERIA

CLASS OF HIGHWAY
TYPE OF TERRAIN
DESIGN SPEED
REQUIRED NPSD
REQUIRED PSD
LEVEL OF SERVICE
ADT PRESENT ( )
ADT FUTURE ( )
DHV
D %
T %

GEOGRAPHIC COORDINATES

LATITUDE 37 DEGREES 55 MINUTES 18 SECONDS NORTH
LONGITUDE 83 DEGREES 15 MINUTES 36 SECONDS WEST

DESIGNED

% RESTRICTED SD
LEVEL OF SERVICE
MAX. DISTANCE W/O PASSING

BASELINE "A"

LENGTH 400.17 LIN. FT. 0.076 MILES
ADDED / DEDUCTED — FOR EQUALITIES ____ LIN. FT.
NOT INCLUDED
RAILROAD CROSSINGS NO. ____ LIN. FT.
BRIDGES ____ LIN. FT.

BASELINE "B"

LENGTH 91.84 LIN. FT. 0.017 MILES
ADDED / DEDUCTED — FOR EQUALITIES ____ LIN. FT.
NOT INCLUDED
RAILROAD CROSSINGS NO. ____ LIN. FT.
BRIDGES ____ LIN. FT.

BASELINE "C"

LENGTH 76.24 LIN. FT. 0.014 MILES
ADDED / DEDUCTED — FOR EQUALITIES ____ LIN. FT.
NOT INCLUDED
RAILROAD CROSSINGS NO. ____ LIN. FT.
BRIDGES ____ LIN. FT.

LENGTH ____ LIN. FT. ____ MILES
ADDED / DEDUCTED — FOR EQUALITIES ____ LIN. FT.
NOT INCLUDED
RAILROAD CROSSINGS NO. ____ LIN. FT.
BRIDGES ____ LIN. FT.

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS
COUNTY OF
MORGAN

ITEM NO. 10-293.20
PROJECT NUMBER: FD52 1550 C088 E143 STP 4602 089
LETTING DATE:

RECOMMENDED BY: MATT SIPES, P.E. PROJECT MANAGER DATE:

PLAN APPROVED BY: STATE HIGHWAY ENGINEER DATE:

COUNTY OF	ITEM NO.	SHEET NO.
MORGAN	10-293.20	R2

UTILITY OWNERS

GAS :

West Liberty Gas Service
565 Main St.
West Liberty, KY 41472
Attn.: Jeremy Lewis
Cell: 606-495-6259

Water / Sewer:

West Liberty Water Works
565 Main Street
West Liberty , KY 41472
Attn.: Kevin Cantrell (Water Operations)
Attn.: Rod B Adams (Sewer Operations)
Phone: (606) 743-3330

Electric:

American Electric Company
12333 Kevin Avenue
Ashland, KY 41102
Attn.: Ron Canfield
Phone: (606) 924-1462

Telephone:

Mountain Rural Telephone
P.O. Box 399
405 Main Street
West Liberty, KY 41472
Attn.: Rick Pelfrey (Plant Manager)
Attn.: Junior Barrett (Engineering Dept)
Phone: (606) 743-3121

1 D.B.I. TYPE 4
T.G. 786.00
FL. IN 780.23
FL. OUT 780.15

2 D.B.I. TYPE 4
T.G. 781.75
FL. IN 775.75
FL. OUT 775.67

3 D.B.I. TYPE 4
T.G. 781.33
FL. IN 774.85
FL. OUT 774.77

4 36" CULV. HDWL.
O.E. 772.00

5 24" SLOPED BOX OUTLET
I.E. 806.92

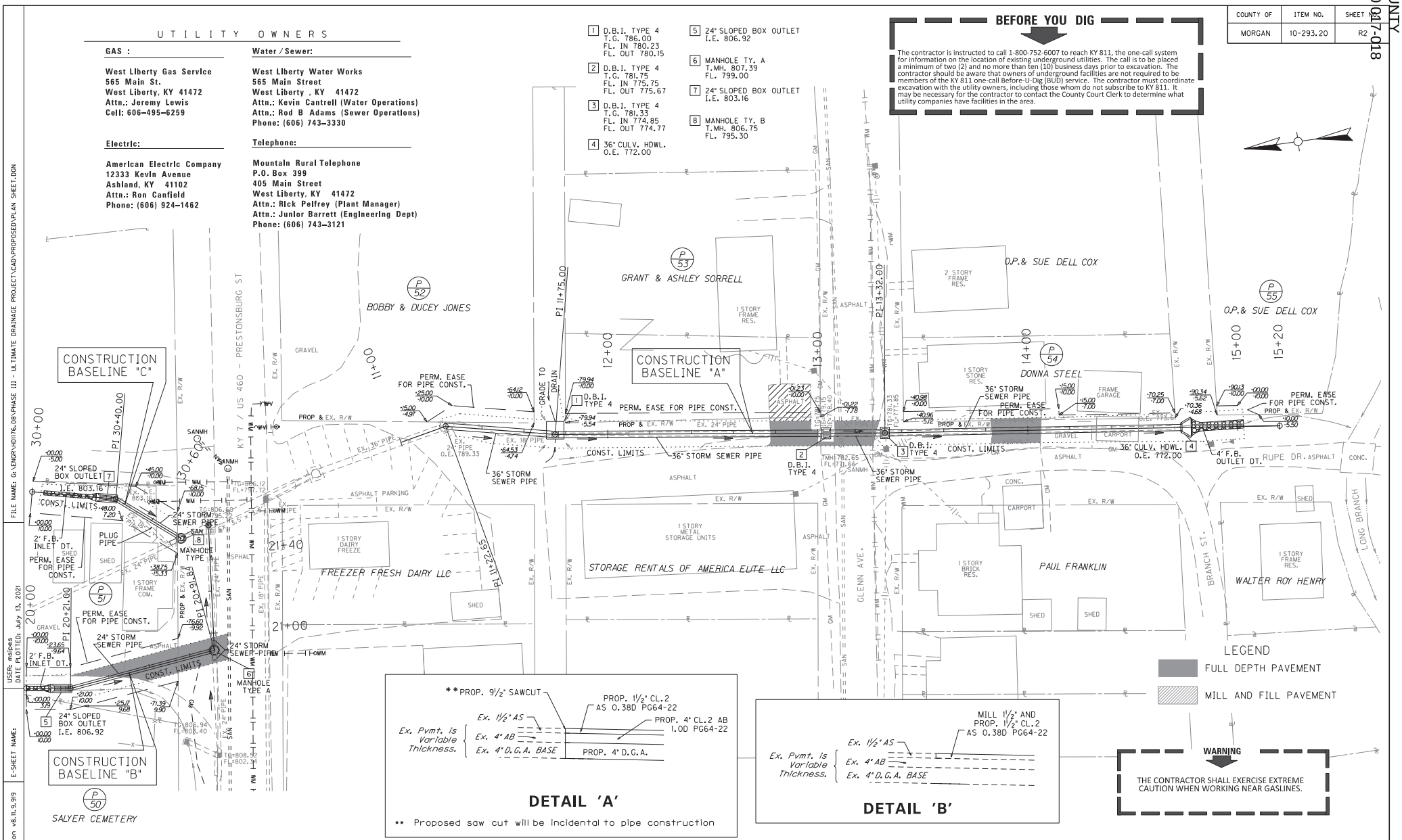
6 MANHOLE TY. A
T.MH. 807.39
FL. 799.00

7 24" SLOPED BOX OUTLET
I.E. 803.16

8 MANHOLE TY. B
T.MH. 806.75
FL. 795.30

BEFORE YOU DIG

The contractor is instructed to call 1-800-752-6007 to reach KY 811, the one-call system for information on the location of existing underground utilities. The call is to be placed a minimum of two (2) and no more than ten (10) business days prior to excavation. The contractor should be aware that owners of underground facilities are not required to be members of the KY 811 one-call Before-U-Dig (BUD) service. The contractor must coordinate excavation with the utility owners, including those whom do not subscribe to KY 811. It may be necessary for the contractor to contact the County Court Clerk to determine what utility companies have facilities in the area.



LEGEND

- FULL DEPTH PAVEMENT
- MILL AND FILL PAVEMENT

DETAIL 'A'

** Proposed saw cut will be incidental to pipe construction

DETAIL 'B'

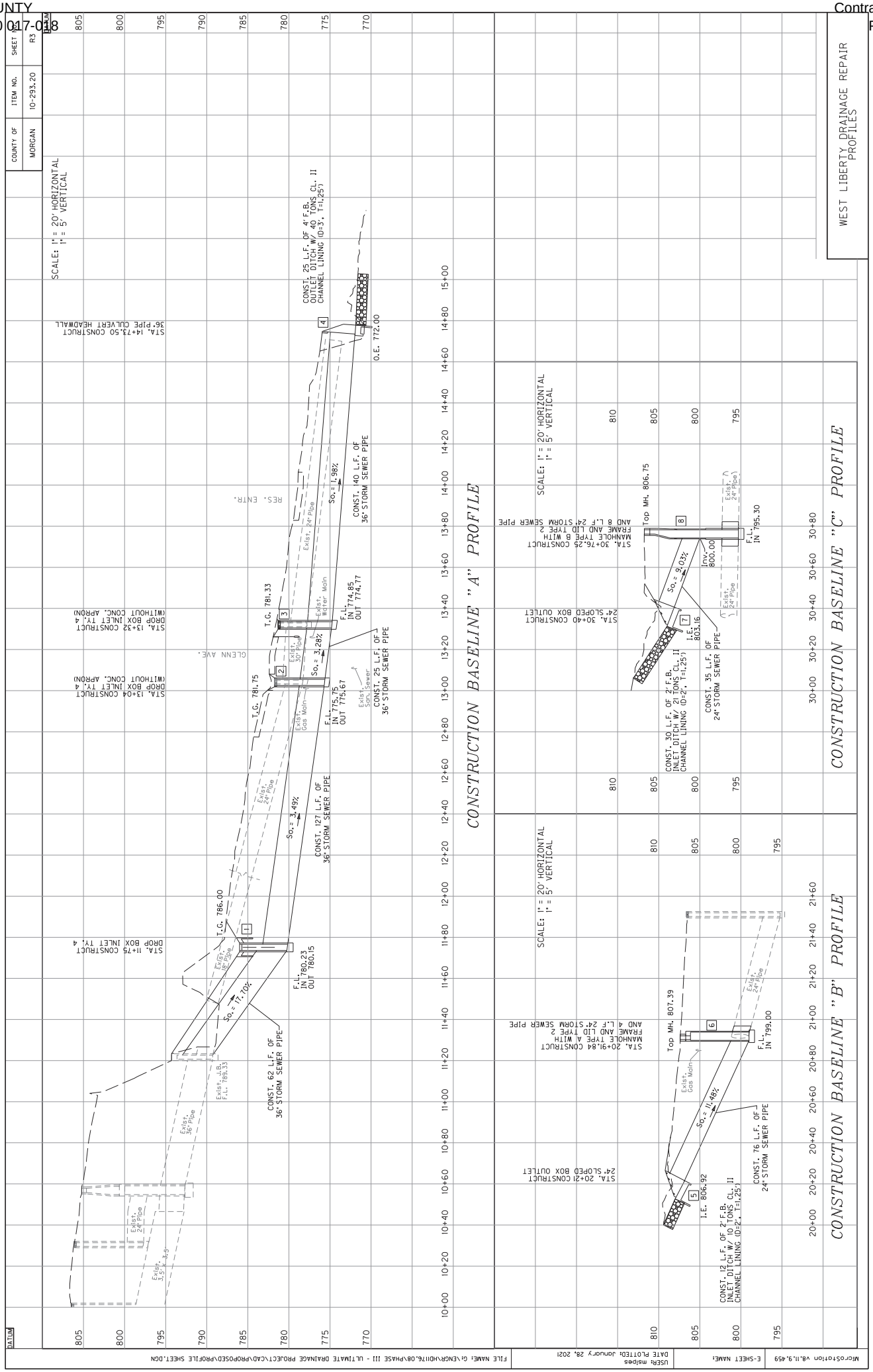
WARNING

THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION WHEN WORKING NEAR GASLINES.

SCALE: 1"= 20'

WEST LIBERTY DRAINAGE REPAIR

FILE NAME: G:\ENGR\ND176.08\PHASE III - ULTIMATE DRAINAGE PROJECT\CAD\PROPOSED\PLAN SHEET.DGN
USER: mdavis
DATE PLOTTED: July 13, 2021
E-SHEET NAME:
MicroStation v8.11.9.919


WEST LIBERTY DRAINAGE REPAIR
PROFILES
COUNTY OF MORGAN
ITEM NO. 10-293.20
SHEET NO. R3
CONSTRUCTION BASELINE "A" PROFILE
CONSTRUCTION BASELINE "B" PROFILE
CONSTRUCTION BASELINE "C" PROFILE
SCALE: 1" = 20' HORIZONTAL
1" = 5' VERTICAL
STA. 11+75 CONSTRUCT DROP BOX INLET TY.4
STA. 13+04 CONSTRUCT DROP BOX INLET TY.4 (WITHOUT CONC. APRON)
STA. 13+32 CONSTRUCT DROP BOX INLET TY.4 (WITHOUT CONC. APRON)
STA. 14+73.50 CONSTRUCT 36" PIPE CULVERT HEADWALL
STA. 20+21 CONSTRUCT 24° SLOPED BOX OUTLET
STA. 20+91.84 CONSTRUCT MANHOLE TYPE A WITH FRAME AND LID TYPE 2 AND 4 L.F. 24° STORM SEWER PIPE
STA. 30+40 CONSTRUCT 24° SLOPED BOX OUTLET
STA. 30+76.25 CONSTRUCT MANHOLE TYPE B WITH FRAME AND LID TYPE 2 AND 8 L.F. 24° STORM SEWER PIPE
CONST. 62 L.F. OF 36" STORM SEWER PIPE
CONST. 127 L.F. OF 36" STORM SEWER PIPE
CONST. 25 L.F. OF 36" STORM SEWER PIPE
CONST. 140 L.F. OF 36" STORM SEWER PIPE
CONST. 25 L.F. OF 4' F.B. OUTLET DITCH W/ 40 TONS CL. II CHANNEL LINING (D=3', T=1.25')
CONST. 12 L.F. OF 2' F.B. INLET DITCH W/ 40 TONS CL. II CHANNEL LINING (D=2', T=1.25')
CONST. 76 L.F. OF 24" STORM SEWER PIPE
CONST. 35 L.F. OF 24" STORM SEWER PIPE
CONST. 30 L.F. OF 2' F.B. INLET DITCH W/ 21 TONS CL. II CHANNEL LINING (D=2', T=1.25')
So.= 17.70%
So.= 3.49%
So.= 3.28%
So.= 1.98%
So.= 11.48%
So.= 9.03%
T.G. 786.00
F.L. IN 780.23 OUT 780.15
T.G. 781.75
F.L. IN 775.75 OUT 775.67
T.G. 781.33
F.L. IN 774.85 OUT 774.77
O.E. 772.00
Top MH. 807.39
F.L. IN 799.00
I.E. 806.92
Top MH. 806.75
F.L. IN 795.30
I.E. 803.16
Inv. 800.00
Exist. 36" Pipe
Exist. 24" Pipe
Exist. 30" Pipe
Exist. Gas Main
Exist. Water Main
Exist. Sewer
Exist. J.B. F.L. 789.33
Exist. 3.5'x 3.5'
RES. ENTR.
GLENN AVE.
DATUM
805
800
795
790
785
780
775
770
10+00
10+20
10+40
10+60
10+80
11+00
11+20
11+40
11+60
11+80
12+00
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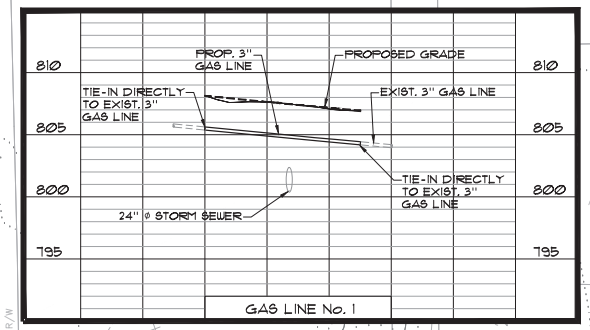
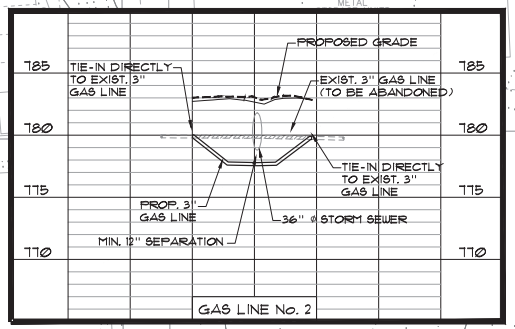
FILE NAME: G:\ENGR\H0176.08\PHASE III - ULTIMATE DRAINAGE PROJECT\CAD\PROPOSED\PROFILE SHEET.DGN
USER: mslpes
DATE PLOTTED: January 28, 2021
E-SHEET NAME:
Microstation V8.11.9.459

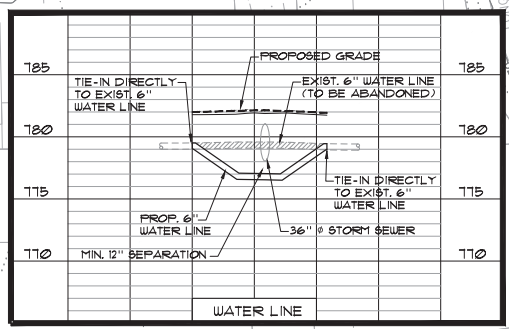
COUNTY OF	ITEM NO.	SHEET
MORGAN	10-293.20	R4

BEFORE YOU DIG

The contractor is instructed to call 1-800-752-6007 to reach KY 811, the one-call system for information on the location of existing underground utilities. The call is to be placed a minimum of two (2) and no more than ten (10) business days prior to excavation. The contractor should be aware that owners of underground facilities are not required to be members of the KY 811 one-call Before-U-Dig (BUD) service. The contractor must coordinate excavation with the utility owners, including those whom do not subscribe to KY811. It may be necessary for the contractor to contact the County Court Clerk to determine what utility companies have facilities in the area.







NOTE:

1. CONTRACTOR SHALL RELOCATE GAS LINE No.1 BY MAKING 2 - 3" PE TIE-INS WITH BYPASS AND 2 - CUT & CAPS. GAS LINE SHALL BE CONSTRUCTED WITH A MINIMUM OF 12" SEPARATION FROM PROPOSED STORM SEWER.
2. CONTRACTOR SHALL LOWER GAS LINE No. 2 BY MAKING 2 - 3" PE TIE-INS WITH BYPASS AND 2 - CUT & CAPS. GAS LINE SHALL BE CONSTRUCTED A MINIMUM OF 12" BELOW PROPOSED 36" STORM SEWER.
3. CONTRACTOR SHALL LOWER WATER LINE BY MAKING 2 - 6" DIRECT TIE-INS. THE CONTRACTOR SHALL TAKE ALL MEASURES NECESSARY TO MINIMIZE THE DURATION OF WATER SERVICE INTERRUPTION.
4. CONTRACTOR SHALL COORDINATE WITH UTILITY OWNER TO DETERMINE LOCATION OF WATER AND GAS UTILITIES.

WARNING

THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION WHEN WORKING NEAR GASLINES.

SCALE: 1"=20'

WEST LIBERTY DRAINAGE REPAIR
UTILITY RELOCATION

COUNTY OF	ITEM NO.	SHEET NO.
MORGAN	10-293.20	R5

RIGHT OF WAY SUMMARY

PARCEL NO.	OWNERS	TOTAL AREA OF TRACT		PERM R/W ACQUIRED		EASEMENTS		AREA SEVERED				EXCESS PURCHASED		PORTION REMAINING		SEWER SYSTEM TYPE	SEWER SYSTEM AFFECTED		BUILDINGS ACQUIRED NUMBER				SOURCE OF TITLE	REMARKS*
						PERMANENT	TEMPORARY	LEFT		RIGHT														
		ACRES	SQ. FT.	ACRES	SQ. FT.	SQ. FT.	SQ. FT.	ACRES	SQ. FT.	ACRES	SQ. FT.	ACRES	SQ. FT.	ACRES	SQ. FT.		YES	NO	C	R	F	S		
50	SALYER CEMETERY	5.983	260,598 b.			113					260,485				260,485		☐	☐					DB226/PG363	
51	RICHARD J. RUTH & THE ESTATE OF DUANE RUTH	8.478	369,323 b.			2,538			366,785						366,785		☐	☐					DB195/PR43	
52	BOBBY & DUCEY JONES		29,096 b.			303			28,793						28,793		☐	☐					DB181/PG65	PB 1/PG 127
53	GRANT & ASHLEY SORRELL		14,318 b.			405			13,913						13,913		☐	☐					DB238/PG507	PB 1/PG 127
54	DONNA STEEL		5,136 b.			493			4,643						4,643		☐	☐					DB176/PG1	PB 1/PG 127
55	OP & SUE DELL COX		41,012 b.			65			40,947						40,947		☐	☐					DB233/PG569	PB 1/PG 127
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NOTE: PORTION REMAINING = TOTAL AREA OF TRACT - PERMANENT R/W ACQUIRED - EXCESS PURCHASED

BASIS FOR DETERMINATION OF AREA:
a. DEED
b. P.V.A.
c. CALCULATED
d. OTHER

TYPE SEWER SYSTEM
1. PRIVATE - INDIVIDUAL
2. PRIVATE - MULTI PARTY
3. PUBLIC
4. NONE
5. NOT APPLICABLE

BUILDINGS ACQUIRED CODE
C - COMMERICAL
R - RESIDENTIAL
F - FARM
S - STORAGE

*INCLUDES HAZARDOUS WASTE
(UST - UNDERGROUND STORAGE TANKS)

RIGHT OF WAY SUMMARY SHEET

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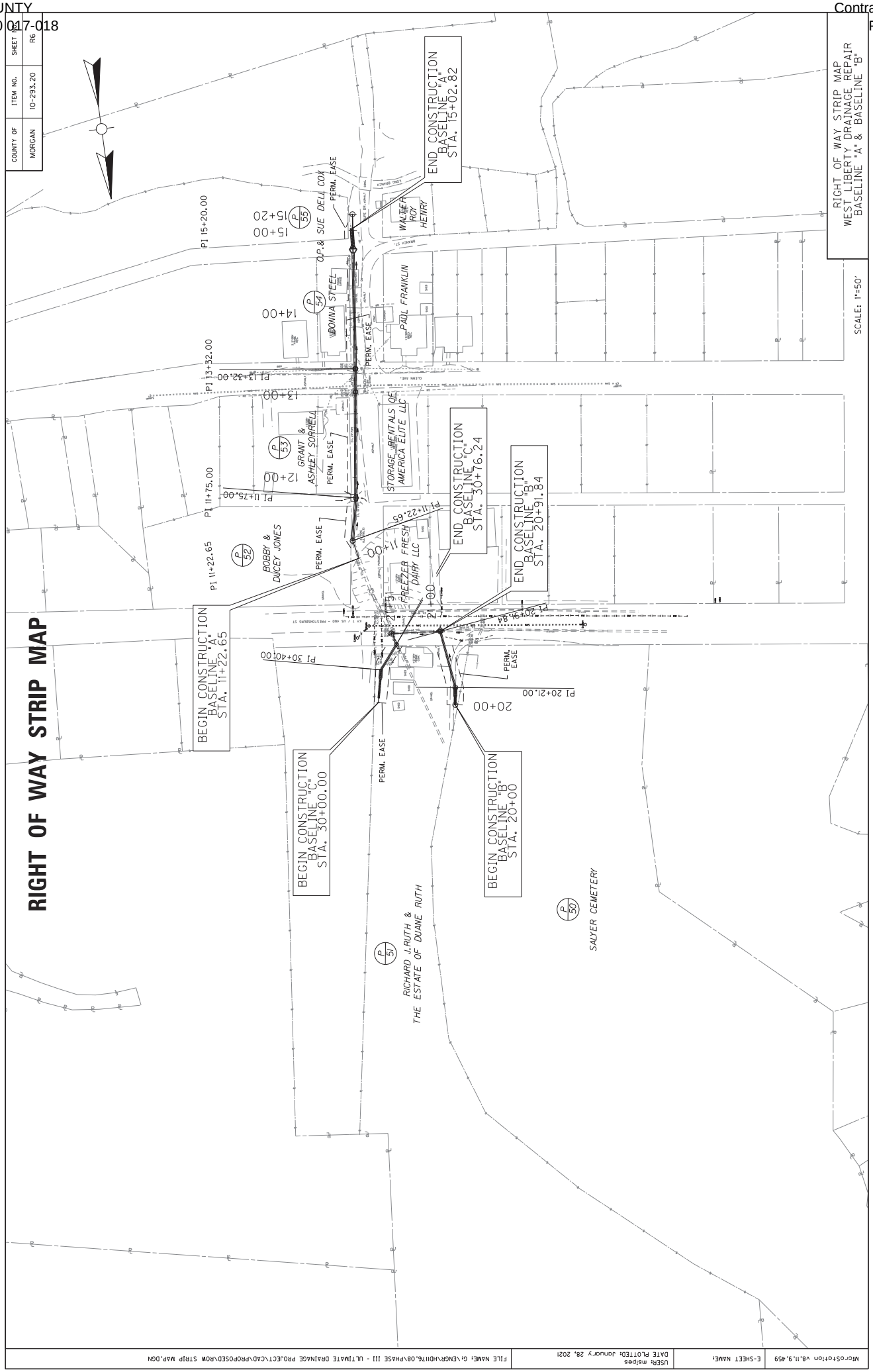
RIGHT OF WAY STRIP MAP
RIGHT OF WAY STRIP MAP
WEST LIBERTY DRAINAGE REPAIR
BASELINE "A" & BASELINE "B"
SCALE: 1"=50'
COUNTY OF MORGAN
ITEM NO. 10-293.20
SHEET NO. R6
BEGIN CONSTRUCTION BASELINE "A" STA. 11+22.65
END CONSTRUCTION BASELINE "A" STA. 15+02.82
BEGIN CONSTRUCTION BASELINE "B" STA. 20+00
END CONSTRUCTION BASELINE "B" STA. 20+91.84
BEGIN CONSTRUCTION BASELINE "C" STA. 30+00.00
END CONSTRUCTION BASELINE "C" STA. 30+76.24
PERM. EASE
BOBBY & DUCEY JONES
GRANT & ASHLEY SORRELL
DONNA STEEL
O.P.& SUE DELL COX
WALTER ROY HENRY
PAUL FRANKLIN
STORAGE RENTALS OF AMERICA ELITE LLC
FREEZER FRESH DAIRY LLC
RICHARD J.RUTH & THE ESTATE OF DUANE RUTH
SALYER CEMETERY
PI 11+22.65
PI 11+75.00
PI 13+32.00
PI 15+20.00
PI 20+21.00
PI 30+40.00
11+00
12+00
13+00
14+00
15+00
20+00
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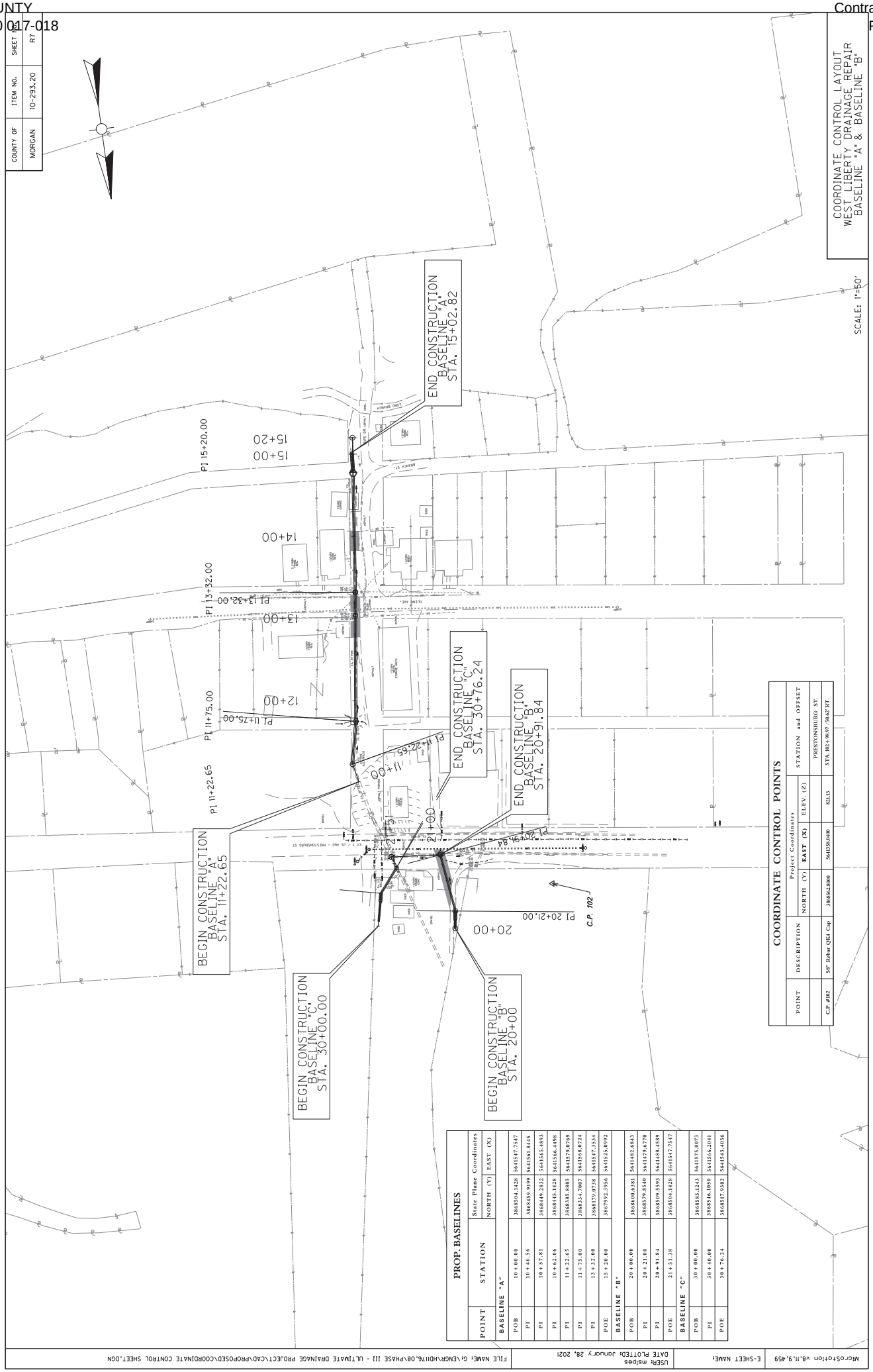
P 50
P 51
P 52
P 53
P 54
P 55


COUNTY OF MORGAN
ITEM NO. 10-293.20
SHEET NO. R7
COORDINATE CONTROL LAYOUT
WEST LIBERTY DRAINAGE REPAIR
BASELINE "A" & BASELINE "B"
SCALE: 1"=50'
END CONSTRUCTION BASELINE "A" STA. 15+02.82
END CONSTRUCTION BASELINE "C" STA. 30+76.24
END CONSTRUCTION BASELINE "B" STA. 20+91.84
BEGIN CONSTRUCTION BASELINE "A" STA. 11+22.65
BEGIN CONSTRUCTION BASELINE "C" STA. 30+00.00
BEGIN CONSTRUCTION BASELINE "B" STA. 20+00
PI 15+20.00
PI 13+32.00
PI 11+75.00
PI 11+22.65
PI 20+21.00
C.P. 102
PRESTONSBURG ST.
COORDINATE CONTROL POINTS
Project Coordinates
POINT | DESCRIPTION | NORTH (Y) | EAST (X) | ELEV. (Z) | STATION and OFFSET
C.P. #102 | 5/8" Rebar QRd Cap | 3868662.8000 | 5641550.6400 | 823.13 | STA. 102+98.97 58.62 RT.
PROP. BASELINES
POINT | STATION | State Plane Coordinates NORTH (Y) | EAST (X)
BASELINE "A"
POB | 10+00.00 | 3868584.1428 | 5641547.7547
PI | 10+46.36 | 3868439.9199 | 5641561.8445
PI | 10+57.81 | 3868449.2832 | 5641565.4893
PI | 10+62.06 | 3868445.1428 | 5641566.4498
PI | 11+22.65 | 3868385.8805 | 5641579.0769
PI | 11+75.00 | 3868334.7007 | 5641568.0724
PI | 13+32.00 | 3868179.0738 | 5641547.3534
POE | 15+20.00 | 3867992.3956 | 5641535.0992
BASELINE "B"
POB | 20+00.00 | 3868600.6381 | 5641482.6843
PI | 20+21.00 | 3868579.8540 | 5641479.6770
PI | 20+91.84 | 3868509.3593 | 5641488.4589
POE | 21+51.38 | 3868504.1428 | 5641547.7547
BASELINE "C"
POB | 30+00.00 | 3868585.1243 | 5641575.0073
PI | 30+40.00 | 3868546.1850 | 5641566.2041
POE | 30+76.24 | 3868517.9302 | 5641543.4656
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DATE PLOTTED: January 28, 2021
FILE NAME: G:\ENGR\H0117G.08\PHASE III - ULTIMATE DRAINAGE PROJECT\CAD\PROPOSED\COORDINATE CONTROL SHEET.DGN

WEST LIBERTY DRAINAGE REPAIR
CITY OF WEST LIBERTY
MORGAN COUNTY, KENTUCKY

JANUARY 2021

Prepared By:

PROFESSIONAL ENGINEERS, INC

3 HMB Circle, US 460
Frankfort, Kentucky 40601
(502) 695-9800

MORGAN COUNTY
West Liberty Drainage Repair
Item No. 10-293.20
Prestonsburg St - US 460 / KY 7

I. DESCRIPTION

Perform all work in accordance with the Department's 2019 Standard Specifications, Supplemental Specifications, Applicable Special Provisions, and Applicable Standard and Sepia Drawings, except as hereafter specified. Article references are to the Standard Specifications. Furnish all materials, labor, equipment, and incidentals for the following work:

(1) Maintain and Control Traffic; (2) Drainage structure work; (3) Pipe Trench Backfill; (4) Pavement Repairs (5) Clearing and Grubbing (6) All other work specified as part of this contract.

II. MATERIALS

Except as specified in these notes or on the drawings, all materials will be according to the Standard Specifications and applicable Special Provisions and Special Notes. The Department will sample and test all materials according to Department's Sampling Manual and the Contractor will have the materials available for sampling a sufficient time in advance of the use of the materials to allow for the necessary time for testing, unless otherwise specified in these notes.

A. **Maintain and Control Traffic.** See Traffic Control Plan.

B. **Pipe Backfill.** Contrary to Standard Specifications, use Kentucky Crushed Aggregate size #57.

III. CONSTRUCTION METHODS

A. **Site Preparation.** Be responsible for all site preparation. Do not disturb existing signs. This item will include, but is not limited to, removal of brush and vegetation, incidental excavation and backfilling; removal of all obstructions or any other items, disposal of materials, sweeping and removal of debris, shoulder preparation and restoration, temporary and permanent erosion and pollution control, and all incidentals. Site preparation will be only as approved or directed by the Engineer.

B. **Pipe Installation.** Temporary Shoring will be required to excavate to the existing

pipes while maintaining the drive-thru of the nearby business. The Contractor shall saw cut the existing pavement to the limits required for pipe trench excavation.

C. **Maintain and Control Traffic.** See Traffic Control Plan.

D. **Final Clean Up and Seeding and Protection.** After all work is completed, completely remove all debris from the job site. Sow disturbed earthen areas with Seed Mixture No. I.

E. **On-Site Inspection.** In accordance with section 102.06, each Contractor submitting a bid for this work will make a thorough inspection of the site prior to submitting a bid and will thoroughly familiarize himself with existing conditions so that the work can be expeditiously performed after a contract is awarded. Submission of a bid will be considered evidence of this inspection having been made. Any claims resulting from site conditions will not be honored by the Department.

F. **Caution:** Information shown on the drawings and in this proposal and the types and quantities of work listed are not to be taken as an accurate or complete evaluation of the material and conditions to be encountered during construction. The bidder must draw his own conclusions as to the conditions encountered. The Department does not give any guarantee as to the accuracy of the data and no claim will be considered for additional compensation if the conditions encountered are not in accordance with the information above.

G. **Utility Clearance.** It is anticipated that some utility facilities will need to be relocated and/or adjusted. Utility plans and specifications have been include; however, there are overhead lines in the area that shall not be disturbed. In the event that it is discovered that the work does require additional utilities to be relocated and/or adjusted, the utility companies will work concurrently with the Contractor while relocating their facilities.

H. **Pipe Backfill**. Pipe backfill shall be constructed in accordance with 701.02.05 of the Standard Specifications. Contrary to Standard Specifications, use Kentucky Crushed Aggregate size No. 57 only. Backfilling operations include backfilling the pipe, the pipe trench, and any additional voids encountered utilizing Kentucky Crushed Aggregate size No. 57 only.

IV. METHOD OF MEASUREMENT

A. **Temporary Shoring**– No direct measurement or payment will be made for Temporary Shoring. And will be considered incidental to the drainage structures installed.

B. **Maintain and Control Traffic.** See Traffic Control Plan. Only the bid items

listed will be measured for payment. Maintenance and repairs of damages outside of the limits of the storm sewer repair, will be considered incidental to "Maintain and Control Traffic" with no separate measurement or payment.

C. **Remove Existing Drainage Structures.** Removal of existing pipe and existing inlets as shown in the plans will be considered incidental to the construction of the pipe.

D. **Connection to Existing Storm Sewer System.** No direct measurement or payment will be made for connection to the existing storm systems and will be considered incidental to the proposed storm drain items. No direct measurement for coring existing manholes for the purposes of connecting the proposed highway storm sewer system to existing manholes will be made.

E. **Pavement Removal / Repair –** Limits of pavement removal and repair should be confined to the minimum necessary to perform the drainage repairs detailed. Repair all damages resulting from the work to the limits designated by the engineer.

V. BASIS OF PAYMENT

No direct payment will be made other than for the bid items listed. All other items required to complete the construction will be incidental to the bid items listed. Existing signs damaged by the Contractor will be replaced by the Contractor at his expense. Payment will be made in accordance with the KYTC Standard Specifications, current edition with supplemental specifications and current Standard Drawings unless otherwise specified herein.

A. **Maintain and Control Traffic.** See Traffic Control Plan.

B. **Site Preparation.** Other than the bid items listed, no direct payment will be allowed for site preparation, but will be incidental to the other items of work.

C. **Lane Closures.** Contrary to Section 112, lane closures will not be measured for payment but will be incidental to the bid item "Maintain and Control Traffic".

D. **Remove Existing Drainage Structures.** Removal of existing pipe and existing inlets as shown in the plans will be considered incidental to the construction of the pipe.

E. **Crushed Aggregate Size No 57.** No direct measurement or payment will be made for Crushed Aggregate Size No. 57 used in pipe backfill, pipe trench backfill, and filling any voids encountered. This item is incidental to pipe installation.

F. **Fabric-Geotextile Class 2.** Fabric-Geotextile Class 2 will be measured and paid in accordance with the Standard Specifications.

G. **Saw Cuts.** Saw cuts for removal of any existing pavement, entrance pavement or

sidewalks will be considered incidental to other items of work, with no direct payment for the “Saw Cut”.

H. **Clearing and Grubbing.** Payment for the item “Clearing and Grubbing” will be full compensation for removal and disposal of all vegetation, debris, existing drainage structures and pipe, or other items designated to be removed on the plans.

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This project is intended to repair the drainage issues near the Freezer Fresh Dairy on Prestonsburg St and open the business as soon as possible.

1. Plan Sheets – See plan sheets for additional details and items of work. Half Size (11”x17”) plan sheets are available for the contractor’s use as a supplement to this bid package. The Half Size supplemental sheets are identical sheets (at a larger scale) to the sheets contained herein, which are considered part of the contract.

2. The size of existing drainage structures are nominal or typical dimensions. The actual dimensions to be constructed may be varied to fit existing conditions as directed or approved by the Engineer.

3. Pavement removal and repair limits should be confined to the minimum necessary to perform the drainage repairs detailed. Repair all damages resulting from the work to the limits designated by the engineer.

4. The contractor is to be advised If there are overhead utility wires near the project.

CAUTION: Other overhead utility locations may exist. These and all other utilities already shown to be relocated should be avoided on this project. If any additional utility is impacted, it will be the contractor’s responsibility to contact the affected utility and cover any costs associated with the impact.

5. Pavement Removal – Saw a neat line the full depth of all pavements and/or entrance pavements that are to be removed.

6. The pavement markings are intended to replace the current markings that are impacted by the project.

TRAFFIC CONTROL PLAN
MORGAN COUNTY
West Liberty Drainage Repair
Item No. 10-293.30

TRAFFIC CONTROL GENERAL

Except as provided herein, “Maintain and Control Traffic” shall be in accordance with the 2019 Standard Specifications and the Standard Drawings, current editions. Except for the roadway and traffic control bid items listed, all items of work necessary to maintain and control traffic will be paid at the lump sum bid price to "Maintain and Control Traffic". All lane closures used on the Project will be in compliance with the appropriate Standard Drawings. Do NOT use cones for lane closures or shoulder closures.

Contrary to Section 106.01, traffic control devices used on this project may be new, or used in like new condition at the beginning of the work and maintained in like new condition until completion of the work. Traffic control devices will conform to current MUTCD.

Shoulder Closures shall be performed in accordance to the Standard Drawings. Any work directly adjacent to the roadway will require lane closures. Lane Closures shall conform to Standard Drawing TTC-100.

Temporary Shoring is required to excavate the existing pipes. When a closure of a business’s drive is necessary, the Contractor shall coordinate with the business owner and the Engineer.

Night work will be allowed on this project. Obtain approval from the Engineer for the method of lighting prior to its use.

REFERENCES

1. Kentucky Transportation Cabinet, Department of Highways, Standard Specifications for Road and Bridge Construction, Edition of 2019.

2. FHWA Manual on Uniform Traffic Control Devices – 2009 Edition.

3. Kentucky Department of Highways Standard Drawings, Current Edition, as applicable:

See Plan Layout Sheet "R1"

4. Kentucky Transportation Cabinet, Department of Highways, Standard Specifications for Road and Bridge Construction, Edition of 2019, Including - Supplemental Specifications, as applicable:

Special Note	Before You Dig *attached*
General Note	Compaction of Asphalt Mixtures (Option B) *attached*

SPECIAL NOTE FOR BEFORE YOU DIG

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Item No. 10-293.30
Prestonsburg St – US 460 / KY 7

Call 1-800-752-6007 toll free a minimum of two and no more than ten business days prior to excavation for information on the location of existing under-ground utilities which subscribe to the before-u-dig (BUD) service. Coordinate excavation with all utility owners, including those who do not subscribe to BUD.

GENERAL NOTE FOR COMPACTION OF ASPHALT MIXTURES (OPTION B)

MORGAN COUNTY
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Will accept the compaction of asphalt mixtures furnished on this project by option B according to subsections 402.03.02 and 403.03.10 of the standard specifications.

Utility Relocation Specifications

TABLE OF CONTENTS

SPECIAL CONDITIONS

1. PROJECT CONSTRUCTION OBSERVATION

The construction observation services shall be provided by the OWNER. The Observer shall be on the project as much as possible; however, due to meetings, etc. there may be times when he is not with the crew. Therefore, the CONTRACTOR shall not backfill any utilities and/or appurtenances until the Observer has seen and accepted it for payment.

Any work backfilled without the Observer's knowledge and consent shall not be allowed for payment to the CONTRACTOR and shall be uncovered for inspection at no additional cost to the OWNER or ENGINEER.

2. UNCLASSIFIED EXCAVATION

All excavation is unclassified. No extra payment will be allowed for solid rock excavation. It is the CONTRACTOR's responsibility to make any additional investigations.

3. CONFLICTING SECTIONS/STATEMENTS IN CONTRACT DOCUMENTS

a. General

It shall be noted that if any provisions in these Contract Documents is in conflict and/or is inconsistent with any other section or provisions, then the most stringent shall apply per the interpretation of the ENGINEER and/or OWNER.

4. FEDERAL/STATE/LOCAL REGULATIONS

The CONTRACTOR shall abide by all local and state laws or ordinances to the extent that such requirements do not conflict with federal laws or regulations. Compliance with any and all applicable laws and/or regulations is strictly the CONTRACTOR's responsibility.

5. SILTATION AND SOIL EROSION

The CONTRACTOR shall make every effort during construction to minimize siltation and soil erosion and comply with all local and state codes that pertain to this project. Any applicable permits shall be the CONTRACTOR's responsibility to obtain.

6. ROUGH CLEAN UP

a. Rough clean up shall be performed on a daily basis concurring with the daily rate of production for pay items, amounts and/or quantities listed in the schedule of values.

b. The CONTRACTOR is to provide sufficient labor and equipment for clean up as to not impede production schedules.

c. Rough clean up shall be defined as follows:

1. All open ditches shall be backfilled on a daily basis.

2. Debris (rocks, roots, timber, etc.) shall be removed from the job site on a daily basis. This material may be stockpiled with the consent of the OWNER and the ENGINEER in designated locations. Any such locations shall be arranged by the CONTRACTOR with the written consent of the property owner.

3. Remaining backfill material (soil) shall be windrowed back on top of the ditch line, compacted and leveled giving consideration for settlement.

d. At the direction of the ENGINEER, OWNER, or their appointed representatives, the CONTRACTOR shall readdress areas if identified as not being adequate in the initial rough clean up process.

7. QUANTITIES OF MATERIALS

The quantities of materials listed on the Bid Schedule are estimates only and are subject to changes in the field. The CONTRACTOR shall verify these quantities before ordering materials. In the event of an under run or over run of materials, the CONTRACTOR shall be responsible for any shipping and/or restocking fees.

8. DISPOSAL OF TRENCH WATER

The CONTRACTOR shall not dispose of any trench water by allowing it to enter any sanitary sewer system without first obtaining written permission to do so from the owner of said system. Documentation of written permission must be provided to the ENGINEER and OWNER.

9. RECORD DRAWINGS

The CONTRACTOR shall maintain a set of plans with current mark ups showing any changes made in the field to the location, orientation, etc. of any element of the project during construction. This set of plans shall be provided to the ENGINEER at the conclusion of the project and shall be used by the ENGINEER in developing the most accurate set of construction Record Drawings possible for the OWNER. Upon request by the CONTRACTOR, the set of plans shall be returned.

10. CONTRACTOR SURVEY REQUIREMENTS

At the conclusion of a project, the CONTRACTOR shall provide the ENGINEER with electronic survey data from a licensed Professional Land Surveyor in the state of Kentucky. The provided data shall include horizontal and elevation data for the rim, invert and any other penetrations of all structures involved in the project. The data shall also include horizontal data for water valves, gas valves, hydrants, sewer cleanouts and any other items that would be deemed relevant by the ENGINEER. The data shall be in a format and coordinate system stipulated by the ENGINEER and shall be provided to the ENGINEER prior to final payment to the CONTRACTOR.

11. PIPELINE TESTING

CONTRACTOR shall pressure test sections of water line or force main no greater than 3,500 feet in length. Gravity sewers shall be tested in sections between manholes.

Water main shall be tested in accordance with the pressures listed in the table below and the contents of the technical specifications.

Pipe Classification	Test Pressure
PVC SDR-21, Cl. 200	185 psi
PVC SDR-17, Cl. 250	215 psi
PVC C-900 DR14, Cl. 200	250 psi
Ductile Iron, Cl. 350	350 psi

12. TRANSPORTATION CABINET'S GENERAL UTILITY NOTES

See next four pages for "General Utility Notes and Instructions Applicable to All Utility Work Made a Part of the Road Construction Contract"

GENERAL UTILITY NOTES AND INSTRUCTIONS APPLICABLE TO ALL UTILITY WORK MADE A PART OF THE ROAD CONSTRUCTION CONTRACT

The contractor should be aware the following utility notes and Standard KYTC Utility Bid Item Descriptions shall supersede, replace and take precedence over any and all conflicting information that may be contained in utility owner supplied specifications contained in the contract, on plans supplied by the utility owner, or any utility owner specifications or information externally referenced in this contract.

Where information may have been omitted from these notes, bid item descriptions, utility owner supplied specifications or plans; the KYTC Standard Specifications for Road and Bridge Construction shall be referenced.

PROTECTION OF EXISTING UTILITIES

The existing utilities shown on the plans are shown as best known at the time the plans were developed and are to be used as a guide only by the Contractor. The Contractor shall use all means at his disposal to accurately locate all existing utilities, whether shown on the plans or not, prior to excavation. The contractor shall protect these utilities during construction. Any damage to existing utilities during construction that are shown or not shown on the plans shall be repaired at the Contractor's expense.

CONTRACT ADMINISTRATION RELATIVE TO UTILITY WORK

All utility work is being performed as a part of a contract administered by KYTC; there is not a direct contract between the utility contractor and utility owner. The KYTC Section Engineer is ultimately responsible for the administration of the road contract and any utility work included in the contract.

SUBMITTALS AND CORRESPONDENCE

All submittals and correspondence of any kind relative to utility work included in the road contract shall be directed to the KYTC Section Engineer, a copy of which may also be supplied to the utility owner by the contractor to expedite handling of items like material approvals and shop drawings. All approvals and correspondence generated by the utility owner shall be directed to the KYTC Section Engineer. The KYTC Section Engineer will relay any approvals or correspondence to the utility contractor as appropriate. At no time shall any direct communication between the utility owner and utility contractor without the communication flowing through the KYTC Section Engineer be considered official and binding under the contract.

ENGINEER

Where the word "Engineer" appears in any utility owner specifications included in this proposal, utility owner specifications included as a part of this contract by reference or on the utility relocation plans, it shall be understood the "Engineer" is the Kentucky Transportation Cabinet (KYTC) Section Engineer or designated representative and the utility owner engineer or designated representative jointly. Both engineers must mutually agree upon all decisions made with regard to the utility construction. The Transportation Cabinet, Section Engineer shall make all final decisions in all disputes.

INSPECTOR OR RESIDENT PROJECT REPRESENTATIVE

Where the word "Inspector" or "Resident Project Representative" appears in the utility specifications included in this proposal, utility owner specifications included as a part of this contract by reference or on the utility relocation plans, it shall be understood the "Inspector" or "Resident Project Representative" is the utility owner inspector and KYTC inspector jointly. The Transportation Cabinet, Section Engineer shall make all final decisions in all disputes.

NOTICE TO UTILITY OWNERS OF THE START OF WORK

One month before construction is to start on a utility, the utility contractor shall make notice to the KYTC Section Engineer and the utility owner of when work on a utility is anticipated to start. The utility contractor shall again make confirmation notice to the KYTC Section Engineer and the utility owner one week before utility work is to actually start.

UTILITY SHUTDOWNS

The Contractor shall not shut down any active and in-service mains, utility lines or services for any reason unless specifically given permission to do so by the utility owner. The opening and closing of valves and operating of other active utility facilities for main, utility line or utility service shut downs are to be performed by the utility owner unless specific permission is given to the contractor by the owner to make shutdowns . If and when the utility owner gives the contractor permission to shutdown mains, utility lines or utility services, the contractor shall do so following the rules, procedures and regulations of the utility owner. Any permission given by the utility owner to the contractor to shutdown active and in-service mains, utility lines or services shall be communicated to the KYTC Section Engineer by the utility owner that such permission has been given.

Notice to customers of utility shut downs is sometimes required to be performed by the utility contractor. The contractor may be required; but, is not limited to, making notice to utility customers in a certain minimum amount of time in advance of the shut down and by whatever means of communication specified by the utility owner. The means of communication to the customer may be; but is not limited to, a door hanger, notice by newspaper ad, telephone contact or any combination of communication methods deemed necessary, customary and appropriate by the utility owner. The contractor should refer to the utility owner specifications for requirements on customer notice.

Any procedure the utility owner may require the contractor to perform by specification or plan note and any expense the contractor may incur to comply with the utility owner's shut down procedure and notice to customers shall be considered an incidental expense to the utility construction.

STATIONS AND DISTANCES

All stations and distances, when indicated for utility placement in utility relocation plans or specifications, are approximate; therefore, some minor adjustment may have to be made during construction to fit actual field conditions. Any changes in excess of 6 inches of plan location shall be reviewed and approved jointly by the KYTC Section Engineer or designated representative and utility owner engineer or designated representative. Changes in location without prior approval shall be remedied by the contractor at his own expense if the unauthorized change creates an unacceptable conflict or condition.

RESTORATION

Temporary and permanent restoration of paved or stone areas due to utility construction shall be considered incidental to the utility work. No separate payment will be made for this work. Temporary restoration shall be as directed by the KYTC Section Engineer. Permanent restoration shall be "in-kind" as existing.

Restoration of seed and sod areas will be measured and paid under the appropriate seeding and sodding bid items established in the contract for roadway work.

SECTION 01010
Summary of Work

PART 1 GENERAL

1.1 DESCRIPTION

A. The Work to be performed under this Contract shall consist of furnishing all labor, materials, tools, equipment and incidentals and performing all Work required to construct complete in place and ready to operate the Project as shown on the Drawings and as specified.

1.2 PROJECT LOCATION

The equipment and materials to be furnished will be installed at the locations shown on the Drawings.

1.3 QUANTITIES

The OWNER reserves the right to alter the quantities of work to be performed or to extend or shorten the improvements at any time when and as found necessary, and the CONTRACTOR shall perform the work as altered, increased or decreased. Payment for such increased or decreased quantity will be made in accordance with the Instructions to Bidders. No allowance will be made for any change in anticipated profits nor shall such changes be considered as waiving or invalidating any conditions or provisions of the Contract and Bond.

1.4 PARTIAL OWNER OCCUPANCY

The existing facilities to which these improvements are being made will continue operation during the period of construction.

END OF SECTION

SECTION 01150
Measurement and Payment

PART 1 GENERAL

1.1 The CONTRACTOR shall provide all necessary labor, materials, tools, equipment, insurances, and permits, etc., and perform all other related work, as may be required for the work in accordance with the applicable terms of these Specifications and other pertinent documents, etc.

1.2 The cost associated with the preparation of submittal and the preparation for and attendance at all project meetings shall be incidental to the work.

1.3 Items shown in the plan but not expressly described herein shall be considered incidental to the work.

1.4 Lump sum items shall be paid upon completion and acceptance of all work covered by the item. However, CONTRACTOR may submit an application for partial payment of lump sum items. Such application shall be in writing and shall define and provide justification for desired break down of the lump sum items. The application will be reviewed by the ENGINEER in a timely manner and any concerns will be discussed with the CONTRACTOR prior to issuing written agreement with the partial payment scheme. It is recommended that Partial Payment Applications be submitted and approval sought prior to the submission of the first invoice for the project.

1.5 The quantities shown are estimated. Only the actual quantities required, furnished, and installed and/or removed, will be eligible for payment. No minimum(s) is/are guaranteed.

1.6 The CONTRACTOR will NOT be paid for any items herein in excess of the estimated quantities or for any items not contained in the proposal(s) unless the CONTRACTOR has obtained WRITTEN authorization from the ENGINEER before proceeding with the work.

1.7 The various phases of contractual work that are required to complete the subject project must be performed in a most expeditious manner and to the satisfaction of the ENGINEER

PART 2 PAY ITEMS

2.1 WATER LINES

A. Measurement - Measurement for the length of pipe to be included for payment at the unit prices bid shall be the actual length laid in the trench measured along the centerline of the pipe and including the lengths of and fittings in the line. Measurement shall begin at the ends of existing pipes, valves or fittings to which the new pipe is connected or such other point as may be designated on the plans.

B. Payment - Payment for installing only water pipe lines complete will be made at the contract unit price bid per linear foot for water pipe of the various sizes and classifications. No pay item has been established for fittings or restraint joints. These are considered incidental and shall be included in the unit price bid per linear foot for water pipe. Payment for installing water pipe shall constitute full compensation for

trenching, installation of pipe and tracer wire, grip ring restraints on all fittings, backfill, disinfecting and testing for the water line, together with other incidental and related work necessary for the completion of the water main installation except that valves, valve boxes, pavement replacement and such other items shall be paid for separately, if included as a pay item on the bid proposal.

2.2 ROCK EXCAVATION

Excavation is unclassified, therefore, separate measurement or payment will not be made.

2.3 BITUMINOUS/CONCRETE PAVEMENT REPLACEMENT FOR NON-STATE MAINTAINED ROADS

A. Measurement - Measurement for pavement replacement shall be equal to the length of the pavement installed, as measured along the centerline of the water main. Minimum width shall be equal to the nominal pipe diameter plus 3'-6" centered over the pipeline.

B. Payment - Payment for pavement replacement shall be made on the basis of the unit prices bid for various classifications of pavements indicated in the proposal form. Such payment shall constitute full compensation for furnishing all labor, material, and equipment and replacing the damaged pavement, including the crushed stone base and crushed stone backfill as required. The CONTRACTOR is advised that although the limits of payment shall be as described under paragraph A, above he shall be responsible for replacing all pavement damaged during construction, at no additional cost, so that the paved area is left in a condition as good as or better than before the start of construction.

Payment for pavement replacement shall also include compensation for providing temporary pavement patches as required by the specifications and for maintaining the patches until such time as the permanent pavement is placed inasmuch as no separate payment will be made for this work.

Payment for flowable fill concrete in non-state maintained roads shall be paid for separately, if required.

2.4 CRUSHED STONE

A. Measurement - Measurement of crushed stone for payment shall be based on linear feet of gravel replaced on driveways and shall be full depth of trench. This item will be paid for based upon amount disturbed and only a one time payment. Crushed stone used for bedding water mains in rock excavation or in backfill around fire hydrants and valves shall not be measured for payment. Payment shall be included in the unit price for pipe, valves or fire hydrant.

Crushed stone used as base material or backfill for pavement replacement also will not be measured for payment inasmuch as payment for this material will be included in the payment for pavement replacement.

B. Payment - Payment for crushed stone, measured as provided above, which payment shall constitute full compensation for furnishing, hauling, placing and compacting the stone as specified.

2.5 CONNECTION TO EXISTING LINES

A. Measurement – Connections to existing lines shall be sized as shown on plans and include all fittings required. This item will be measured by an actual count of connections made, tested, sterilized and accepted.

B. Payment - Connections to existing lines, installed and accepted will be paid for on the basis of the unit price per each and payment shall constitute full compensation for furnishing, hauling, installing complete, testing and sterilizing, for excavation, preparation of bed and backfilling, and for the furnishing of all equipment, tools and incidentals necessary to complete the item.

2.6 FLOWABLE FILL CONCRETE

A. Measurement - Measurement of flowable fill concrete for payment shall be based on linear feet installed in the trench measured along the centerline of the pipe.

B. Payment- Payment for installing flowable fill concrete will be made at the contract unit price bid per linear foot. Payment for installing flowable fill concrete shall constitute full compensation for flowable fill concrete, sand, mechanical tamping and related work necessary to complete in accordance with the plans and specifications. Pavement replacement and gravel replacement shall be paid for separately.

2.7 CUT AND CAP WATER LINE

A. Measurement – Cutting and capping of water lines will be measured by actual count of installed in the completed system.

B. Payment - Payment for cutting and capping of all size water lines shall be made on the basis of the contract unit price bid. Such payment shall constitute full compensation for capping, concrete, restraints etc. to complete in full accordance with the Plans and Specifications.

2.8 CLEANUP AND RESTORATION

A. Measurement - Measurement for Cleanup and Restoration shall be along the centerline of the main line pipe (not service line) including bores, graveled areas, paved areas and creek crossings. Measurement shall begin at the ends of existing pipes, valves or fittings to which the new pipe is connected or such other point as may be designated on the plans. Final measurement for Cleanup and Restoration shall be the same as final length of water line installed.

B. Payment - Payment for Cleanup and Restoration will be made at the contract unit price stated in the Bid Schedule. Payment for Cleanup and Restoration shall constitute full compensation for removal of all rock, excess dirt, grading, seeding and strawing, together with other incidental and related work necessary for the initial cleanup as determined by the Engineer. The Contractor shall be responsible for final cleanup to address areas of settlement and reseed and straw as directed by the Engineer prior to final release of retainage. Cost of final cleanup will not be a separate pay item and shall be included in the unit price bid per linear foot of water line.

SECTION 01340
Shop Drawings, Product Data and Samples

PART 1 GENERAL

1.1 SCOPE

A. The work under this Section includes submittal to the ENGINEER of shop drawings, product data and samples required by the various sections of these Specifications.

B. Submittal Contents: The submittal contents required are specified in each section.

C. The following forms shall be used for all major components of the work:

1. Typical Maintenance Summary Form

2. Notice of Start of Manufacturing

3. Notice of Shipment of Equipment

4. Notice of Schedule Impact

The forms are included at the back of this section.

D. Definitions: Submittals are categorized as follows:

1. Shop Drawings

a. Shop drawings shall include technical data, drawings, diagrams, procedure and methodology, performance curves, schedules, templates, patterns, test reports, calculations, instructions, measurements and similar information as applicable to the specific item for which the shop drawing is prepared.

b. Provide newly-prepared information, on reproducible sheets, with graphic information at accurate scale (except as otherwise indicated) or appropriate number of prints hereof, with name or preparer (firm name) indicated. The Contract Drawings shall not be traced or reproduced by any method for use as or in lieu of detail shop drawings. Show dimensions and note which are based on field measurement. Identify materials and products in the work shown. Indicate compliance with standards and special coordination requirements. Do not allow shop drawing copies without appropriate final "Action" markings by the ENGINEER to be used in connection with the Work.

c. Drawings shall be presented in a clear and thorough manner. Details shall be identified by reference to sheet and detail, specification section, schedule or room numbers shown on the Contract Drawings.

d. Minimum assembly drawings sheet size shall be 24 x 36-inches.

e. Minimum detail sheet size shall be 8-1/2 x 11-inches.

f. Minimum Scale:
(1) Assembly Drawings Sheet, Scale: 1-inch = 30 feet.

(2) Detail Sheet, Scale: 1/4-inch = 1 foot.

2. Product Data

a. Product data includes standard printed information on materials, products and systems, not specially prepared for this Project, other than the designation of selections from among available choices printed therein.

b. Collect required data into one submittal for each unit of work or system, and mark each copy to show which choices and options are applicable to the Project. Include manufacturer's standard printed recommendations for application and use, compliance with standards, application of labels and seals, notation of field measurements which have been checked and special coordination requirements.

3. Samples

a. Samples include both fabricated and un-fabricated physical examples of materials, products and units of work, both as complete units and as smaller portions of units of work, either for limited visual inspection or, where indicated, for more detailed testing and analysis.

b. Provide units identical with final condition of proposed materials or products for the work. Include "range" samples, not less than three units, where unavoidable variations must be expected, and describe or identify variations between units of each set. Provide full set of optional samples where the ENGINEER’S selection is required. Prepare samples to match the ENGINEER’S sample where indicated. Include information with each sample to show generic description, source or product name and manufacturer, limitations and compliance with standards. Samples are submitted for review and confirmation of color, pattern, texture and "kind" by the ENGINEER. ENGINEER will note "test" samples, except as otherwise indicated, for other requirements, which are the exclusive responsibility of the CONTRACTOR.

4. Miscellaneous submittals related directly to the Work (non-administrative) include warranties, maintenance agreements, workmanship bonds, project photographs, survey data and reports, physical work records, statements of applicability, quality testing and certifying reports, copies of industry standards, record drawings, field measurement data, operating and maintenance

materials, overrun stock, security/protection/safety keys and similar information, devices and materials applicable to the Work but not processed as shop drawings, product data or samples.

1.2 SPECIFIC CATEGORY REQUIREMENTS

A. General: Except as otherwise indicated in the individual work sections, comply with general requirements specified herein for each indicated category of submittal. Submittals shall contain:

1. The date of submittal and the dates of any previous submittals.

2. The Project title.

3. Numerical submittal numbers, starting with 1.0, 2.0, etc. Revisions to be numbered 1.1, 1.2, etc.

4. The Names of:

   a. Contractor

   b. Supplier

   c. Manufacturer

5. Identification of the product, with the Specification section number, permanent equipment tag numbers and applicable Drawing No.

6. Field dimensions, clearly identified as such.

7. Relation to adjacent or critical features of the Work or materials.

8. Applicable standards, such as ASTM or Federal Specification numbers.

9. Notification to the ENGINEER in writing, at time of submissions, of any deviations on the submittals from requirements of the Contract Documents.

10. Identification of revisions on resubmittals.

11. An 8 x 3-inch blank space for CONTRACTOR and ENGINEER stamps.

12. CONTRACTOR'S stamp, initialed or signed, certifying to review of submittal, verification of products, field measurements and field construction criteria and coordination of the information within the submittal with requirements of the Work and of Contract Documents.

13. Submittal sheets or drawings showing more than the particular item under consideration shall have all but the pertinent description of the item for which

review is requested crossed out.

1.3 ROUTING OF SUBMITTALS

A. Submittals and routine correspondence shall be routed as follows:

1. Supplier to CONTRACTOR (through representative if applicable)

2. CONTRACTOR to ENGINEER

3. ENGINEER to CONTRACTOR and OWNER

4. CONTRACTOR to Supplier

1.4 ADDRESS FOR COMMUNICATIONS

Engineer: HMB Professional Engineers, Inc.
3 HMB Circle
Frankfort, KY 40601
OFFICE (502) 695-9800
FAX (502) 695-9810

PART 2 PRODUCTS

2.1 SHOP DRAWINGS

A. Unless otherwise specifically directed by the ENGINEER, make all shop drawings accurately to a scale sufficiently large to show all pertinent features of the item and its method of connection to the Work.

B. Submit all shop assembly drawings, larger than 11 x 17-inches, in the form of one reproducible transparency with two opaque prints or bluelines.

C. Submit all shop drawings, 11 x 17-inches and smaller, in the form of six opaque prints or bluelines.

D. One reproducible for all submittals larger than 11 x 17-inches and no more than three prints of other submittals will be returned to the CONTRACTOR.

2.2 MANUFACTURER'S LITERATURE

A. Where content of submitted literature from manufacturers includes data not pertinent to this submittal, clearly indicate which portion of the contents is being submitted for the ENGINEER’S review.

B. Submit the number of copies which are required to be returned (not to exceed three)

plus three copies which will be retained by the ENGINEER.

2.3 SAMPLES

A. Samples shall illustrate materials, equipment or workmanship and established standards by which completed work is judged.

B. Unless otherwise specifically directed by the ENGINEER, all samples shall be of the precise article proposed to be furnished.

C. Submit all samples in the quantity which is required to be returned plus one sample which will be retained by the ENGINEER.

2.4 COLORS

A. Unless the precise color and pattern is specifically described in the Contract Documents, wherever a choice of color or pattern is available in a specified product, submit accurate color charts and pattern charts to the ENGINEER for review and selection.

B. Unless all available colors and patterns have identical costs and identical wearing capabilities, and are identically suited to the installation, completely describe the relative costs and capabilities of each.

PART 3 EXECUTION

3.1 CONTRACTOR'S COORDINATION OF SUBMITTALS

A. Prior to submittal for the ENGINEER’S review, the CONTRACTOR shall use all means necessary to fully coordinate all material, including the following procedures:

1. Determine and verify all field dimensions and conditions, catalog numbers and similar data.

2. Coordinate as required with all trades and all public agencies involved.

3. Submit a written statement of review and compliance with the requirements of all applicable technical Specifications as well as the requirements of this Section.

4. Clearly indicate in a letter or memorandum on the manufacturer's or fabricator's letterhead, **all deviations** from the Contract Documents.

B. Each and every copy of the shop drawings and data shall bear the CONTRACTOR’S stamp showing that they have been so checked. Shop drawings submitted to the ENGINEER without the CONTRACTOR’S stamp will be returned to the

CONTRACTOR for conformance with this requirement.

C. The Owner may backcharge the CONTRACTOR for costs associated with having to review a particular shop drawing, product data or sample more than two times to receive a "No Exceptions Taken" mark.

D. Grouping of Submittals

1. Unless otherwise specifically permitted by the ENGINEER, make all submittals in groups containing all associated items.

2. No review will be given to partial submittals of shop drawings for items which interconnect and/or are interdependent. It is the CONTRACTOR'S responsibility to assemble the shop drawings for all such interconnecting and/or interdependent items, check them and then make one submittal to the ENGINEER along with CONTRACTOR'S comments as to compliance, non-compliance or features requiring special attention.

E. Schedule of Submittals: Within 30 days of Contract award and prior to any shop drawing submittal, the CONTRACTOR shall submit a schedule showing the estimated date of submittal and the desired approval date for each shop drawing anticipated. A reasonable period shall be scheduled for review and comments. Time lost due to unacceptable submittals shall be the CONTRACTOR'S responsibility and some time allowance for resubmittal shall be provided. The schedule shall provide for submittal of items which relate to one another to be submitted concurrently.

3.2 TIMING OF SUBMITTALS

A. Make all submittals far enough in advance of scheduled dates for installation to provide all required time for reviews, for securing necessary approvals, for possible revision and resubmittal, and for placing orders and securing delivery.

B. In scheduling, allow sufficient time for the ENGINEER'S review following the receipt of the submittal.

3.3 REVIEWED SHOP DRAWINGS

A. ENGINEER Review

1. Allow a minimum of 14 days for the ENGINEER'S initial processing of each submittal requiring review and response, except allow longer periods where processing must be delayed for coordination with subsequent submittals. The ENGINEER will advise the CONTRACTOR promptly when it is determined that a submittal being processed must be delayed for coordination. Allow a minimum of two weeks for reprocessing each submittal. Advise the ENGINEER on each submittal as to whether processing time is critical to progress of the Work, and therefore the Work would be expedited if processing time could be foreshortened.

2. Acceptable submittals will be marked "No Exceptions Taken". A minimum of three copies will be retained by the ENGINEER for ENGINEER'S and the OWNER'S use and the remaining copies will be returned to the CONTRACTOR.

3. Submittals requiring minor corrections before the product is acceptable will be marked "Make Corrections Noted". The CONTRACTOR may order, fabricate and ship the items included in the submittals, provided the indicated corrections are made. Drawings must be resubmitted for review and marked "No Exceptions Taken" prior to installation or use of products.

4. Submittals marked "Amend and Resubmit" must be revised to reflect required changes and the initial review procedure repeated.

5. The "Rejected - See Remarks" notation is used to indicate products which are not acceptable. Upon return of a submittal so marked, the CONTRACTOR shall repeat the initial review procedure utilizing acceptable products.

6. Only two copies of items marked "Amend and Resubmit" and "Rejected - See Remarks" will be reviewed and marked. One copy will be retained by the ENGINEER and the other copy with all remaining unmarked copies will be returned to the CONTRACTOR for resubmittal.

B. No work or products shall be installed without a drawing or submittal bearing the "No Exceptions Taken" notation. The CONTRACTOR shall maintain at the job site a complete set of shop drawings bearing the ENGINEER'S stamp.

C. Substitutions: In the event the CONTRACTOR obtains the ENGINEER'S approval for the use of products other than those which are listed first in the Contract Documents, the CONTRACTOR shall, at the CONTRACTOR'S own expense and using methods approved by the ENGINEER, make any changes to structures, piping and electrical work that may be necessary to accommodate these products.

D. Use of the "No Exceptions Taken" notation on shop drawings or other submittals is general and shall not relieve the CONTRACTOR of the responsibility of furnishing products of the proper dimension, size, quality, quantity, materials and all performance characteristics, to efficiently perform the requirements and intent of the Contract Documents. The ENGINEER'S review shall not relieve the CONTRACTOR of responsibility for errors of any kind on the shop drawings. Review is intended only to assure conformance with the design concept of the Project and compliance with the information given in the Contract Documents. The CONTRACTOR is responsible for dimensions to be confirmed and correlated at the job site. The CONTRACTOR is also responsible for information that pertains solely to the fabrication processes or to the technique of construction and for the coordination of the work of all trades.

3.4 RESUBMISSION REQUIREMENTS

A. Shop Drawings

1. Revise initial drawings as required and resubmit as specified for initial submittal, with the resubmittal number shown.

2. Indicate on drawings all changes which have been made other than those requested by the ENGINEER.

B. Project Data and Samples: Resubmit new data and samples as specified for initial submittal, with the resubmittal number shown.

END OF SECTION

SECTION 01562
Dust Control

PART 1 GENERAL

1.1 SCOPE

Limit blowing dust caused by construction operations by applying water or employing other appropriate means or methods to maintain dust control, subject to the approval of the OWNER. As a minimum, this may require the use of a water wagon twice a day to suppress dusty conditions.

1.2 PROTECTION OF ADJACENT PROPERTY

A. The Bidders shall visit the site and note the buildings, landscaping, roads, parking areas and other facilities near the Work site that may be damaged by their operations. The CONTRACTOR shall make adequate provision to fully protect the surrounding area and will be held fully responsible for all damages resulting from CONTRACTOR'S operations.

B. Protect all existing facilities (indoors or out) from damage by dust, fumes, spray or spills (indoors or out). Protect motors, bearings, electrical gear, instrumentation and building or other surfaces from dirt, dust, welding fumes, paint spray, spills or droppings causing wear, corrosion, malfunction, failure or defacement by enclosure, sprinkling or other dust palliatives, masking and covering, exhausting or containment.

END OF SECTION

SECTION 01720
Record Documents

PART 1 GENERAL

1.1 SCOPE

A. The work under this Section includes, but is not necessarily limited to, the compiling, maintaining, recording and submitting of project record documents as herein specified.

B. Record documents include, but are not limited to:

1. Drawings;

2. Specifications;

3. Change orders and other modifications to the Contract;

4. ENGINEER field orders or written instructions, including Requests for Information (RFI) and Clarification Memorandums;

5. Reviewed shop drawings, product data and samples;

6. Test records.

C. The CONTRACTOR shall maintain on the Project site throughout the Contract Time an up to date set of Record Drawings.

1.2 MAINTENANCE OF DOCUMENTS AND SAMPLES

A. Storage

1. Store documents and samples in the CONTRACTOR'S field office, apart from documents used for construction.

2. Provide files and racks for storage of documents.

3. Provide locked cabinet or secure storage space for storage of samples.

B. File documents and samples in accordance with format of these Specifications.

C. Maintenance

1. Maintain documents in a clean, dry, legible condition and in good order.

2. Do not use record documents for construction purposes.
3. Maintain at the site for the OWNER one copy of all record documents.

D. Make documents and samples available at all times for inspection by Engineer.

E. Failure to maintain the Record Documents in a satisfactory manner may be cause for withholding of a certificate for payment.

1.3 QUALITY ASSURANCE

A. Unless noted otherwise, Record Drawings shall provide dimensions, distances and coordinates to the nearest 0.1 foot.

B. Unless noted otherwise, Record Drawings shall provide elevations to the nearest 0.01 foot for all pertinent items constructed by the CONTRACTOR.

1.4 RECORDING

A. Label each document "PROJECT RECORD" in neat, large printed letters.

B. Recording

1. Record information concurrently with construction progress.

2. Do not conceal any work until required information is recorded.

1.5 RECORD DRAWINGS

A. Record Drawings shall be reproducible, shall have a title block indicating that the drawings are Record Drawings, the name of the company preparing the Record Drawings, and the date the Record Drawings were prepared. The CONTRACTOR will be provided paper sepias of the Drawings, or it may elect to provide reproducible drawings via another method. Reproducible shall be defined as being translucent so as to allow a blueline print to be produced.

B. Legibly mark drawings to record actual construction, including:

1. All Construction

a. Changes of dimension and detail.

b. Changes made by Requests for Information (RFI), field order, clarification memorandums or by change order.

c. Details not on original Drawings.

2. Site Improvements, Including Underground Utilities

a. Horizontal and vertical locations of all exposed and underground utilities and appurtenances, both new facilities constructed and those utilities encountered, referenced to permanent surface improvements.

b. Location of and dimensions of roadways and parking areas, providing dimensions to back of curb when present.

c. The locations shall be referenced to at least two easily identifiable, permanent landmarks (e.g., power poles, valve markers, etc.) or benchmarks.

d. The Record Drawings shall include the horizontal angle and distance between manhole covers.

3. Structures

a. Depths of various elements of foundation in relation to finish first floor datum or top of wall.

b. Location of internal and buried utilities and appurtenances concealed in the construction, referenced to visible and accessible features of the structure.

1.6 SPECIFICATIONS

A. Legibly mark each section to record:

1. Manufacturer, trade name, catalog number, and supplier of each product and item of equipment actually installed.

2. Changes made by Requests for Information (RFI), field order, clarification memorandums, or by change order.

1.7 SUBMITTAL

A. At contract closeout, deliver Record Documents to the ENGINEER for the OWNER.

B. Accompany submittal with transmittal letter, in duplicate, containing:

1. Date

2. Project title and number

3. CONTRACTOR'S name and address

4. Title and number of each record document

5. Signature of CONTRACTOR or CONTRACTOR'S authorized representative

END OF SECTION

SECTION 02255
Crushed Stone and Dense Graded Aggregate

PART 1 GENERAL

1.1 SCOPE

A. Furnish and install crushed stone for miscellaneous uses as shown on the Drawings, as called for in the Specifications.

B. Sizes, types, and quality of crushed stone are specified in this Section, but its use for replacement of unsuitable material, pavement base, and similar uses is specified in detail elsewhere in the Specifications. The ENGINEER may order the use of crushed stone for purposes other than those specified in other sections, if, in his opinion, such use is advisable. Payment for same will be subject to negotiation.

PART 2 PRODUCTS

2.1 MATERIALS

A. When referred to in these Specifications, crushed stone shall be Number 57 graded in accordance with the Kentucky Transportation Cabinet, Department of Highways, Standard Specifications for Road and Bridge Construction, Latest Edition, unless otherwise noted.

B. When referred to in these Specifications, dense graded aggregate (DGA) shall be crushed stone classified by the Kentucky Transportation Cabinet, Department of Highways, Standard Specifications for Road and Bridge Construction, Latest Edition, and conforming to the following requirements:

Sieve Size	Percent Passing
1 inch	100
3/4 inch	70-100
3/8 inch	50-80
#4	35-65
#10	25-50
#40	15-30
#200	5-12

PART 3 EXECUTION

3.1 INSTALLATION

A. Crushed stone shall be placed in uniform layers not greater than 6 inches deep and shaped by power equipment to required lines, grades, cross sections, and depths. No minimum compacted density, method of compaction, or compaction equipment is required since a nominal amount of compaction effort with vibration can establish the desired intergranular locking of the aggregate under controlled placement depth. Acceptable compaction can be achieved with pneumatic-tired and tracked equipment and rollers.

B. All compaction operation shall be performed to the satisfaction of the ENGINEER.

C. Crushed stone shall be placed in those areas as shown on the Drawings, as may be directed by the ENGINEER and as required by the Contract Documents.

END OF SECTION

SECTION 02513
Bituminous Concrete Paving

PART 1 GENERAL

1.1 GENERAL

A. RELATED DOCUMENTS

1. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

B. DESCRIPTION OF WORK

1. Extent of bituminous concrete paving work is shown on drawings and described in the Contract Documents

2. Prepared aggregate subbase is specified in earthwork sections.

C. SUBMITTALS

1. Material Certificates: Provide copies of materials certificates signed by material producer and CONTRACTOR, certifying that each material item complies with, or exceed, specified requirements.

D. QUALITY ASSURANCE

1. Codes and Standards: Comply with Kentucky Department of Transportation Standard Specifications for Road and Bridge Construction, latest edition, and with local governing regulations if more stringent than herein specified.

E. SITE CONDITIONS

1. Weather Limitations: Apply prime and tack coats when ambient temperature is above 50 deg. F (10 deg. C), and when temperature has not been below 35 deg. F (1 deg. C) for 12 hours immediately prior to application. Do not apply when base is wet or contains an excess of moisture.

2. Construct asphalt concrete surface course when atmospheric temperature is above 40 deg. F (4 deg. C), and when base is dry. Base course may be placed when air temperature is above 30 deg. F (-1 deg. C) and rising.

3. Grade Control: Establish and maintain required lines and elevations.

1.2 PRODUCTS

A. MATERIALS

1. General: Use locally available material and gradations which exhibit a satisfactory record of previous installations.

2. Base Course Aggregate: Sound, angular crushed stone, crushed gravel, or crushed slag, sand, stone or slag screenings.

3. Surface Course Aggregate: Crushed stone, crushed gravel, crushed slag, and sharp-edged natural sand.

4. Mineral Filler: Rock or slag dust, hydraulic cement, or other inert material complying with AASHTO M 17 (ASTM D 242).

5. Asphalt Cement: AASHTO M 226 (ASTM D 3381) for viscosity-graded material.

6. Prime Coat: Cut-back asphalt type; AASHTO M 82 (ASTM D 2027) MC-30, MC-70 or MC-250.

7. Tack Coat: Emulsified asphalt; AASHTO M 140 (ASTM D 977) or M 208 (D 2397); SS-1, SS-1h, CSS-1 or CSS-1h, diluted with one part water to one part emulsified asphalt.

8. Lane Marking Paint: Chlorinated rubber-alkyd type, AASHTO M 248 (FS TT-P-115), Type III.

B. ASPHALT-AGGREGATE MIXTURE

1. Provide plant-mixed, hot-laid asphalt-aggregate mixture complying with Kentucky State Specification Section 400.

1.3 EXECUTION

A. SURFACE PREPARATION

1. Remove loose material from compacted subbase surface immediately before applying prime coat.

2. Proof roll prepared subbase surface to check for unstable areas and areas requiring additional compaction.

3. Notify CONTRACTOR of unsatisfactory conditions. Do not begin paving work until deficient subbase areas have been corrected and are ready to receive paving.

4. Prime Coat: Apply at rate of 0.20 to 0.50 gal. per sq. yd., over compacted subgrade. Apply material to penetrate and seal, but not flood, surface. Cure and dry as long as necessary to attain penetration and evaporation of volatile.

5. Tack Coat: Apply to contact surfaces of previously constructed asphalt or portland cement concrete and surfaces abutting or projecting into asphalt concrete pavement. Distribute at rate of 0.05 to 0.15 gal. per sq. yd. of surface.

6. Allow to dry until at proper condition to receive paving.

7. Exercise care in applying bituminous materials to avoid smearing of adjoining concrete surfaces. Remove and clean damaged surfaces.

B. PLACING MIX

1. General: Place asphalt concrete mixture on prepared surface, spread and strike-off. Spread mixture a minimum temperature of 225 deg. F (107 deg. C). Place inaccessible and small areas by hand. Place each course to required grade, cross-section, and compacted thickness.

2. Paver Placing: Place in strips not less than 10' wide, unless otherwise acceptable to Architect. After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips. Complete base course for a section before place in surface course.

3. Joints: Make joints between old and new pavements, or between successive days' work, to ensure continuous bond between adjoining work. Construct joints to have same texture, density and smoothness as other sections of asphalt concrete course. Clean contact surfaces and apply tack coat.

C. ROLLING

1. General: Begin rolling when mixture will bear roller weight without excessive displacement.

2. Compact mixture with hot hand tampers or vibrating plate compactors in areas inaccessible to rollers.

3. Breakdown Rolling: Accomplish breakdown or initial rolling immediately following rolling of joints and outside edge. Check surface after breakdown rolling, and repair displaced areas by loosening and filling, if required, with hot material.

4. Second Rolling: Follow breakdown rolling as soon as possible, while mixture is hot. Continue second rolling until mixture has been thoroughly compacted.

5. Finish Rolling: Perform finish rolling while mixture is still warm enough for removal of roller marks. Continue rolling until roller marks are eliminated and course has attained maximum density.

6. Patching: Remove and replace paving areas mixed with foreign materials and defective areas. Cut-out such areas and fill with fresh, hot asphalt concrete. Compact by rolling to maximum surface density and smoothness.

7. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.

8. Erect barricades to prevent paving from traffic until mixture has cooled enough not to become marked.

E. FIELD QUALITY CONTROL

1. General: Test in-place asphalt concrete courses for compliance with requirements for thickness and surface smoothness. Repair or remove and replace unacceptable paving as directed by Architect.

2. Thickness: In-place compacted thickness will not be acceptable if exceeding following allowable variation from required thickness:

    a. Base Course: 1/2", plus or minus.
    b. Surface Course: 1/4", plus or minus.

3. Surface Smoothness: Test finished surface of each asphalt concrete course for smoothness, using 10' straightedge applied parallel with, and at right angles to centerline of paved area. Surfaces will not be acceptable if exceeding the following tolerances for smoothness.

    a. Base Course Surface: 1/4".
    b. Wearing Course Surface: 3/16".
    c. Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowable variance from template, 1/4".

4. Check surface areas at intervals as directed by Architect.

END OF SECTION

SECTION 02665
Water Mains and Accessories

PART 1 GENERAL

1.01 SCOPE

A. This Section describes products to be incorporated into the water mains and requirements for the installation and use of these items. Furnish all products and perform all labor necessary to fulfill the requirements of these Specifications.

B. General: Supply all products and perform all work in accordance with applicable American Society for Testing and Material (ASTM), American Water Works Association (AWWA), American National Standards Institute (ANSI), or other recognized standards. Latest revisions of all standards are applicable.

1.02 QUALIFICATIONS

If requested by the ENGINEER, submit evidence that manufacturers have consistently produced products of satisfactory quality and performance for a period of at least two years.

1.03 SUBMITTALS

Complete shop drawings and engineering data for all products shall be submitted to the ENGINEER in accordance with the requirements of Section 01340 of these Specifications.

1.04 TRANSPORTATION AND HANDLING

A. Unloading: Furnish equipment and facilities for unloading, handling, distributing and storing pipe, fittings, valves and accessories. Make equipment available at all times for use in unloading. Do not drop or dump materials. Any materials dropped or dumped will be subject to rejection without additional justification. Pipe handled on skids shall not be rolled or skidded against the pipe on the ground.

B. Handling: Handle pipe, fittings, valves and accessories carefully to prevent shock or damage. Handle pipe by rolling on skids, forklift, or front end loader. Do not use material damaged in handling. Slings, hooks or pipe tongs shall be padded and used in such a manner as to prevent damage to the exterior coatings or internal lining of the pipe.

1.05 OWNER FURNISHED MATERIALS (Not Used)

1.06 STORAGE AND PROTECTION

A. Store all pipe which cannot be distributed along the route. CONTRACTOR shall make arrangements for the use of suitable storage areas.

B. Stored materials shall be kept safe from damage. The interior of all pipe, fittings and other appurtenances shall be kept free from dirt or foreign matter at all times. Valves and hydrants shall be drained and stored in a manner that will protect them from damage by freezing.

C. Pipe shall not be stacked higher than the limits recommended by the manufacturer. The bottom tier shall be kept off the ground on timbers, rails or concrete. Pipe in tiers shall be alternated: bell, plain end; bell, plain end. At least two rows of timbers shall be placed between tiers and chocks, affixed to each other in order to prevent movement. The timbers shall be large enough to prevent contact between the pipe in adjacent tiers.

D. Stored mechanical and push-on joint gaskets shall be placed in a cool location out of direct sunlight. Gaskets shall not come in contact with petroleum products. Gaskets shall be used on a first-in, first-out basis.

E. Mechanical-joint bolts shall be handled and stored in such a manner that will ensure proper use with respect to types and sizes.

1.07 QUALITY ASSURANCE

The manufacturer shall provide written certification to the ENGINEER that all products furnished comply with all applicable requirements of these Specifications.

PART 2 PRODUCTS

2.01 PIPING MATERIALS AND ACCESSORIES

A. Ductile Iron Pipe (DIP)

1. Ductile iron pipe shall be manufactured in accordance with AWWA C151 (latest edition). All pipe, except specials, shall be furnished in nominal lengths of 18 to 20 feet. Sizes will be as shown on the Drawings. All pipe shall have a minimum pressure rating as indicated in the following table, and

corresponding minimum wall thickness, unless otherwise specified or shown on the Drawings:

Pipe Sizes (inches)	Pressure Class (psi)
4 - 12	350
14 - 18	250
20	250
24	200
30 - 54	250
60 - 64	200

2. Flanged pipe minimum wall thickness shall be equal to Special Class 53. Flanges shall be furnished by the pipe manufacturer.

3. Pipe and fittings shall be cement lined in accordance with AWWA C104 (latest edition). Pipe and fittings shall be furnished with a bituminous outside coating.

4. Fittings shall be ductile iron and shall conform to AWWA C110 or AWWA C153 (latest edition) with a minimum rated working pressure of 250 psi or as indicated on plans.

5. Joints

   a. Unless shown or specified otherwise, joints shall be push-on or restrained joint type for pipe and standard mechanical, push-on or restrained joints for fittings. Push-on and mechanical joints shall conform to AWWA C111 (latest edition). Restrained joints for pipe and fittings shall be American "FLEX-RING" or "LOK-RING", Clow "SUPER-LOCK", or U.S. Pipe "TR FLEX". No field welding of restrained joint pipe will be permitted. No mega lug type restraints are allowed on 24" and 30" water line.

   b. Restrained joint pipe (RJP) on supports shall have bolted joints and shall be specifically designed for clear spans of at least 36 feet.

   c. Flanged joints shall meet the requirements of ANSI B16.1, Class 125.

6. Provide the appropriate gaskets for mechanical and flange joints. Gaskets for flange joints shall be made of 1/8-inch thick, cloth reinforced rubber; gaskets may be ring type or full face type.

7. Provide the necessary bolts for mechanical, restrained and flange connections. Bolts for flange connections shall be steel with American Regular unfinished square or hexagon heads. Nuts shall be steel with American Standard Regular hexagonal dimensions, all as specified in ANSI B17.2. All bolts and all nuts shall be threaded in accordance with ANSI B1.1, Coarse Thread Series, Class 2A and 2B fit. Mechanical joint glands shall be ductile iron.

8. Acceptance will be on the basis of the ENGINEER'S inspection and the manufacturer's written certification that the pipe was manufactured and tested in accordance with the applicable standards.

9. If the water main is located within a 200 feet radius of an underground storage tank (UST), special rubber gaskets shall be provided for the water main joints. These gaskets shall be manufactured of "nitrate rubber" material or other acceptable material possessing superior resistance to deterioration from petroleum based products. This requirement will apply to the gaskets supplied for mechanical joints and push-on joints.

B. Polyvinyl Chloride Pipe (PVC) - **(C-900)**

1. All PVC pipe shall have belled ends for push-on type jointing and shall conform to AWWA C900, ductile iron pipe equivalent outside diameters. The pipe shall have a Dimension Ratio (DR) of **14** and shall be capable of withstanding a working pressure of **200** psi. Pipe shall be supplied in minimum lengths of 20 feet.

2. All fittings shall be of cast or ductile iron meeting the requirements of AWWA C110 or AWWA C153 with a minimum rated working pressure of **250** psi. Fittings shall be cement lined in accordance with AWWA C104. Fittings shall be furnished with a bituminous outside coating. Special adapters shall be provided, as recommended by the manufacturer, to adapt the PVC pipe to mechanical jointing with cast or ductile iron pipe, fittings or valves.

3. Detection tape shall be provided over all PVC water mains.

4. Acceptance will be on the basis of the ENGINEER'S inspection and the manufacturer's written certification that the pipe was manufactured and tested

in accordance with the applicable standards, including the National Sanitation Foundation. Additionally, each piece of pipe shall be stamped "NSF Approved".

C. Polyethylene Pipe and Fittings

1. The CONTRACTOR shall furnish and install high density polyethylene pipe meeting these Specifications at the locations indicated on the Plans and in other sections of these Specifications.

a. High Density polyethylene pipe shall be manufactured and tested in conformance to the requirements of the latest revision of the American Society for Testing and Materials designation ASTM D-3350 “Polyethylene Plastic Pipe and Fittings Materials”.

b. High density Polyethylene pipe shall have a grade designation of PE 3406 and a cell classification designation of P 355434C.

c. High density polyethylene pipe shall be joined by means of butt fusion.

d. Fittings for high density polyethylene pipe shall be manufactured of the same materials as the pipe. Unless otherwise indicated, all fittings shall be joined to the pipe by butt fusion techniques.

2.02 CONCRETE

Concrete shall have a compressive strength of not less than 3000 psi, with not less than 5.5 bags of cement per cubic yard and a slump between 3 and 5-inches. For job mixed concrete, submit the concrete mix design for approval by the Engineer. Ready-mixed concrete shall be mixed and transported in accordance with ASTM C 94. Reinforcing steel shall conform to the requirements of ASTM A 615, Grade 60.

PART 3 EXECUTION

3.01 EXISTING UTILITIES AND OBSTRUCTIONS

A. The Drawings indicate utilities or obstructions that are known to exist according to the best information available to the OWNER. The CONTRACTOR shall call the agencies or departments that own and/or operate utilities in the vicinity of the construction work site at least 72 hours (three business days) prior to construction to verify the location of the existing utilities.

B. Existing Utility Location: The following steps shall be exercised to avoid interruption of existing utility service.

1. Provide the required notice to the utility owners and allow them to locate their facilities. Field utility locations are valid for only 10 days after original notice. The CONTRACTOR shall ensure, at the time of any excavation, that a valid utility location exists at the point of excavation.

2. Expose the facility, for a distance of at least 200 feet in advance of pipeline construction, to verify its true location and grade. Repair, or have repaired, any damage to utilities resulting from locating or exposing their true location.

3. Avoid utility damage and interruption by protection with means or methods recommended by the utility owner.

4. Maintain a log identifying when phone calls were made, who was called, area for which utility relocation was requested and work order number issued, if any. The CONTRACTOR shall provide the ENGINEER an updated copy of the log bi-weekly, or more frequently if required.

C. Conflict with Existing Utilities

1. Horizontal Conflict: Horizontal conflict shall be defined as when the actual horizontal separation between a utility, main, or service and the proposed water main does not permit safe installation of the water main by the use of sheeting, shoring, tieing-back, supporting, or temporarily suspending service of the parallel or crossing facility. The CONTRACTOR may change the proposed alignment of the water main to avoid horizontal conflicts if the new alignment remains within the available right-of-way or easement, complies with regulatory agency requirements and after a written request to and subsequent approval by the EENGINEER or OWNER. Where such relocation of the water main is denied by the ENGINEER or OWNER, the CONTRACTOR shall arrange to have the utility, main, or service relocated.

2. Vertical Conflict: Vertical conflict shall be defined as when the actual vertical separation between a utility, main, or service and the proposed water main does not permit the crossing without immediate or potential future damage to the utility, main, service, or the water main. The CONTRACTOR may change the proposed grade of the water main to avoid vertical conflicts if the changed grade maintains adequate cover and complies with regulatory agencies requirements after written request to and subsequent approval by the ENGINEER or OWNER. Where such relocation of the water main is denied by the ENGINEER or OWNER, the CONTRACTOR shall arrange to have the utility, main, or service relocated.

D. Electronic Locator: Have available at all times an electronic pipe locator and a magnetic locator, in good working order, to aid in locating existing pipe lines or other obstructions.

E. Water and Sewer Separation

1. Water mains should maintain a minimum 10 foot edge-to-edge separation from sewer lines, whether gravity or pressure. If the main cannot be installed in the prescribed easement or right-of-way and provide the 10 foot separation, the separation may be reduced, provided the bottom of the water main is a minimum of 18-inches above the top of the sewer. Should neither of these two separation criteria be possible, the water main shall be installed below the sewer with a minimum vertical separation of 18-inches.

2. The water main, when installed below the sewer, shall be encased in concrete with a minimum 6-inch concrete depth to the first joint in each direction. Where water mains cross the sewer, the pipe joint adjacent to the pipe crossing the sewer shall be cut to provide maximum separation of the pipe joints from the sewer.

3. No water main shall pass through, or come in contact with, any part of a sanitary sewer manhole.

3.02 CONSTRUCTION ALONG HIGHWAYS, STREETS AND ROADWAYS

A. Install pipe lines and appurtenances along highways, streets and roadways in accordance with the applicable regulations of, and permits issued by, the Transportation Cabinet, local county and city with reference to construction operations, safety, traffic control, road maintenance and repair.

B. Traffic Control

1. The CONTRACTOR shall provide, erect and maintain all necessary barricades, suitable and sufficient lights and other traffic control devices; provide qualified flagmen where necessary to direct traffic; take all necessary precautions for the protection of the work and the safety of the public.

2. Construction traffic control devices and their installation shall be in accordance with the current Manual On Uniform Traffic Control Devices for Streets and Highways and the Department of Highways Specifications, latest edition.

3. Placement and removal of construction traffic control devices shall be coordinated with the Department of Transportation, local county and city, a minimum of 48 hours in advance of the activity.

4. Placement of construction traffic control devices shall be scheduled ahead of associated construction activities. Construction time in street right-of-way shall be conducted to minimize the length of time traffic is disrupted. Construction traffic control devices shall be removed immediately following their useful purpose. Traffic control devices used intermittently, such as "Flagmen Ahead", shall be removed and replaced when needed.

5. Existing traffic control devices within the construction work zone shall be protected from damage. Traffic control devices requiring temporary relocation shall be located as near as possible to their original vertical and horizontal locations. Original locations shall be measured from reference points and recorded in a log prior to relocation. Temporary locations shall provide the same visibility to affected traffic as the original location. Relocated traffic control devices shall be reinstalled in their original locations as soon as practical following construction.

6. Construction traffic control devices shall be maintained in good repair and shall be clean and visible to affected traffic for daytime and nighttime operation. Traffic control devices affected by the construction work zone shall be inspected daily.

7. Construction warning signs shall be black legend on an orange background. Regulatory signs shall be black legend on a white background. Construction sign panels shall meet the minimum reflective requirements of the Department of Transportation, local county and city. Sign panels shall be of durable materials capable of maintaining their color, reflective character and legibility during the period of construction.

8. Channelization devices shall be positioned preceding an obstruction at a taper length as required by the current Manual On Uniform Traffic Control Devices for Streets and Highways, as appropriate for the speed limit at that location. Channelization devices shall be patrolled to insure that they are maintained in the proper position throughout their period of use.

9. All Traffic Control requirements in Roadway Contract shall be followed in addition to the requirements listed above.

C. Construction Operations

1. Perform all work along highways, streets and roadways to minimize interference with traffic.

2. Stripping: Where the pipe line is laid along road right-of-way, strip and stockpile all sod, topsoil and other material suitable for right-of-way restoration.

3. Trenching, Laying and Backfilling: Do not open the trench any further ahead of pipe laying operations than is necessary. Backfill and remove excess material immediately behind laying operations. Complete excavation and backfill for any portion of the trench in the same day.

4. Shaping: Reshape damaged slopes, side ditches, and ditch lines immediately after completing backfilling operations. Replace topsoil, sod and any other materials removed from shoulders.

5. Construction operations shall be limited to 400 feet along areas within KY Transportation Cabinet jurisdiction, including clean-up and utility exploration.

D. Excavated Materials: Do not place excavated material along highways, streets and roadways in a manner which obstructs traffic. Sweep all scattered excavated material off of the pavement in a timely manner.

E. Drainage Structures: Keep all side ditches, culverts, cross drains, and other drainage structures clear of excavated material. Care shall be taken to provide positive drainage to avoid ponding or concentration of runoff.

1. The CONTRACTOR shall make provisions for handling all flows in existing creeks, ditches, sewers and trenches by pipes, flumes or other approved methods at all times when his operations would, in any way, interfere with the natural functioning of said creeks, ditches, sewers and drains. The CONTRACTOR shall at all times during construction provide and maintain sufficient equipment for the disposal of all water which enters the excavation, both in open cut trenches and in tunnels, to render such excavation firm and dry, until the structures to be built thereon are completed.

F. Landscaping Features: Landscaping features shall include, but are not necessarily limited to: fences; property corners; cultivated trees and shrubbery; manmade improvements; subdivision and other signs within the right-of-way and easement. The CONTRACTOR shall take extreme care in moving landscape features and promptly re-establishing these features.

G. Maintaining Highways, Streets, Roadways and Driveways

1. Maintain streets, highways, roadways and driveways in suitable condition for movement of traffic until completion and final acceptance of the Work. All excavation shall be conducted in a manner to the last interruption to traffic.

2. During the time period between pavement removal and completing permanent pavement replacement, maintain highways, streets and roadways by the use of steel running plates. Running plate edges shall have asphalt placed around their periphery to minimize vehicular impact. The backfill above the pipe shall be compacted as specified elsewhere up to the existing pavement surface to provide support for the steel running plates.

3. Furnish a road grader or front-end loader for maintaining highways, streets, and roadways. The grader or front-end loader shall be available at all times.

4. Immediately repair all driveways that are cut or damaged. Maintain them in a suitable condition for use until completion and final acceptance of the Work. Driveways and other private and public access routes shall not be kept blocked or closed by the CONTRACTOR for more than a reasonable period of time without prior written approval from the property owner or controlling authority.

5. Maintenance of all traffic shall be in accordance with any requirements of the local road department(s) and/or the Kentucky Transportation Cabinet. It is the responsibility of the CONTRACTOR to coordinate all work with and notify the above-named agencies, and to provide all necessary signs, barricades, lights, flagmen, and other items for maintenance of traffic.

6. Public travel shall be maintained, unrestricted, wherever and whenever possible. Detours shall be provided when so directed by the appropriate agency. Adequate precautions shall be taken to provide for the safety of both vehicular and pedestrian traffic. Emergency vehicles shall be provided access to construction area at all times.

7. Unless specifically directed otherwise by the ENGINEER, not more than five hundred (500') feet of trench shall be opened ahead of the pipe laying, and not more than five hundred (500') feet of open ditch shall be left behind the pipe laying. All barricades, lanterns, watchmen, and other such signs and signals as may be necessary to warn the public of the dangers in connection with open trenches, excavations and other obstructions, shall be provided by and at the expense of the CONTRACTOR.

8. When so required, or when directed by the ENGINEER, only one-half (1/2) of the street crossing and road crossings shall be excavated before placing temporary bridges over the side excavated for the convenience of the traveling public.

9. All backfilled ditches shall be maintained in such manner that they will offer no hazard to the traveling public and the property owners abutting the improvements shall be taken into consideration. All public or private drives shall be promptly backfilled or bridges at the direction of the ENGINEER. Excavated materials shall be disposed of so as to cause the least interference, and in every case the deposition of excavated materials shall be satisfactory to the ENGINEER.

H. Property Protection

1. Extreme care shall be taken to protect trees, fences, poles, crops and all other property from damage unless their removal is authorized by the ENGINEER. Any damaged property shall be restored to as good or better than original condition and shall meet with the approval of the ENGINEER and OWNER.

2. The CONTRACTOR has the right to fully utilize the easement unless specifically stated otherwise on the plans or by the ENGINEER. If any irreplaceable trees, fences, poles or crops, such as tobacco, corn, soy beans and such (excluding pasture land), occur on the easement the CONTRACTOR shall obtain the ENGINEER's and OWNER's approval prior to removing or otherwise causing damage to any of these items.

3. Beyond the limits of the easement the CONTRACTOR shall be responsible for any damage caused by his operations and/or his personnel.

3.03 PIPE DISTRIBUTION

A. Pipe shall be distributed and placed in such a manner that will not interfere with traffic.

B. No pipe shall be strung further along the route than 1000 feet beyond the area in which the CONTRACTOR is actually working without written permission from the OWNER.

C. No street or roadway may be closed for unloading of pipe without first obtaining permission from the proper authorities. The CONTRACTOR shall furnish and maintain proper warning signs and obstruction lights for the protection of traffic along highways, streets and roadways upon which pipe is distributed.

D. No distributed pipe shall be placed inside drainage ditches.

E. Distributed pipe shall be placed as far as possible from the roadway pavement, but no closer than five feet from the roadway pavement, as measured edge-to-edge.

3.04 LOCATION AND GRADE

A. The Drawings show the alignment of the water main and the location of valves, hydrants and other appurtenances.

B. Construction Staking

1. The base lines for locating the principal components of the work and a bench marks adjacent to the work are shown on the Drawings if Available. Base lines shall be defined as the line to which the location of the water main is referenced, i.e., edge of pavement, road centerline, property line, right-of-way or survey line. The CONTRACTOR shall be responsible for performing all survey work required for constructing the water main, including the establishment of base lines and any detail surveys needed for construction. This work shall include the staking out of permanent and temporary easements to insure that the CONTRACTOR is not deviating from the designated easements.

2. The level of detail of survey required shall be that which the correct location of the water main can be established for construction and verified by the ENGINEER or OWNER. Where the location of components of the water main, e.g. tunnels and fittings, are not dimensioned, the establishment on the location of these components shall be based upon scaling these locations from the Drawings with relation to readily identifiable land marks, e.g., survey reference points, power poles, manholes, etc.

C. Reference Points

1. The CONTRACTOR shall take all precautions necessary, which includes, but is not necessarily limited to, installing reference points, in order to protect and preserve the centerline or baseline established by the ENGINEER.

2. Reference points shall be placed, at or no more than three feet, from the outside of the construction easement or right-of-way. The location of the reference points shall be recorded in a log with a copy provided to the ENGINEER and OWNER for use, prior to verifying reference point locations. Distances between reference points and the manhole centerlines shall be accurately measured to 0.01 foot.

3. The CONTRACTOR shall give the ENGINEER reasonable notice that reference points are set. The reference point locations must be verified by the ENGINEER prior to commencing clearing and grubbing operations.

D. After the CONTRACTOR locates and marks the water main centerline or baseline, the CONTRACTOR shall perform clearing and grubbing.

E. Construction shall begin at a connection location and proceed without interruption. Multiple construction sites shall not be permitted without written authorization from the ENGINEER for each site.

F. The CONTRACTOR shall be responsible for any damage done to reference points, base lines, center lines and temporary bench marks, and shall be responsible for the cost of re-establishment of reference points, base lines, center lines and temporary bench marks as a result of the operations.

3.05 LAYING AND JOINTING PIPE AND ACCESSORIES

A. Lay all pipe and fittings to accurately conform to the lines and grades established by the ENGINEER.

B. Pipe Installation

1. Proper implements, tools and facilities shall be provided for the safe performance of the Work. All pipe, fittings, valves and hydrants shall be lowered carefully into the trench by means of slings, ropes or other suitable tools or equipment in such a manner as to prevent damage to water main materials and protective coatings and linings. Under no circumstances shall water main materials be dropped or dumped into the trench.

2. All pipe, fittings, valves, hydrants and other appurtenances shall be examined carefully for damage and other defects immediately before installation. Defective materials shall be marked and held for inspection by the ENGINEER, who may prescribe corrective repairs or reject the materials.

3. All lumps, blisters and excess coating shall be removed from the socket and plain ends of each pipe, and the outside of the plain end and the inside of the bell shall be wiped clean and dry and free from dirt, sand, grit or any foreign materials before the pipe is laid. No pipe containing dirt shall be laid.

4. Foreign material shall be prevented from entering the pipe while it is being placed in the trench. No debris, tools, clothing or other materials shall be placed in the pipe at any time.

5. As each length of pipe is placed in the trench, the joint shall be assembled and the pipe brought to correct line and grade. The pipe shall be secured in place with approved backfill material.

6. It is not mandatory to lay pipe with the bells facing the direction in which work is progressing.

7. Applying pressure to the top of the pipe, such as with a backhoe bucket, to lower the pipe to the proper elevation or grade, shall not be permitted.

8. Detection tape shall be buried 4 to 10-inches deep. Should detection tape need to be installed deeper, the CONTRACTOR shall provide 3-inch wide tape. In no case shall detection tape be buried greater than 20-inches from the finish grade surface.

C. Alignment and Gradient

1. Lay pipe straight in alignment and gradient or follow true curves as nearly as practicable. Do not deflect any joint more than the maximum deflection recommended by the manufacturer.

2. Maintain a transit, level and accessories on the job to lay out angles and ensure that deflection allowances are not exceeded.

D. Expediting of Work: Excavate, lay the pipe, and backfill as closely together as possible. Do not leave unjointed pipe in the trench overnight. Backfill and compact the trench as soon as possible after laying and jointing is completed. Cover the exposed end of the installed pipe each day at the close of work and at all other times when work is not in progress. If necessary to backfill over the end of an uncompleted pipe or accessory, close the end with a suitable plug, either push-on, mechanical joint, restrained joint or as approved by the ENGINEER.

E. Joint Assembly

1. Push-on, mechanical, flange and restrained type joints shall be assembled in accordance with the manufacturer's recommendations.

2. The CONTRACTOR shall inspect each pipe joint within 200 feet on either side of main line valves to insure 100 percent seating of the pipe spigot, except as noted otherwise.

3. Each restrained joint shall be inspected by the CONTRACTOR to ensure that it has been "homed" 100 percent.

4. The CONTRACTOR shall internally inspect each pipe joint to insure proper assembly for pipe 24-inches in diameter and larger after the pipe has been brought to final alignment.

F. Cutting Pipe: Cut ductile iron pipe using an abrasive wheel saw. Cut PVC pipe using a suitable saw; remove all burrs and smooth the end before jointing. The CCONTRACTOR shall cut the pipe and bevel the end, as necessary, to provide the correct length of pipe necessary for installing the fittings, valves, accessories and closure pieces in the correct location. Only push-on or mechanical joint pipe shall be cut.

G. Polyethylene Encasement: Installation shall be in accordance with AWWA C105 and the manufacturer's instructions. All ends shall be securely closed with tape and all damaged areas shall be completely repaired to the satisfaction of the Engineer.

H. Valve and Fitting Installation

1. Prior to installation, valves shall be inspected for direction of opening, number of turns to open, freedom of operation, tightness of pressure-containing bolting and test plugs, cleanliness of valve ports and especially seating surfaces, handling damage and cracks. Defective valves shall be corrected or held for inspection by the ENGINEER. Valves shall be closed before being installed.

2. Valves, fittings, plugs and caps shall be set and joined to the pipe in the manner specified in this Section for cleaning, laying and joining pipe, except that 12-inch and larger valves shall be provided with special support, such as treated timbers, crushed stone, concrete pads or a sufficiently tamped trench bottom so that the pipe will not be required to support the weight of the valve. Valves shall be installed in the closed position.

3. A valve box shall be provided on each underground valve. They shall be carefully set, centered exactly over the operating nut and truly plumbed. The valve box shall not transmit shock or stress to the valve. The bottom flange of the lower belled portion of the box shall be placed below the valve operating nut. This flange shall be set on brick, so arranged that the weight of the valve box and superimposed loads will bear on the base and not on the valve or pipe. Extension stems shall be installed where depth of bury places the operating nut in excess of 30-inches beneath finished grade so as to set the top of the operating nut 30-inches below finished grade. The valve box cover shall be flush with the surface of the finished area or such other level as directed by the ENGINEER.

4. In no case shall valves be used to bring misaligned pipe into alignment during installation. Pipe shall be supported in such a manner as to prevent stress on the valve.

5. A valve marker shall be provided for each underground valve. Unless otherwise detailed on the Drawings or directed by the ENGINEER, valve markers shall be installed 6-inches inside the right-of-way or easement.

I. Hydrant Installation

1. Prior to installation, inspect all hydrants for direction of opening, nozzle threading, operating nut and cap nut dimensions, tightness of pressure-containing bolting, cleanliness of inlet elbow, handling damage and cracks. Defective hydrants shall be corrected or held for inspection by the ENGINEER.

2. All hydrants shall stand plumb and shall have their nozzles parallel with or at right angles to the roadway, with pumper nozzle facing the roadway, except that hydrants having two-hose nozzles 90 degrees apart shall be set with each nozzle facing the roadway at an angle of 45 degrees.

3. Hydrants shall be set to the established grade, with the centerline of the lowest nozzle at least 12-inches above the ground or as directed by the ENGINEER.

4. Each hydrant shall be connected to the main with a 6-inch branch controlled by an independent 6-inch valve. When a hydrant is set in soil that is pervious, drainage shall be provided at the base of the hydrant by placing coarse gravel or crushed stone mixed with coarse sand from the bottom of the trench to at least 6-inches above the drain port opening in the hydrant to a distance of 12-inches around the elbow.

5. When a hydrant is set in clay or other impervious soil, a drainage pit 2 x 2 x 2 feet shall be excavated below each hydrant and filled with coarse gravel or crushed stone mixed with coarse sand under and around the elbow of the hydrant and to a level of 6-inches above the drain port.

6. Hydrants shall be located as shown on the Drawings or as directed by the ENGINEER. In the case of hydrants that are intended to fail at the ground-line joint upon vehicle impact, specific care must be taken to provide adequate soil resistance to avoid transmitting shock moment to the lower barrel and inlet connection. In loose or poor load bearing soil, this may be

accomplished by pouring a concrete collar approximately 6-inches thick to a diameter of 24-inches at or near the ground line around the hydrant barrel.

3.06 CONNECTIONS TO WATER MAINS

A. Make connections to existing pipe lines with tapping sleeves and valves, unless specifically shown otherwise on the Drawings.

B. Location: Before laying pipe, locate the points of connection to existing water mains and uncover as necessary for the ENGINEER or OWNER to confirm the nature of the connection to be made.

C. Interruption of Services: Make connections to existing water mains only when system operations permit. Operate existing valves only with the specific authorization and direct supervision of the Owner.

D. Tapping Saddles and Tapping Sleeves

1. Holes in the new pipe shall be machine cut, either in the field or at the factory. No torch cutting of holes shall be permitted.

2. Prior to attaching the saddle or sleeve, the pipe shall be thoroughly cleaned, utilizing a brush and rag, as required.

3. Before performing field machine cut, the watertightness of the saddle or sleeve assembly shall be pressure tested. The interior of the assembly shall be filled with water. An air compressor shall be attached, which will induce a test pressure as specified in this Section. No leakage shall be permitted for a period of five minutes.

4. After attaching the saddle or sleeve to an existing main, but prior to making the tap, the interior of the assembly shall be disinfected. All surfaces to be exposed to potable water shall be swabbed or sprayed with a one percent hypochlorite solution.

E. Connections Using Solid Sleeves: Where connections are shown on the Drawings using solid sleeves, the CONTRACTOR shall furnish materials and labor necessary to make the connection to the existing pipe line.

F. Connections Using Couplings: Where connections are shown on the Drawings using couplings, the CONTRACTOR shall furnish materials and labor necessary to make the connection to the existing pipe line, including all necessary cutting, plugging and backfill.

G. All connections to AC pipe shall meet all federal, state, and local regulations and requirements.

3.07 THRUST RESTRAINT

A. Provide restraint at all points where hydraulic thrust may develop.

B. Concrete Blocking

1. Provide concrete blocking for all bends, tees, valves, and other points where thrust may develop, except where other exclusive means of thrust restraint are specifically shown on the Drawings.

2. Concrete shall be as specified in this Section.

3. Form and pour concrete blocking at fittings as shown on the Drawings and as directed by the ENGINEER. Pour blocking against undisturbed earth. Increase dimensions when required by over excavation.

3.08 INSPECTION AND TESTING

A. Pressure and Leakage Test

1. All sections of the water main subject to internal pressure shall be pressure tested in accordance with AWWA C600. A section of main will be considered ready for testing after completion of all thrust restraint and backfilling.

2. Each segment of water main between main valves shall be tested individually.

3. Test Preparation

a. For water mains less than 24-inches in diameter, flush sections thoroughly at flow velocities, greater than 2.5 feet per second, adequate to remove debris from pipe and valve seats. For water mains 24-inches in diameter and larger, the main shall be carefully swept clean, and mopped if directed by the ENGINEER. Partially open valves to allow the water to flush the valve seat.

b. Partially operate valves and hydrants to clean out seats.

c. Provide temporary blocking, bulkheads, flanges and plugs as necessary, to assure all new pipe, valves and appurtenances will be pressure tested.

d. Before applying test pressure, air shall be completely expelled from the pipeline and all appurtenances. Insert corporation cocks at highpoints to expel air as main is filled with water as necessary to supplement automatic air valves. Corporation stops shall be constructed as detailed on the Drawings with a meter box.

e. Fill pipeline slowly with water. Provide a suitable pump with an accurate water meter to pump the line to the specified pressure.

f. The differential pressure across a valve or hydrant shall equal the maximum possible, but not exceed the rated working pressure. Where necessary, provide temporary backpressure to meet the differential pressure restrictions.

g. Valves shall not be operated in either the opening or closing direction at differential pressures above the rated pressure.

4. Test Pressure: Test the pipeline at 50 psi above the rated working pressure measured at the lowest point for at least two hours. Maintain the test pressure within 5 psi of the specified test pressure for the test duration. Should the pressure drop more than 5 psi at any time during the test period, the pressure shall be restored to the specified test pressure. Provide an accurate pressure gage with graduation not greater than 5 psi.

5. Leakage

   a. Leakage shall be defined as the sum of the quantity of water that must be pumped into the test section, to maintain pressure within 5 psi of the specified test pressure for the test duration plus water required to return line to test pressure at the end of the test. Leakage shall be the total cumulative amount measured on a water meter.

   b. The OWNER assumes no responsibility for leakage occurring through existing valves.

6. Test Results: No test section shall be accepted if the leakage exceeds the limits determined by the following formula:

$$L = \frac{SD\,(P)^{1/2}}{133{,}200}$$

Where:	L	=	allowable leakage, in gallons per hour
	S	=	length of pipe tested, in feet
	D	=	nominal diameter of the pipe, in inches
	P	=	average test pressure during the leakage test, in pounds per square inch (gauge)

As determined under Section 4 of AWWA C600.

If the water main section being tested contains lengths of various pipe diameters, the allowable leakage shall be the sum of the computed leakage for each diameter. The leakage test shall be repeated until the test section is accepted. All visible leaks shall be repaired regardless of leakage test results.

7. Completion: After a pipeline section has been accepted, relieve test pressure. Record type, size and location of all outlets on record drawings.

3.09 DISINFECTING PIPELINE

A. After successfully pressure testing each pipeline section, disinfect in accordance with AWWA C651 for the continuous-feed method and these Specifications.

B. Specialty Contractor: Disinfection shall be performed by an approved specialty contractor. Before disinfection is performed, the CONTRACTOR shall submit a written procedure for approval before being permitted to proceed with the disinfection. This plan shall also include the steps to be taken for the neutralization of the chlorinated water.

C. Chlorination

1. Apply chlorine solution to achieve a concentration of at least 50 milligrams per liter free chlorine in new line. Retain chlorinated water for 24 hours.

2. Chlorine concentration shall be recorded at every outlet along the line at the beginning and end of the 24 hour period.

3. After 24 hours, all samples of water shall contain at least 25 milligrams per liter free chlorine. Re-chlorinate if required results are not obtained on all samples.

D. Disposal of Chlorinated Water: Reduce chlorine residual of disinfection water to less than one milligram per liter if discharged directly to a body of water or to less than two milligrams per liter if discharged onto the ground prior to disposal. Treat water with sulfur dioxide or other reducing chemicals to neutralize chlorine residual. Flush all lines until residual is equal to existing system.

E. Bacteriological Testing: After final flushing and before the main is placed into service, the CONTRACTOR shall assist the OWNER in collecting samples from the line to have tested for bacteriological quality. Testing shall be performed by the OWNER at a laboratory certified by the State of Kentucky. Re-chlorinate lines until the required results are obtained.

3.10 PROTECTION AND RESTORATION OF WORK AREA

A. General: Return all items and all areas disturbed, directly or indirectly by work under these Specifications, to their original condition or better, as quickly as possible after work is started.

1. The CONTRACTOR shall plan, coordinate, and prosecute the work such that disruption to personal property and business is held to a practical minimum.

2. All construction areas abutting lawns and yards of residential or commercial property shall be restored promptly. Backfilling of underground facilities, ditches, and disturbed areas shall be accomplished on a daily basis as work is completed. Finishing, dressing, and grassing shall be accomplished immediately thereafter, as a continuous operation within each area being constructed and with emphasis placed on completing each individual yard or business frontage. Care shall be taken to provide positive drainage to avoid ponding or concentration of runoff.

3. Handwork, including raking and smoothing, shall be required to ensure that the removal of roots, sticks, rocks, and other debris is removed in order to provide a neat and pleasing appearance.

4. The Transportation Cabinet’s engineer shall be authorized to stop all work by the CONTRACTOR when restoration and cleanup are unsatisfactory and to require appropriate remedial measures.

B. Man-Made Improvements: Protect, or remove and replace with the ENGINEER’S approval, all fences, walkways, mail boxes, pipe lines, drain culverts, power and telephone lines and cables, property pins and other improvements that may be encountered in the Work.

C. Cultivated Growth: Do not disturb cultivated trees or shrubbery unless approved by the ENGINEER. Any such trees or shrubbery which must be removed shall be heeled in and replanted under the direction of an experienced nurseryman.

D. Cutting of Trees: Do not cut trees for the performance of the work except as absolutely necessary. Protect trees that remain in the vicinity of the work from damage from equipment. Do not store spoil from excavation against the trunks.

Remove excavated material stored over the root system of trees within 30 days to allow proper natural watering of the root system. Repair any damaged tree over 3-inches in diameter, not to be removed, under the direction of an experienced nurseryman. All trees and brush that require removal shall be promptly and completely removed from the work area and disposed of by the CONTRACTOR. No stumps, wood piles, or trash piles will be permitted on the work site.

E. Disposal of Rubbish: Dispose of all materials cleared and grubbed during the construction of the Project in accordance with the applicable codes and rules of the appropriate county, state and federal regulatory agencies.

END OF SECTION

Section 02680
Gas Distribution System

PART 1 GENERAL

1.01 SCOPE

A. This Section discussed products to be incorporated into natural gas mains and requirements for the installation and use of these items. The Contractor shall perform all labor necessary to fulfill the requirements of these Specifications.

B. All work shall be in accordance with 49 CFR 102 and applicable American Society for Testing and Material (ASTM), American National Standards Institute (ANSI), American Petroleum Institute (API), and other recognized standards.

C. The Contractor shall provide natural gas distribution piping, fittings, tapping values, pressure regulating valves, shutoff valves, safety devices and other items required for a complete system. Any item, either temporary or permanent, that the Owner is not providing shall be provided by Contractor.

D. The Contractor shall provide transportation and handling of all equipment, materials and products as provided for in Paragraph 1.05 of this Section.

1.02 RELATED SECTIONS

A. Section 01150 – Measurement and Payment.

1.03 STORAGE AND PROTECTION

A. Contractor shall provide storage and protection of all equipment, materials and products.

B. Store all pipes which cannot be distributed along the route. Make arrangements for the use of suitable storage areas.

C. Stored materials shall be kept safe from damage. The interior of all pipes, fittings and other appurtenances shall be kept from dirt or foreign matter at all times. Valves shall be drained and stored in a manner that will protect them from damage by freezing.

D. Pipe shall not be stacked higher than the limits recommended by the manufacturer. The bottom section shall be kept off the ground on timbers, rails or concretes. At least two rows of timbers shall be placed between tiers and chocks affixed to each other in order to prevent movement. The timbers shall be big enough to prevent contact between the pipes in adjacent tiers.

1.04 QUALITY ASSURANCE

A. Installation of natural gas system components shall be performed by skilled workers experienced in the installation of gas systems employed by and under direct supervision of a licensed utility contractor. Foreman shall meet requirements as prescribed by OSHA requirements as a competent person.

B. The Contractor shall certify compliance with drug testing requirements of 19CFR Sections 40.192, 193, 195, and 199. In addition, a drug policy agreement, Section 0200 provided by the owner must be submitted by the Contractor with the contract agreement.

C. Each polyethylene fusion joint operator shall present evidence of qualification to perform fusion joint operations as required by 49 CFR Section 192.285. All jointers shall be competent and experienced in polyethylene joining. They shall have a complete working knowledge of joining equipment and the preliminaries necessary for making ready to joint. They shall also be familiar with the precautions necessary to insure good results with a maximum of safety. Jointers shall be qualified by the manufacturer and a copy of this certification shall be furnished to the Owner before the work on the project begins. Prequalification tests shall be required if there is some specific reason to question a jointer's ability or if the jointer is not engaged in a given process of joining for a period of six months or more.

D. The Contractor shall submit a Operator Qualification Plan that meets or exceeds the owners plan for those tasks that the owner has determined to be covered tasks.

E. Horizontal Directional Drilling (HDD) operator(s) shall provide certification to the Owner of competency training by the HDD equipment manufacturer.

Part 2 PRODUCTS

2.01 GENERAL

A. Materials and Equipment:

1. Furnished by Contractor. Except as otherwise specified in Paragraph 2.01, all other materials and equipment required for this contract shall be furnished and paid for by the Contractor.
2. This includes all necessary tapping and inserting machines required for the "hot connection" and the services of manufacturer's representative. If necessary, to instruct the Contractors as the proper installations of the special fittings required to make the "hot connection".

2.02 NATURAL GAS PIPING MATERIALS FOR MAINS

A. Polyethylene (PE) Pipe:

1. All polyethylene pipe shall be manufactured from resin qualifying for a Plastic Pipe Institute Material Designation of PE 3408.

2. All polyethylene pipe shall have a Standard Dimensions Ration (SDR) of 11.

3. All polyethylene pipe shall be YELLOWSTRIPES 8300.

4. All polyethylene pipe shall conform to ASTM D 2513.

2.03 NATURAL GAS SERVICE PIPING

Service piping shall conform to ANSI/ASME 31.9.

2.04 Valves

A. Polyethylene (PE) Valves:

1. All polyethylene (PE) valves shall be manufactured from resin qualifying for a Plastic Pipe Institute material designation of PE 3408.

2. All polyethylene valves shall be butt fusion type of valves.
3. All polyethylene valves shall be Bastomaz “Polyvalves” or as appropriate for butt fusion, full opening ball valves compatible with YELLOWSTRIPE 8300 polyethylene pipe as noted in paragraph “Polyethylene Pipe” of subsection “Natural Gas Piping Materials for Mains”. Hereinafter.

4. All polyethylene valves shall have stabilizers installed to prevent excessive movement of the valve body during operation. See Polyethylene Valve Stabilizers Details hereinafter.

5. All polyethylene valves shall conform to ANSI/ASME B16.40 and MSS-SP-25.

2.05 VALVE BOXES

A. Valve boxes shall be two piece telescopic plastic. Diameter of valve box shall not be less than 6-1/4 inches.

B. Valve boxes shall be Mueller or as approved.

C. Valve boxes shall be of sufficient length so that no extensions are needed on the valve box.
   1. Should a case arise that requires an extension to be used on a valve box, PVC schedule 40 water pipe shall be used.

   2. The extension (PVC Pipe) shall be placed on the bottom of the valve box.

D. Valve boxes shall be installed plumb and extending above finished grades so that no water will stand around the valve box top.

E. Valve boxes shall have a concrete collar poured around the top of the box.

2.06 RISERS

A. Risers on polyethylene lines shall be Central anodeless risers.
   1. The transition of the risers shall be of the same material as the polyethylene pipe.

B. Risers shall be painted according to PAINTING, herein.

C. Risers shall conform to PFI-E524 and PFI-E831.

2.07 MISCELLANEOUS FITTINGS

A. Polyethylene Fittings:
   1. All polyethylene (PE) fittings shall be manufactured from resign qualifying for a Plastic Pipe Institute material designation of PE 8403.

   2. All polyethylene fittings shall be butt fusion type of fittings unless otherwise noted or called for in the plans.

   3. All polyethylene fittings shall be of the same material and compatible with the polyethylene pipe if it is not YELLOWSTRIPE 8300.

   4. All polyethylene fittings shall be compatible with YELLOWSTRIPE 8300 or as approved.

   5. All transition fittings (plastic or steel) shall be factory assembled and as otherwise specified in subsection Natural Gas Piping Materials for Mains, paragraph “Polyethylene Pipe” hereinabove and Polyethylene Fittings hereinabove.

6. All polyethylene fittings shall conform to MSS-SP-25, ASTM D2613 and ASTM D3350.

7. Tap tees shall be 2” IPS high volume side wall tension with butt fusion outlet.

8. Service tees shall be side wall fusion type and include an integrated UMAC excess f... valves in the outlet (residential matters only).

B. Line Stopper Fittings:

1. All line stopper fittings shall be welded bottom out.

2. Line stoppers shall be capable of totally stopping the flow of gas in the line.

3. Line stoppers and fittings shall be manufactured by Mueller, T.D. Williams or as approved line stopper fittings.

4. See subsection Line Stopper Connections, hereinafter.

Part 3 EXECUTION

3.01 GENERAL REQUIREMENTS

A. Handling and Laying Pipes:

1. Provide and use approved equipment for the safe and convenient handling of pipe, fittings, valves, and other gas piping materials. Unload all piping materials carefully, and lower them carefully into the trenches with suitable equipment in a manner that will prevent damage to the materials and their protective coatings. Do not under any circumstances drop or dump piping materials, either from transportation vehicles, or into trenches.

2. Pipe shall bear uniformly, firmly and continuously on the trench bottom.

3. Generally, do not lay pipe in a straight line in the trench. Where possible, lay pipe so that it continuously meanders from one side of the trenches to the other as much as the trench will permit, where narrow trench or other adverse conditions prevent this, provide slack loops in the piping, all as approved to permit free expansion and contraction of the pipe without subjecting it to successive stress.

4. Each time pipe laying is discontinued, tightly plug all open ends of the last piping laid, and at all times keep all openings in previously laid piping tightly

plugged, all as required to prevent entry of water, dirt and other foreign matter.

5. Polyethylene pipe shall be installed to confirm the ANSI/ASTM D2774 and PPI recommended procedures.

B. Operating Pressure:
   1. All pipe work included in this contract will be operated at the following:
      a. 80 psig maximum pressure (PE piping)

3.02 SPECIAL REQUIREMENTS FOR POLYETHYLENE PIPING

A. Polyethylene Joints and Connections:
   1. Connections shall be made by butt fusion or sidewall fusion. No socket fusion will be allowed.

   2. Connections to steel piping shall be made with factory assembled transition fittings.

   3. All joints and connections of polyethylene pipe, fittings, and valves shall be made by heat fusion in accordance with the pipe and fitting manufacturer's heat fusion procedures.

   4. Contractor shall submit to the Owners written copy of the fusion procedures that will be used in this contract.

   5. Fusion connections shall conform to ANSI/ASTM D2657.

B. Polyethylene Pipe Joints:
   1. All fusion pipe joining shall be done ONLY by operators qualified to make fusion joints under the procedures given herein.

   2. Contractor shall present written proof to Owner for his files (at construction conference) that pipe fusion operators are qualified under these procedures.

   3. When required by the Owner a sample joint will be removed and sent to an independent testing lab to be destructively tested.

   4. If more than three joints or 5% of the joints fail by destructive methods the joiner will not be able to join plastic pipe on this job until sufficient proof that

the joiner has requalified, submitted samples of his joints and made satisfactory joints in the presence of Owner.

C. Polyethylene to Steel Connections:
All polyethylene to steel joints shall be made using factory assembled transition fittings. All transition fittings used in the system shall have PE3408 polyethylene pipe on the polyethylene side of the fitting and Schedule 40, beveled end, steel pipe on the steel side of the fitting.

3.04 CONNECTIONS TO EXISTING PIPNG

A. Line Stopper Connections:
1. This type connection shall be used only when the flow of gas between points is to be stopped temporarily to replace a section of piping or associated items (valves, gaskets, fittings, etc.)

2. At the Contractors expense, provide all necessary special fittings shall be welding type suitable for the maximum operating pressures specified hereinbefore, of Mueller, T.D. Williamson, or as approved make. Fittings shall include split tees, line stoppers, purging valves, equalizer connections, plugs, flanges, and other necessary items. Furnish tapping and inserting machines as required to make the connections. Install all special fittings in strict accordance with the manufacturer's recommendations.

3. Once the replacement is made the stoppers shall be removed and the section of piping put back in service.

B. "Hot" Connections of Polyethylene Pipe to Existing Polyethylene Pipe:
1. All connections shall be done ONLY by certified operators and proof of certification shall be submitted to Owner before work is started.

2. Contractor shall maintain continuity of gas service. At Contractors expense, provide all necessary special fitting and equipment of the same pressure ratings as pipe material. All fittings shall be type suitable for the maximum operating pressures specified hereinbefore, or as approved. Furnish tapping and inserting machines and other necessary items as required to make the connections. Install all special fittings in strict accordance with the manufacturer's recommendations.

3. Follow all safety precautions during "Hot Tapping" operations and have fire control apparatuses handy at all times.

C. "Cold" Connections:

1. Schedule all piping work such that no customer service is disconnected from a source of gas for more than one day.

2. Disregard for the above Section of the Specification will be considered just cause for the Owner to shut down the construction work until such time that the work is adequately scheduled.

3. Open cut installation shall follow the following general sequence.
    a. Install new piping in trench.
    b. Test new piping – make repairs and retest as necessary for approval.
    c. Pressurize new piping, purging all air and explosive mixtures from the piping.
    d. Disconnect service piping from existing mains and reconnect piping to new main (coordinate this work with the Owner so the customer's appliances are equipment can be disconnected before outage and pilots refit after service is reconnected.)
    e. Soap test all new connections which were not tested under (b) above.

3.05 SERVICE PIPING AND APPURTENANCES

A. Service Piping:

1. Existing service piping will remain in service to the greatest extent possible.

2. Service piping shall be connected to new polyethylene mains with PE tap tees, polyethylene reducers (where needed) and 3/4" PE pipe as shown on the Drawings.

3.06 VALVE INSTALLATION

A. Setting Valves and Boxes:

1. Install each valve as the pipe laying progress to the valve location, with valve operation stem plumb at approximate location indicated but at exact location as approved.

2. Before installing each valve, examine it carefully, see to it that it is in proper working condition, remove all dirt and foreign matter there from, remove packing grease, repack with proper grease as recommended by manufacture, and turn valve closed and open.

3. Valves shall not be installed in a position to cause any type of strain, stress or unequal pressure on the flanged ends.

3.07 LOWERING EXISTING PIPE

A. All applicable requirements herein shall apply to lowering existing piping and in addition the following requirements shall apply there to.

B. For each length of existing piping required to be lowered, proceed generally as follows:

1. Excavate as required to uncover the pipes for its full lowering length.

2. Before disturbing pipe, advise the Owner that the pipe is ready for his inspection.

3. The Owner will inspect all uncovered pipe in its original position, determine the exact lengths of pipe to be lowered and the exact lengths of pipe which shall remain in existing position, and advise the Contractor to proceed accordingly.

4. Excavate over the pipe and along the side of the pipe as required and lower the pipe, or leave the pipe in the present position, as authorized by the Owner.

5. Disconnect existing customers' services, and reconnect them to the lowered pipe, as required.

6. Patch and repair all pipe coating which has been damaged by the excavating and lowering operations, using materials to match the existing coating materials.

7. Provide all necessary temporary supports for piping during the excavation under the pie, and avoid all unnecessary damage to the pipe coating.

8. After pipe has been lowered, test all steel pipe coating with an "Electric Holiday Detector".

9. Finally, obtain Owners approval of lowered pipe, and backfill over all pipe as specified.

3.08 Miscellaneous Crossings MISCELLANEOUS CROSSINGS

A. Highway and Road Crossings:
   1. State Highway Crossings:
      a. Do all work on the highway rights-of-way under line supervision of the Highway Department, and in strict accordance with its requirements. DO NOT UNDER ANY CIRCUMSTANCES PLACE ANY EXCAVATED MATERIALS, CONSTRUCTION MATERIALS, CONSTRUCTION EQUIPMENT, OR OTHER ITEMS ON THE HIGHWAY PAVEMENT. Arrange all work to avoid all unnecessary inference with highway traffic. As soon as practicable after installation of each gas line across the highway, restore all highway property at the location is at least the condition that existed prior to the beginning or work thereon.

      b. All areas will be open cut.

   2. All other road crossing: Install pipe in accordance with all State, County, and Local requirements as applicable.

B. Driveway, Parking Lots, and Sidewalk Crossings: All sidewalks, driveways, curb and gutter and parking lots that are concrete or asphalt shall be open cut unless otherwise indicated.

C. Directional Bores may be used if requested by contractor with no additional payment.

3.09 BACKFILLING

A. General: Do not backfill over pipes until leakage tests have been approved. Immediately after approval of these tests, backfill the trenches as specified below.

B. All locations: After the pipe work has been approved, thoroughly hand tamp all backfill into joint holes around and over the pipe work until a six inch cover has been tamped over the tops of the pipes.

C. Pipe Under Paved Areas, Including Area With Existing Paving and Areas Proposed to Be Paved: From six inches above pipe taps up to paving sub grade backfill only with flowable fill.

D. Pipe Under Non-Paved Areas: Place all backfill from 8 inches above pipe top up to finished grade by approved methods. Windrow excess excavated material over line

trenches, and alter sufficient settlement satisfactory to the Owner has occurred, complete the surface dressing, surplus material removal, and surface cleanup.

E. Pipe Crossing Streets, Roads, Gravel Driveways, and Dirt Driveways: Backfill the trenches and make the crossing unusable by vehicular traffic immediately after laying pipe and obtaining approval thereof, and maintain these crossings usable by vehicular traffic until project acceptance. Do not under any circumstances leave a street or road crossing or a private driveway unusable overnight.

F. Backfill Materials, Except as Otherwise Specified:

1. Up to 12 inches above tops of pipe; Backfill only with selected earth which is free of rocks, stones, bricks, broken concrete, rubbish, wood, vegetable materials.

2. From 12 inches above tops of pipes up to finished grade, Backfill with any materials removed from the excavation and suitable for backfill, except of not use of backfill material and pieces of the following materials which are larger than 6 inches in their greatest dimensions: rock, stone, concrete, asphalt paving, or masonry. Dispose of all excavated materials which are not replaced as backfill, as approved.

3. On paved or concrete surfaces, from 12 inches above top of pipes to bottom of subgrade, backfill with flowable fill.

G. Final Backfilling Requirements: Refilling smooth off as required all backfill which settles so that all backfill finally conforms to the original ground surfaces, not only at the time of project acceptance, but also for the duration of the guaranteed period. This includes removing and repairing all pavements which may have been damaged by settlement.

3.10 REPLACEMENT OF SHOULDER MATERIALS

A. All existing crushed stone shoulder surfaces which are disturbed by the gas work shall be restored to the conditions which existed prior to the commencing of this work.

B. Reuse existing crushed stone materials to the general probable extent and provide additional new materials as required. New crushed stone materials shall conform to applicable state and local specifications. Depth of crush stone shall match that of existing shoulder surfacing.

3.11 TRENCHING, EXCAVATING, STORING, BRACING AND DEWATERING

A. Except as otherwise indicated, specified herein, or authorized, make all excavations by open cut.

B. Excavate trenches to the indicated depth and locations to provide uniform and continuous bearing and support of the pipe on firm undisturbed earth. Where necessary to make joints in the trench, provide ample joint holes in trench to facilitate this. Trench depths shall be as required to provide the specified MINIMUM cover over the top of the pipes; as required to permit pipes to pass under culverts, roads, driveways, existing pipelines, and other obstructions; and as required to accommodate valves and boxes. Trench widths shall be as required for the proper laying and joining of pipes, and the proper placing and compacting of backfill, but in no case shall a trench be more than 24 inches wider than the diameter of the pipe to be laid therein except in dual trench installations. Prepare the final sub grade accurately with hand tools, and in special cases where required cut the trenches entirely by hand. Where excavation is carried below proper subgrade, before laying pipe, bring the trench bottom up to the proper subgrade by backfilling with approved material placed in three inch maximum thickness loose layers, and thoroughly compact each layer as required to provide uniform and continuous bearing and support for the pipe.

1. Where rock is encountered, remove it and prepare the final subgrade with #10 backfill material as specified under Rock Excavation and Blasting hereinafter.

C. MINIMUM cover over tops of pipes shall be 60 inches within road right-of-way, unless instructed otherwise.

D. IN ALL CASES, THE SPECIFIED MINIMUM COVER OVER PIPES SHALL BE BASED UPON FINAL FINISHED SURFACES, INCLUDING PAVING, IF ANY.

E. Store and brace trenches and excavations as required to protect personnel adjacent structures, and adjacent property. Where required by the conditions encountered, store and brace trenches and excavations in accordance with Occupational Safety and Health (OSHA) Act of 1970 (PL 91-598), as amended. Contractor shall pay particular attention to the OSHA Part 1928, Subpart P “Excavation, Trenching & Sharing” as described in OSHA 2225.

F. Provide and maintain in proper working order all necessary dewatering equipment required to remove water from excavations. Where quicksand or other water bearing strata are encountered, install and connect the necessary equipment to remove water

in the excavation site until the pipe has been installed property and will be unaffected by submission.

G. Do not install any work until excavations are free of water, mud and loose earth. Do not install any work on frozen ground.

H. Install pipe crossing concrete driveways, asphalt driveways, and other special conditions by open cut. Install pipes crossing dirt or gravel drives by open cut, unless otherwise authorized.

I. Where the trench bottom at required subgrade is found to be unstable or includes ashes, cinders, or any type of refuse, vegetable or other organic material or large pieces of fragments of inorganic material which in the Owners opinion should be removed, excavate and remove such unsuitable material. Before laying pipe, bring the trench bottom up to proper subgrade by backfilling with approved material placed in three inch maximum thickness loose layers, and thoroughly compact each layer as required to provide uniform and continuous bearing and support for the pipe.

3.12 ROCK EXCAVATION AND BLASTING

A. Wherever used as the name of an excavated material the term “rock” shall mean any one or more of the following materials which in the Owner’s opinion require for their removal drilling and blasting, wedging, sledging or barring, or breaking up with power operated hand tools, boulders, pieces or concrete, concrete, and masonry, each weighing more than 250 pounds; and solid sledge rock, concrete and masonry, each with more than ½” cubic yard of volume.

B. There will be no special pay provision for rock excavation in the contract. If rock is encountered it will be considered normal excavation requirements.

C. Except as otherwise specified in subsection Trenching, Excavating, Storing, Bracing and Dewatering herein, where rock is encountered in pipe trenches, remove all rock from sides of trench to provide at least 8 inch clearance all around pipe, remove all rock from required subgrade, broken concrete rubbish, vegetable materials, or other unapproved materials, to provide uniform and continuous beating for the pipe.

D. Only in special cases where authorized, due to adverse field conditions where rock is encountered in pipe trenches, remove the rock only as required to clear the pipe at least four inches all around, and lay the pipe with a protective wrapping of “Rock Shield” and backfill with #10 or selected earth which is free of rocks, stones, brick, cinders, broken concrete, rubbish, vegetable materials or other unapproved materials; to provide uniform and continuous bearing for the pipe. Remove all jagged rock

edges which could penetrate the “Rock Shield” and puncture the pipe or pipes coating.

E. Where blasting is required, conduct all blasting operations only with properly qualified and licensed personnel in accordance with all applicable ordinances and regulations. Cover all blasts with heavy timbers or other approved coverings and use all other safety precautions as required to prevent personal injury and property damage. Repair all damage caused by blasting operators.
   1. Recommendations of the IME shall be followed.

   2. ANSI/NFPA 485 shall be followed.

3.13 DIRT FOR PIPE BACKING

A. Where rock or other conditions unsuitable for supporting pipe are encountered, a 6 inch layer of #10 or dirt which is free or rocks, stones, bricks, cinders, broken concrete, rubbish, wood, vegetable materials, and other unsuitable materials shall be placed in the trench to support pipe. A similar 12 inch layer of #10 or dirt shall also be placed over the pipe.

B. See Backfilling, hereinafter.

3.14 CUTTING AND REPLACING PAVEMENT AND OTHER SPECIAL SURFACES

Restore to at least the conditions which existed before excavation, all surfaces which have been disturbed by the pipeline installation in accordance with State, County, and Local requirements as applicable.

3.15 DIRECTIONAL DRILLING

All existing highways, roads, sidewalks, driveways, curb and gutter and parking lots that are concrete or asphalt can be bored at contractors request with no additional payment unless otherwise indicated.

3.16 CLEANING OF LINES

A. Internal Cleaning:
   1. Prior to meeting: Internally clean all new piping with a suitable pig type cleaner forced by air pressure through the pipe line two or more times until the line is thoroughly cleaned.
      a. Polyethylene Pipe:
         i. All pigging shall be performed with a polyurethane or polyethylene non-abrasive type pig.

ii. Should a large amount of water be present during pigging the line shall be drilled using a suitable squeeze type pig.

2. Provide a suitable barrier in front of the open ends of the pipe to catch the cleaners and prevent injury to personnel.

3. The line shall be pigged a minimum of three times or until the line as thoroughly cleaned.

4. After pigging the line air shall be forced through the line to ensure all smaller particles and dust are removed.

5. The compressor used in forcing the pig through the line or blowing air through the line shall in no way inject any type of lubricant or any foreign matter into the line.

3.17 TESTING

A. Furnish approved testing equipment, give Owner ample advance notice of all proposed tasks, and conduct all tests in the Owner's presence in an approved manner.

B. Pressure Tests:

1. Test all PE piping with 100 psi air and/or insert gas pressure, measure the test pressure with an accurate recording type pressure gauge with 24 hour chart of electronic recorder.

2. Test gauge shall show no drop in pressure for 24 hours after the source of test pressure has been disconnected from the pipeline involved in the test and the temperature of the test medium has been showed to equalize.

3. Locate and repair all leaks which may be disclosed by the tests, and repeat the tests as required for approval.
4. All charts used in the tests shall be identified with the test chart, section of pipeline involved, test pressure, and Contractors signature.

C. Deliver to the Owner the original copy of the test chart.
1. All test charts shall be twelve inch twenty four hour recording charts.

2. All test gauges shall be a minimum of 4.5 inches in diameter or bigger depending on the accuracy required for the test with a range equal to twice the test pressure.

3. All tests shall have a gauge at the point where the air or inert gas is being put into the system at the point furthest from the recording chart and one at the point where the recording chart is located.

4. At no time shall less than two gauges be on any line being tested.

5. Service lines shall be tested for a period of no less than one hour as director by the Owner.

6. Piping shall in no case show any drop in pressure during the test except what may occur due to temperature changes.

7. It is strongly recommended that once the pipe has been pressurized to the proper pressure that it sit for a period of time to allow pressure and temperature equalization.

8. Compressors used in pumping the line up shall in no way inject any type of oil, lubricant or any foreign matter into the line.

D. Liquid Leak Tests (Soap Test):
   1. All above ground fittings, equipment, gauges, piping and joints shall be tested with a suitable liquid leak detection solution before any paint or coating is applied.

   2. The test shall show no sign of any leaks (bubbling).

   3. The test results shall be noted.

3.18 PURGING

A. New Lines: before placing in service, purge all new lines with gas to remove all air and explosive materials, using proper safety precautions.
   1. Purging gas will be furnished by the Owner. Do not waste gas unnecessarily.

B. Existing piping: Before temporarily or permanently taking existing piping out of service, purge all piping with air to remove all gas and explosive mixtures using proper safety precautions.

3.19 CLEAN UP

A. Clean up the work areas as the work progresses. Negligence to proper cleaning up which causes undue inconvenience to citizens, or presents an unsightly or dangerous condition, or causes embarrassments to civic officials will be sufficient reason; for rejection of construction estimates until the unsatisfactory conditions have been remedied.

B. After all work is complete make a final clean up of all areas where work has been done..

3.20 FIRE PREVENTION

A. At all times during the work under this contract, maintain suitable approved fire extinguishing equipment near the locations where work is in progress, and especially in the vicinity of “hot connection” and purging operation.

B. Use every possible safety precaution to prevent fire and explosions, and comply with all applicable safety and fire prevention codes.

C. Portable the extinguishing equipment shall conform to national Fire Protection Associations Standard Section 10.

D. The storage and use of flammable and explosive liquids, solids and devices shall be in accordance with the applicable section of the National Fire Protection Association Codes, Standards and Recommended Practices.

E. Section 1 of the NFPA standards shall be followed at all times.

3.21 EXISTING UTILITIES

A. At all times maintain in a minimum of one foot of clearance between gas piping and all other underground utilities.

B. To the greatest extent possible maintain a minimum clearance of three to five feet between proposed piping and existing utilities.

C. Coordinate all work with other utility personnel to assist them in maintaining service to their customers.

3.22 CONSTRUCTION PERSONNEL

A. All persons performing fusion welds on polyethylene pipe shall be certified, meeting all training requirements.

B. Backhoe operators shall include on qualified operator with a rubber tired backhoe with all equipment and supplies necessary to perform excavation and backfill operations.

C. Foreman shall include one qualified construction crew foreman capable of handling and supervising all types of construction personnel.

D. Laborer shall include one laborer capable of performing the various duties expectant from a laborer in pipe laying operations.

END OF SECTION

SECTION 02933
Seeding

PART 1 GENERAL

1.1 SCOPE

A. The work covered by this section shall include the establishment of all ground cover including areas to be seeded and sodded. This work shall include the supply of all materials, labor, superintendence and maintenance as outlined in these specifications.

B. The part of the site not covered by roads, walks, building, etc. shall be seeded according to these specifications. The areas to be sodded shall include a three foot strip immediately adjacent to all roads, walks, and structures, etc.

C. Before final acceptance of the work, the CONTRACTOR shall satisfactorily clean all areas within the limits of his operations including the street surfaces, walks, gutters, fences, lawns, private property and structures, leaving them in as neat, clean and usable condition as originally found. He shall remove all machinery, tools, surplus materials, temporary buildings and other structures from the site of work. He shall so remove all organic matter and materials containing organic matter from all areas and places used by him during construction. All sewers, manholes, inlets, etc., shall be cleared of all scaffolding, sedimentation, debris, rubbish and dirt.

Where the CONTRACTOR's operations have resulted in filling existing ditches, clogging existing culverts, damaging existing bridges, ground surfaces, sidewalks, driveways, etc., the Contract shall reditch, clean culverts, repair or replace bridges, ground surfaces, sidewalks, driveways, etc., so as to return them to a condition as good as or better than existed prior to the beginning of his operations.

The CONTRACTOR's cleanup operations, which include repair, restoration or replacement of ground surfaces and existing improvements and the removal of rock, shall be performed continuously during the construction operations.

Following installation of the pipeline, “rough cleanup” work shall be performed. This shall consist of grading the trench to create a neat, low mound of backfill material and disposing of any excavated material, rubbish, etc. Crushed stone shall be added to driveways where necessary and fences repaired to the satisfaction of the property owners. After trenches have had adequate time to settle, final grade work and seeding shall be performed.

Rough Grade Work and Cleanup (Rough Cleanup) shall be defined to include the final backfill and windrowing of the ditch line, filling and leveling street and driveway cuts, cleaning up and removal of rubbish, repair of fences and structures,

and any other such work that may be required to result in a neat, orderly project area. Rough Cleanup shall be performed as other construction progresses and must be completed immediately after the adjacent pipeline construction.

Rough Cleanup is not a separate pay item. The cost for this work shall be included in the unit bid price for waterlines. If Rough Cleanup is not performed as specified, the OWNER will require deductions from partial payment estimates.

Final cleanup, grade work and seeding shall be performed on each line when backfilled trenches have had adequate time to settle, but at least within 2 months from the date each line is constructed. Final grade work and seeding on Kentucky Bureau of Highways rights-of-way shall be done in accordance with said Bureau's specifications and the permit granted to the OWNER specifically for this project.

Where work was performed on private property in lawns, earth of good quality, free from rock shall be spread over the disturbed area and graded and compacted to match adjacent ground contours. The graded area shall be hand raked until smooth and free from rock, potholes, and humps. The disturbed area shall then be seeded with the seed variety used on the original lawn (e,g., a bluegrass lawn shall be reseeded with bluegrass seed) and the seed raked in lightly. The seeded area shall be fertilized and then uniformly covered with straw to a depth of approximately 1-1/2 inches.

Where work was performed on private property and not in lawns the trench line shall be graded and filled if necessary to match adjacent contours. All rock larger than 1-1/2" in diameter shall be removed from the disturbed area. In general, pasture and fallow land shall be fertilized and seeded with Kentucky 31 Fescue and plowed fields shall be left unseeded, however, the desire of each property owner shall govern regarding seeding.

In all cases on private property the rate of seed and fertilizer application shall be that recommended by the University of Kentucky Cooperative Extension Service for new plantings of the variety of grass seed used.

If the trench line settles following final grade work or if grass seed fails to germinate within a reasonable time, the CONTRACTOR shall regrade or reseed the area in question as specified above and as directed by the ENGINEER.

The OWNER reserves the right to require the CONTRACTOR to obtain a signed Release from each property owner affected by the work. Said Release shall indicate that the property owner is satisfied with the restoration of his land. However, the execution of such a release shall not relieve the CONTRACTOR from any of his contractual obligations or other claims that may arise at a later date. The widths of construction easements obtained by the OWNER from

property owners is normally 20 feet and the CONTRACTOR shall confine his activities to the area within the limits of the easements unless specific permission is obtained by the CONTRACTOR from property owners.

PART 2 PRODUCTS

2.1 LIME

A. Agriculture lime shall be spread over the entire area to be planted at an average rate of one (1) ton per acre. One tillage operation shall incorporate both the lime and the fertilizer into the soil to a depth of four inches (4").

2.2 FERTILIZER

A. Two fertilizer materials shall be applied to all areas to be seeded. The first shall be complete commercial fertilizer with 1:2:2 ratio of nitrogen, phosphorus, and potassium. Eight hundred pounds (800 lbs) per acre of a 6-12-12 fertilizer, or equivalent amount of another 1:2:2 ratio fertilizer shall be used.

B. In addition to a complete fertilizer, a slowly available nitrogen fertilizer shall be applied. Two hundred fifty pounds (250 lbs.) per acre of area formaldehyde (38-0-0) shall be used.

C. Both fertilizer materials shall be free flowing and suitable for application with approved equipment. Each material shall conform to State fertilizer laws. Bagged fertilizer shall be delivered in sealed standard containers and shall bear the name, trademark, and warranty of the producer. The fertilizers shall be incorporated into the surface four inches (4") by tillage.

2.3 SEED

A. Grass seed shall be fresh, clean and new crop seed composed of the following varieties mixed in the proportion by weight as shown and shall be certified as to varietal purity. All seed shall be mixed by a dealer furnished in sealed standard containers, and tagged with the dealer's guaranteed statement of composition of mixture and percentage of purity and germination. All areas disturbed by construction activity shall be seeded within the following blend at a rate of two hundred pounds (200 lbs.) per acre (4.6 pounds per 1000 square feet).

B. The quality of seed shall conform to or exceed the minimum requirement for seed quality of the Kentucky Seed Improvement Association and shall meet or exceed the following standards for purity and germination:

Variety	Min% Purity/Germ	Seeding Rate Wt.%	Pounds Per Acre
Kentucky Bluegrass-Kenblue	98/80	20	40
Creeping Red Fescue-Pennlawn	98/85	70	140
Perennial Ryegrass	95/90	10	20

2.4 MULCH

A. Mulch for hydroseeding shall be natural wood cellulose fiber or wood pulp which disperses readily in water and which has no toxic effect when combined with seed or other materials. It shall be a commercially available product made for use in spray applicators. Wood cellulose mulch shall be applied at a rate of 1000 lbs. per acre when work is done in the spring or fall season as defined below and 1500 pounds per acre when work is done during summer months.

2.5 SOD

A. Sod shall be bluegrass sod strongly rooted and free of pernicious weeds. It shall be a uniform thickness of not more than 1 1/2" and shall have not less than 3/4" of soil. All sod shall be grown on a commercial turf farm and no pasture sod shall be acceptable. The source of the sod must be approved by the Engineer before it is cut for delivery.

PART 3 EXECUTION

3.1 PLANTING SEASON

A. The normal seasonal dates for seeding mixtures containing Kentucky Bluegrass or tall fescue shall be August 15 to October 15 and from the time the soil is workable in the spring to May 1. Seeding of a specified grass variety at times other than the normal seasonal dates must be approved by the ENGINEER. Seeding shall not be done during windy weather or when the ground is excessively wet, frozen or otherwise untillable.

3.2 SOIL PREPARATION

A. All areas shall be graded to surface drain as shown on the plans. The lime and fertilizer shall be applied at the rates specified above and tilled into the surface 4 inches with approved tillage equipment to provide a reasonably firm, but friable seedbed.

B. All areas to be seeded or sodded shall meet the specified grades, and be free of any weed or undesirable plant growth or debris.

C. Lime and fertilizer for all areas shall be applied at the rate specified and incorporated into the top four inches by approved tillage equipment. The seed and wood cellulose mulch shall then be mixed with adequate water to produce a slurry and then applied uniformly with a hydroseeder at the rates specified above. Any area inadequately covered shall be redone as directed by the ENGINEER.

3.3 MAINTENANCE OF SEEDED AREAS:

A. The CONTRACTOR shall maintain seeded areas until they have been mowed two times and then he shall repair eroded areas one time after the second mowing. Each mowing shall be when the grass is about four inches (4") high and cut back to about 2 1/2". After the second mowing, the CONTRACTOR shall notify the ENGINEER that he is ready to repair erosion damage so that an inspection can be scheduled when the erosion repair erosion damage so that an inspection can be scheduled when the erosion repair work is complete. Once the erosion areas have been filled with topsoil, fertilized, seeded and mulched and the work has been inspected and approved by the ENGINEER, the work under this section is complete. Any further erosion repair work necessary will be treated as an extra and shall be done only when authorized by the ENGINEER.

3.4 CARE DURING CONSTRUCTION

A. The CONTRACTOR shall be responsible for repair to turf areas damaged by his equipment or men until all work is accepted. Temporary haul roads and storage areas shall be tilled to depth of four inches (4") and fertilized, seeded and mulched as specified above.

END OF SECTION

SECTION 02957
Erosion Control and Stabilization

PART 1 GENERAL

1.1 SUMMARY

A. This Section includes provisions for erosion control and stabilization.

PART 2 PRODUCTS

2.1 EROSION CONTROL

A. All drainage paths and swales to be cut, graded, and seeded prior to any utilities trenching.

B. All drainage paths and excavated areas to be mulched upon completion of seeding. Straw bales are to be staked perpendicular to flow in bottom of swale every 100 feet along drainage swale route. Straw bales to remain in swale route until a substantial growth of grass has been established. Straw bales are to be staked around all inlet rims where swale lines are excavated to route storm water flow into inlet.

C. Erosion control requires immediate seeding and mulching of any stripped and unvegetated areas, including unpaved right-of-ways.

2.2 SEEDING

A. A leguminous inoculated seed mixture shall be used for all seed areas. Class of seeding as follows:

1. Mixture A: shall be used for all drainage paths, swales, side slopes, and all other areas where existing lawn is disturbed during construction.

   Seed mixture shall be as follows:

   2 lbs./1000 sq. ft. - Chewings Fescue
   2 lbs./1000 sq. ft. - Kentucky Bluegrass
   2 lbs./1000 sq. ft. - Perennial Rye

   Seed shall be sown at a rate of 6 lbs. per 1000 sq. ft. of area.

2. Mixture B: shall be for all areas disturbed by excavation and re-grading as seasonal or temporary cover in bare areas.

   Seed mixture shall be as follows:

1 lb./1000 sq. ft. - Perennial Rye
1 lb./1000 sq. ft. - Annual Rye

Seed shall be sown at a rate of 4 lbs. per 1000 sq. ft. of area.

3. Mixture C: shall be used for all lake or pond banks.

Seed mixture shall be as follows:

20% Perennial Ryegrass
15% Kentucky Bluegrass
15% Creeping Red Fescue
50% Nutri-Kote plus Apron fungicide seed coating.

Seed shall be sown at a rate of 5 lbs. per 1000 sq. ft. of area.

2.3 FERTILIZER

A. Apply a minimum of 600 lbs. of 12-12-12 fertilizer per acre.

2.4 MULCH

A. Mulch shall consist of clean, seed-free threshed straw of wheat, rye, oats, or barley. Spread mulch uniformly to form a continuous blanket not less than 1.5 inches loose measurement over "Mixture A" and "Mixture C" seeded areas.

B. The mulch shall be held in place by being mechanically crimped into the soil, tackified with a bio-degradable tackifier, or netted and stapled to the soil with degradable netting. The mulch should be applied at a minimum rate of 1500 lbs. per acre.

2.5 STRAW TACKIFIER - MULCH TACKIFIER

A. The tackifier shall be a naturally derived product from all organic sources resulting in a strong resilient muciloid, non-bitumen M-Binder. The product can be used in a hydro-seeder with both 100% Virgin Wood Fiber or Paper Wood Cellulose mulch and can be sprayed on 100% Wheat Straw Mulch for stabilization from the wind. Application rates vary between 60-140 lbs. per acre depending upon the existing conditions. The product shall be packed in 40 lbs. fiber bags.

Technical Specifications:

Protein Content	1.62
Ash Content	2.7
Fiber	4.0
pH of 1% Solution	6.8
Settleable Solids	5.0

B. Erosion control requires immediate seeding and mulching of any stripped and un-vegetated areas, including unpaved right-of-ways.

PART 3 (NOT USED)

END OF SECTION

SECTION 03300
Cast-in-place Concrete

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section specifies cast-in place concrete, including formwork, reinforcing, mix design, placement procedures, and finishes.

B. Cast-in-place concrete includes the following:

1. Foundations and footings.
2. Slabs-on-grade.
3. Fill for steel deck.
4. Foundation walls.
5. Shear walls.
6. Load-bearing building walls.
7. Building frame members.
8. Equipment pads and bases.
9. Fill for steel pan stairs.

1.3 SUBMITTALS

A. General: Submit the following according to Conditions of the Contract and Division 1 Specification Sections.

B. Product data for proprietary materials and items, including reinforcement and forming accessories, admixtures, patching compounds, waterstops, joint systems, curing compounds, dry-shake finish materials, and others if requested by ENGINEER.

C. Shop drawings for reinforcement detailing fabricating, bending, and placing concrete reinforcement. Comply with ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures" showing bar schedules, stirrup spacing, bent bar diagrams, and arrangement of concrete reinforcement. Include special reinforcing required for openings through concrete structures.

D. Shop drawings for formwork indicating fabrication and erection of forms for specific finished concrete surfaces. Show form construction including jointing, special form joints or reveals, location and pattern of form tie placement, and other items that affect exposed

concrete visually.

1. ENGINEER's review is for general applications and features only. Designing formwork for structural stability and efficiency is CONTRACTOR's responsibility.

E. Samples of materials as requested by ENGINEER, including names, sources, and descriptions, as follows:

1. Color finishes.
2. Normal weight aggregates.
3. Fiber reinforcement.
4. Reglets.
5. Waterstops.
6. Vapor retarder/barrier.
7. Form liners.

F. Laboratory test reports for concrete materials and mix design test.

G. Material certificates in lieu of material laboratory test reports when permitted by ENGINEER. Material certificates shall be signed by manufacturer and CONTRACTOR, certifying that each material item complies with or exceeds specified requirements. Provide certification from admixture manufacturers that chloride content complies with specification requirements.

1.4 QUALITY ASSURANCE

A. Codes and Standards: Comply with provisions of the following codes, specifications, and standards, except where more stringent requirements are shown or specified:

1. American Concrete Institute (ACI) 301, "Specifications for Structural Concrete for Buildings."
2. ACI 318, "Building Code Requirements for Reinforced Concrete."
3. Concrete Reinforcing Steel Institute (CRSI) "Manual of Standard Practice."

B. Concrete Testing Service: Engage a testing agency acceptable to ENGINEER to perform material evaluation tests and to design concrete mixes.

C. Materials and installed work may require testing and retesting at any time during progress of Work. Tests, including retesting of rejected materials for installed Work, shall be done at CONTRACTOR's expense.

PART 2 - PRODUCTS

2.1 FORM MATERIALS

A. Forms for Exposed Finish Concrete: Plywood, metal, metal-framed plywood faced, or other acceptable panel-type materials to provide continuous, straight, smooth, exposed surfaces. Furnish in largest practicable sizes to minimize number of joints and to conform to joint system shown on drawings.

B. Forms for Unexposed Finish Concrete: Plywood, lumber, metal, or another acceptable material. Provide lumber dressed on at least two edges and one side for tight fit.

C. Forms for Textured Finish Concrete: Units of face design, size, arrangement, and configuration to match control sample. Provide solid backing and form supports to ensure stability of textured form liners.

D. Forms for Cylindrical Columns and Supports: Metal, glass-fiber-reinforced plastic, or paper or fiber tubes that will produce smooth surfaces without joint indications. Provide units with sufficient wall thickness to resist wet concrete loads without deformation.

E. Pan-Type Forms: Glass-fiber-reinforced plastic or formed steel, stiffened to support weight of placed concrete without deformation.

F. Carton Forms: Biodegradable paper surface, treated for moisture-resistance, structurally sufficient to support weight of plastic concrete and other superimposed loads.

G. Form Release Agent: Provide commercial formulation form release agent with a maximum of 350 g/L volatile organic compounds (VOCs) that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

H. Form Ties: Factory-fabricated, adjustable-length, stainless steel, removable or snap-off metal form ties designed to prevent form deflection and to prevent spalling of concrete upon removal. Provide units that will leave no metal closer than 1-1/2 inches (38 mm) to the plane of the exposed concrete surface.

1. Provide ties that, when removed, will leave holes not larger than 1 inch (25 mm) in diameter in the concrete surface. Use only stainless material.

2.2 REINFORCING MATERIALS

A. Reinforcing Bars: ASTM A 615 Grade 60 (ASTM A 615M Grade 400), deformed.

B. Galvanized Reinforcing Bars: ASTM A 767 (ASTM A 767M), Class II [2.0 oz. zinc psf (610 g/sq. m)], hot-dip galvanized after fabrication and bending.

C. Epoxy-Coated Reinforcing Bars: ASTM A 775 (ASTM A 775M).

D. Steel Wire: ASTM A 82, plain, cold-drawn steel.

E. Welded Wire Fabric: ASTM A 185, welded steel wire fabric.

F. Deformed-Steel Welded Wire Fabric: ASTM A 497.

G. Epoxy-Coated Welded Wire Fabric: ASTM A 884, Class A.

H. Supports for Reinforcement: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire fabric in place. Use wire bar-type supports complying with CRSI specifications.

1. For slabs-on-grade, use supports with sand plates or horizontal runners where base material will not support chair legs.
2. For exposed-to-view concrete surfaces where legs of supports are in contact with forms, provide supports with legs that are protected by plastic (CRSI, Class 1) or stainless steel (CRSI, Class 2).

2.3 CONCRETE MATERIALS

A. Portland Cement: ASTM C 150, Type I.

1. Use one brand of cement throughout Project.

B. Fly Ash: ASTM C 618, Type F.

C. Normal-Weight Aggregates: ASTM C 33 and as specified. Provide aggregates from a single source for exposed concrete.

1. For exposed exterior surfaces, do not use fine or coarse aggregates that contain substances that cause spalling.
2. Local aggregates not complying with ASTM C 33 that have been shown to produce concrete of adequate strength and durability by special tests or actual service may be used when acceptable to Engineer.

D. Lightweight Aggregates: ASTM C 330.

E. Water: Potable.

F. Fiber Reinforcement: Polypropylene fibers engineered and designed for secondary reinforcement of concrete slabs, complying with ASTM C 1116, Type III, not less than 3/4 inch long.

1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:

a. Gilco Fibers, Cormix Construction Chemicals.
b. Durafiber, Durafiber Corp.
c. Fiberstrand 100, Euclid Chemical Co.
d. Fibermesh, Fibermesh Co., Div. Synthetic Industries, Inc.
e. Forta, Forta Corp.
f. Grace Fibers, W.R. Grace & Co.
g. Polystrand, Metalcrete Industries

G. Admixtures, General: Provide concrete admixtures that contain not more than 0.1 percent chloride ions.

H. Air-Entraining Admixture: ASTM C 260, certified by manufacturer to be compatible with other required admixtures.

1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:

a. Air-Tite, Cormix Construction Chemicals.
b. Air-Mix or Perma-Air, Euclid Chemical Co.
c. Darex AEA or Daravair, W.R. Grace & Co.
d. MB-VR or Micro-Air, Master Builders, Inc.
e. Sealtight AEA, W.R. Meadows, Inc.
f. Sika AER, Sika Corp.

I. Water-Reducing Admixture: ASTM C 494, Type A.

1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:

a. Chemtard, ChemMasters Corp.
b. PSI N, Cormix Construction Chemicals.
c. Eucon WR-75, Euclid Chemical Co.
d. WRDA, W.R. Grace & Co.
e. Pozzolith Normal or Polyheed, Master Builders, Inc.
f. Metco W.R., Metalcrete Industries.
g. Prokrete-N, Prokrete Industries.
h. Plastocrete 161, Sika Corp.

J. High-Range Water-Reducing Admixture: ASTM C 494, Type F or Type G.

1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:

a. Super P, Anti-Hydro Co., Inc.
b. Cormix 200, Cormix Construction Chemicals.

c. Eucon 37, Euclid Chemical Co.
d. WRDA 19 or Daracem, W.R. Grace & Co.
e. Rheobuild or Polyheed, Master Builders, Inc.
f. Superslump, Metalcrete Industries.
g. PSPL, Prokrete Industries.
h. Sikament 300, Sika Corp.

K. Water-Reducing, Accelerating Admixture: ASTM C 494, Type E.

1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:

a. Q-Set, Conspec Marketing & Manufacturing Co.
b. Lubricon NCA, Cormix Construction Chemicals.
c. Accelguard 80, Euclid Chemical Co.
d. Daraset, W.R. Grace & Co.
e. Pozzutec 20, Master Builders, Inc.
f. Accel-Set, Metalcrete Industries.

L. Water-Reducing, Retarding Admixture: ASTM C 494, Type D.

1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:

a. PSI-R Plus, Cormix Construction Chemicals.
b. Eucon Retarder 75, Euclid Chemical Co.
c. Daratard-17, W.R. Grace & Co.
d. Pozzolith R, Master Builders, Inc.
e. Protard, Prokrete Industries.
f. Plastiment, Sika Corporation.

2.4 RELATED MATERIALS

A. Reglets: Where sheet flashing or bituminous membranes are terminated in reglets, provide reglets of not less than 0.0217- inch- (0.46-mm-) thick galvanized sheet steel. Fill reglet or cover face opening to prevent intrusion of concrete or debris.

B. Dovetail Anchor Slots: Hot-dip galvanized sheet steel, not less than 0.0336 inch thick (0.76 mm) with bent tab anchors. Fill slot with temporary filler or cover face opening to prevent intrusion of concrete or debris.

C. Waterstops: Provide flat, dumbbell-type or centerbulb-type waterstops at construction joints and other joints as indicated. Size to suit joints.

D. Rubber Waterstops: Corps of Engineers CRD-C 513.

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:

    a. The Burke Co.
    b. Progress Unlimited.
    c. Williams Products, Inc.

E. Polyvinyl Chloride Waterstops: Corps of Engineers CRD-C 572.

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:

    a. The Burke Co.
    b. Greenstreak Plastic Products Co.
    c. W.R. Meadows, Inc.
    d. Progress Unlimited.
    e. Schlegel Corp.
    f. Vinylex Corp.

F. Sand Cushion: Clean, manufactured or natural sand.

G. Vapor Retarder: Provide vapor retarder that is resistant to deterioration when tested according to ASTM E 154, as follows:

1. Polyethylene sheet not less than 8 mils (0.2 mm) thick.

H. Vapor Barrier: Premolded seven-ply membrane consisting of reinforced core and carrier sheet with fortified bitumen layers, protective weathercoating, and plastic antistick sheet. Water vapor transmission rate of 1 perm when tested according to ASTM E 96, Method B. Provide manufacturer's recommended mastics and gusset tape.

1. Product: Subject to compliance with requirements, provide Sealtight Premoulded Membrane by W.R. Meadows, Inc. or approved equal.

I. Nonslip Aggregate Finish: Provide fused aluminum oxide granules or crushed emery as the abrasive aggregate for a nonslip finish, with emery aggregate containing not less than 50 percent aluminum oxide and not less than 25 percent ferric oxide. Use material that is factory-graded, packaged, rustproof, nonglazing, and unaffected by freezing, moisture, and cleaning materials.

J. Colored Wear-Resistant Finish: Packaged dry combination of materials consisting of portland cement, graded quartz aggregate, coloring pigments, and plasticizing admixture. Use coloring pigments that are finely ground nonfading mineral oxides interground with

cement. Color as selected by OWNER from manufacturers' standards, unless otherwise indicated.

1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:

    a. Conshake 600 Colortone, Conspec Marketing & Mfg. Co.
    b. Floorcron, Cormix Construction Chemicals.
    c. Quartz Tuff, Dayton-Superior.
    d. Surflex, Euclid Chemical Co.
    e. Colorundum, A.C. Horn, Inc.
    f. Quartz Plate, L&M Construction Chemicals, Inc.
    g. Colorcron, Master Builders, Inc.
    h. Floor Quartz, Metalcrete Industries
    i. Lithochrome Color Hardener, L.M. Scofield Co.
    j. Harcol Redi-Mix, Sonneborn-Chemrex.
    k. Hard Top, Symons Corp.

K. Absorptive Cover: Burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. (305 g/sq. m), complying with AASHTO M 182, Class 2.

L. Moisture-Retaining Cover: One of the following, complying with ASTM C 171.

1. Waterproof paper.
2. Polyethylene film.
3. Polyethylene-coated burlap.

M. Liquid Membrane-Forming Curing Compound: Liquid-type membrane-forming curing compound complying with ASTM C 309, Type I, Class A. Moisture loss not more than 0.55 kg/sq. m when applied at 200 sq. ft./gal (4.9 sq. m/L).

1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:

    a. A-H 3 Way Sealer, Anti-Hydro Co., Inc.
    b. Spartan-Cote, The Burke Co.
    c. Conspec #1, Conspec Marketing & Mfg. Co.
    d. Sealco 309, Cormix Construction Chemicals.
    e. Day-Chem Cure and Seal, Dayton Superior Corp.
    f. Eucocure, Euclid Chemical Co.
    g. Horn Clear Seal, A.C. Horn, Inc.
    h. L&M Cure R, L&M Construction Chemicals, Inc.
    i. Masterkure, Master Builders, Inc.
    j. CS-309, W.R. Meadows, Inc.
    k. Seal N Kure, Metalcrete Industries.
    l. Kure-N-Seal, Sonneborn-Chemrex.

m. Stontop CS2, Stonhard, Inc.

N. Water-Based Acrylic Membrane Curing Compound: ASTM C 309, Type I, Class B.

1. Provide material that has a maximum volatile organic compound (VOC) rating of 350 g/L.
2. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:

a. Highseal, Conspec Marketing and Mfg. Co.
b. Sealco - VOC, Cormix Construction Chemicals.
c. Safe Cure and Seal, Dayton Superior Corp.
d. Aqua-Cure, Euclid Chemical Co.
e. Dress & Seal WB, L&M Construction Chemicals, Inc.
f. Masterkure 100W, Master Builders, Inc.
g. Vocomp-20, W.R. Meadows, Inc.
h. Metcure, Metalcrete Industries.
i. Stontop CS1, Stonhard, Inc.

O. Evaporation Control: Monomolecular film-forming compound applied to exposed concrete slab surfaces for temporary protection from rapid moisture loss.

1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:

a. Aquafilm, Conspec Marketing and Mfg. Co.
b. Eucobar, Euclid Chemical Co.
c. E-Con, L&M Construction Chemicals, Inc.
d. Confilm, Master Builders, Inc.
e. Waterhold, Metalcrete Industries.

P. Underlayment Compound: Free-flowing, self-leveling, pumpable, cement-based compound for applications from 1 inch (25 mm) thick to feathered edges.

1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:

a. K-15, Ardex, Inc.
b. Self-Leveling Wear Topping, W.R. Bonsal Co.
c. Conflow, Conspec Marketing and Mfg. Co.
d. Corlevel, Cormix Construction Chemicals.
e. LevelLayer II, Dayton Superior Corp.
f. Flo-Top, Euclid Chemical Co.
g. Gyp-Crete, Gyp-Crete Corp.
h. Levelex, L&M Construction Chemicals, Inc.

i. Underlayment 110, Master Builders, Inc.
j. Stoncrete UL1, Stonhard, Inc.
k. Concrete Top, Symons Corp.
l. Thoro Underlayment Self-Leveling, Thoro System Products.

Q. Bonding Agent: Polyvinyl acetate or acrylic base.

1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:

a. Polyvinyl Acetate (Interior Only):

1) Superior Concrete Bonder, Dayton Superior Corp.
2) Euco Weld, Euclid Chemical Co.
3) Weld-Crete, Larsen Products Corp.
4) Everweld, L&M Construction Chemicals, Inc.
5) Herculox, Metalcrete Industries.
6) Ready Bond, Symons Corp.

b. Acrylic or Styrene Butadiene:

1) Acrylic Bondcrete, The Burke Co.
2) Strongbond, Conspec Marketing and Mfg. Co.
3) Day-Chem Ad Bond, Dayton Superior Corp.
4) SBR Latex, Euclid Chemical Co.
5) Daraweld C, W.R. Grace & Co.
6) Hornweld, A.C. Horn, Inc.
7) Everbond, L&M Construction Chemicals, Inc.
8) Acryl-Set, Master Builders Inc.
9) Intralok, W.R. Meadows, Inc.
10) Acrylpave, Metalcrete Industries.
11) Sonocrete, Sonneborn-Chemrex.
12) Stonlock LB2, Stonhard, Inc.
13) Strong Bond, Symons Corp.

R. Epoxy Adhesive: ASTM C 881, two-component material suitable for use on dry or damp surfaces. Provide material type, grade, and class to suit Project requirements.

1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:

a. Burke Epoxy M.V., The Burke Co.
b. Spec-Bond 100, Conspec Marketing and Mfg. Co.
c. Resi-Bond (J-58), Dayton Superior.
d. Euco Epoxy System #452 or #620, Euclid Chemical Co.

e. Epoxtite Binder 2390, A.C. Horn, Inc.
f. Epabond, L&M Construction Chemicals, Inc.
g. Concresive Standard Liquid, Master Builders, Inc.
h. Rezi-Weld 1000, W.R. Meadows, Inc.
i. Metco Hi-Mod Epoxy, Metalcrete Industries.
j. Sikadur 32 Hi-Mod, Sika Corp.
k. Stonset LV5, Stonhard, Inc.
l. R-600 Series, Symons Corp.

2.5 PROPORTIONING AND DESIGNING MIXES

A. Prepare design mixes for each type and strength of concrete by either laboratory trial batch or field experience methods as specified in ACI 301. For the trial batch method, use an independent testing agency acceptable to Engineer for preparing and reporting proposed mix designs.

1. Do not use the same testing agency for field quality control testing.
2. Limit use of fly ash to not exceed 25 percent of cement content by weight.

B. Submit written reports to ENGINEER of each proposed mix for each class of concrete prior to start of Work. Do not begin concrete production until proposed mix designs have been reviewed.

C. Design mixes to provide normal weight concrete with the following properties as indicated on drawings and schedules:

1. 4000 psi (27.6 MPa), 28-day compressive strength; water-cement ratio, 0.44 maximum (non-air-entrained), 0.35 maximum (air-entrained).

D. Water-Cement Ratio: Provide concrete for following conditions with maximum water-cement (W/C) ratios as follows:

1. Subjected to freezing and thawing: W/C 0.45.
2. Subjected to deicers/watertight: W/C 0.40.
3. Subjected to brackish water, salt spray, or deicers: W/C 0.40.

E. Slump Limits: Proportion and design mixes to result in concrete slump at point of placement as follows:

1. Ramps, slabs, and sloping surfaces: Not more than 3 inches (75 mm).
2. Reinforced foundation systems: Not less than 1 inch (25 mm) and not more than 3 inches (75 mm).
3. Concrete containing high-range water-reducing admixture (superplasticizer): Not more than 8 inches (200 mm) after adding admixture to site-verified 2 - 3 inch (50 - 75 mm) slump concrete.

4. Other concrete: Not more than 4 inches (100 mm).

F. Lightweight Structural Concrete: Lightweight aggregate and concrete shall conform to ASTM C 330. Proportion mix to produce concrete with a minimum compressive strength of 3000 psi (20.7) at 28 days and a calculated equilibrium unit weight of 110 pcf (1762 kg/cu. m) plus or minus 3 pcf (48.1 kg/cu. m) as determined by ASTM C 567. Concrete slump at the point of placement shall be the minimum necessary for efficient mixing, placing, and finishing. Maximum slump shall be 6 inches (150 mm) for pumped concrete and 5 inches (125 mm) elsewhere. Air entrain concrete exposed to weather according to ACI 301 requirements.

G. Adjustment to Concrete Mixes: Mix design adjustments may be requested by Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant, as accepted by ENGINEER. Laboratory test data for revised mix design and strength results must be submitted to and accepted by ENGINEER before using in Work.

H. Fiber Reinforcement: Add at manufacturer's recommended rate but not less than 1.5 lb/cu. yd. (0.9 kg/cu. m).

2.6 ADMIXTURES

A. Use water-reducing admixture or high-range water-reducing admixture (superplasticizer) in concrete, as required, for placement and workability.

B. Use accelerating admixture in concrete slabs placed at ambient temperatures below 50 deg F (10 deg C).

C. Use high-range water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs, architectural concrete, parking structure slabs, concrete required to be watertight, and concrete with water-cement ratios below 0.50.

D. Use air-entraining admixture in exterior exposed concrete unless otherwise indicated. Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having total air content with a tolerance of plus or minus 1-1/2 percent within the following limits:

1. Concrete structures and slabs exposed to freezing and thawing, deicer chemicals, or hydraulic pressure:

    a. 4.5 percent (moderate exposure); 5.5 percent (severe exposure) for 1-1/2 inch (38 mm) maximum aggregate.
    b. 4.5 percent (moderate exposure); 6.0 percent (severe exposure) for 1 inch (25 mm) maximum aggregate.
    c. 5.0 percent (moderate exposure); 6.0 percent (severe exposure) for 3/4 inch (19 mm) maximum aggregate.

d. 5.5 percent (moderate exposure); 7.0 percent (severe exposure) for 1/2 inch (13 mm) maximum aggregate.

2. Other concrete not exposed to freezing, thawing, or hydraulic pressure, or to receive a surface hardener: 2 to 4 percent air.

E. Use admixtures for water reduction and set accelerating or retarding in strict compliance with manufacturer's directions.

2.7 CONCRETE MIXING

A. Ready-Mixed Concrete: Comply with requirements of ASTM C 94, and as specified.

1. When air temperature is between 85 deg F (29 deg C) and 90 deg F (32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes, and when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 GENERAL

A. Coordinate the installation of joint materials, vapor retarder/barrier, and other related materials with placement of forms and reinforcing steel.

3.2 FORMS

A. General: Design, erect, support, brace, and maintain formwork to support vertical, lateral, static, and dynamic loads that might be applied until concrete structure can support such loads. Construct formwork so concrete members and structures are of correct size, shape, alignment, elevation, and position. Maintain formwork construction tolerances and surface irregularities complying with the following ACI 347 limits:

1. Provide Class A tolerances for concrete surfaces exposed to view.
2. Provide Class C tolerances for other concrete surfaces.

B. Construct forms to sizes, shapes, lines, and dimensions shown and to obtain accurate alignment, location, grades, level, and plumb work in finished structures. Provide for openings, offsets, sinkages, keyways, recesses, moldings, rustications, reglets, chamfers, blocking, screeds, bulkheads, anchorages and inserts, and other features required in the Work. Use selected materials to obtain required finishes. Solidly butt joints and provide backup at joints to prevent cement paste from leaking.

C. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush plates or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces where slope is too steep to place concrete

with bottom forms only. Kerf wood inserts for forming keyways, reglets, recesses, and the like for easy removal.

D. Provide temporary openings for clean-outs and inspections where interior area of formwork is inaccessible before and during concrete placement. Securely brace temporary openings and set tightly to forms to prevent losing concrete mortar. Locate temporary openings in forms at inconspicuous locations.

E. Chamfer exposed corners and edges as indicated, using wood, metal, PVC, or rubber chamfer strips fabricated to produce uniform smooth lines and tight edge joints.

F. Provisions for Other Trades: Provide openings in concrete formwork to accommodate work of other trades. Determine size and location of openings, recesses, and chases from trades providing such items. Accurately place and securely support items built into forms.

G. Cleaning and Tightening: Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, or other debris just before placing concrete. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

3.3 VAPOR RETARDER/BARRIER INSTALLATION

A. General: Place vapor retarder/barrier sheeting in position with longest dimension parallel with direction of pour.

B. Lap joints 6 inches (150 mm) and seal with manufacturer's recommended mastic or pressure-sensitive tape.

1. Cover vapor retarder/barrier with sand cushion and compact to depth indicated.

3.4 PLACING REINFORCEMENT

A. General: Comply with Concrete Reinforcing Steel Institute's recommended practice for "Placing Reinforcing Bars," for details and methods of reinforcement placement and supports and as specified.

1. Avoiding cutting or puncturing vapor retarder/barrier during reinforcement placement and concreting operations. Repair damages before placing concrete.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other materials that reduce or destroy bond with concrete.

C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcing by metal chairs, runners, bolsters, spacers, and hangers, as approved.

D. Place reinforcement to maintain minimum coverages as indicated for concrete protection. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement operations. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces.

E. Install welded wire fabric in lengths as long as practicable. Lap adjoining pieces at least one full mesh and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.

3.5 JOINTS

A. Construction Joints: Locate and install construction joints so they do not impair strength or appearance of the structure.

B. Provide keyways at least 1-1/2 inches (38 mm) deep in construction joints in walls and slabs and between walls and footings. Bulkheads designed and accepted for this purpose may be used for slabs.

C. Place construction joints perpendicular to main reinforcement. Continue reinforcement across construction joints except as indicated otherwise. Do not continue reinforcement through sides of strip placements.

D. Use bonding agent on existing concrete surfaces that will be joined with fresh concrete.

E. Waterstops: Provide waterstops in construction joints as indicated. Install waterstops to form continuous diaphragm in each joint. Support and protect exposed waterstops during progress of Work. Field-fabricate joints in waterstops according to manufacturer's printed instructions.

F. Isolation Joints in Slabs-on-Grade: Construct isolation joints in slabs-on-grade at points of contact between slabs-on-grade and vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

G. Contraction (Control) Joints in Slabs-on-Grade: Construct contraction joints in slabs-on-grade to form panels of patterns as shown. Use saw cuts 1/8 inch (3 mm) wide by one-fourth of slab depth or inserts 1/4 inch (6 mm) wide by one-fourth of slab depth, unless otherwise indicated.

1. Form contraction joints by inserting premolded plastic, hardboard, or fiberboard strip into fresh concrete until top surface of strip is flush with slab surface. Tool slab edges round on each side of insert. After concrete has cured, remove inserts and clean groove of loose debris.
2. Contraction joints in unexposed floor slabs may be formed by saw cuts as soon as possible after slab finishing as may be safely done without dislodging aggregate.
3. If joint pattern is not shown, provide joints not exceeding 15 ft. (4.5 m) in either

direction and located to conform to bay spacing wherever possible (at column centerlines, half bays, third bays).

4. Provide joint fillers and sealants.

3.6 INSTALLING EMBEDDED ITEMS

A. General: Set and build into formwork anchorage devices and other embedded items required for other work that is attached to or supported by cast-in-place concrete. Use setting drawings, diagrams, instructions, and directions provided by suppliers of items to be attached.

B. Install reglets to receive top edge of foundation sheet waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, relieving angles, and other conditions.

C. Install dovetail anchor slots in concrete structures as indicated on drawings.

D. Forms for Slabs: Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and contours in finished surfaces. Provide and secure units to support screed strips using strike-off templates or compacting-type screeds.

3.7 PREPARING FORM SURFACES

A. General: Coat contact surfaces of forms with an approved, nonresidual, low-VOC, form-coating compound before placing reinforcement.

B. Do not allow excess form-coating material to accumulate in forms or come into contact with in-place concrete surfaces against which fresh concrete will be placed. Apply according to manufacturer's instructions.

1. Coat steel forms with a nonstaining, rust-preventative material. Rust-stained steel formwork is not acceptable.

3.8 CONCRETE PLACEMENT

A. Inspection: Before placing concrete, inspect and complete formwork installation, reinforcing steel, and items to be embedded or cast in. Notify other trades to permit installation of their work.

B. General: Comply with ACI 304, "Guide for Measuring, Mixing, Transporting, and Placing Concrete," and as specified.

C. Deposit concrete continuously or in layers of such thickness that no new concrete will be placed on concrete that has hardened sufficiently to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as specified. Deposit concrete to avoid segregation at its final location.

D. Placing Concrete in Forms: Deposit concrete in forms in horizontal layers no deeper than 24 inches (600 mm) and in a manner to avoid inclined construction joints. Where placement consists of several layers, place each layer while preceding layer is still plastic to avoid cold joints.

1. Consolidate placed concrete by mechanical vibrating equipment supplemented by hand-spading, rodding, or tamping. Use equipment and procedures for consolidation of concrete complying with ACI 309.
2. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations no farther than the visible effectiveness of the machine. Place vibrators to rapidly penetrate placed layer and at least 6 inches (150 mm) into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to set. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mix to segregate.

E. Placing Concrete Slabs: Deposit and consolidate concrete slabs in a continuous operation, within limits of construction joints, until completing placement of a panel or section.

1. Consolidate concrete during placement operations so that concrete is thoroughly worked around reinforcement, other embedded items and into corners.
2. Bring slab surfaces to correct level with a straightedge and strike off. Use bull floats or darbies to smooth surface free of humps or hollows. Do not disturb slab surfaces prior to beginning finishing operations.
3. Maintain reinforcing in proper position on chairs during concrete placement.

F. Cold-Weather Placement: Comply with provisions of ACI 306 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

G. When air temperature has fallen to or is expected to fall below 40 deg F (4 deg C), uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F (10 deg C) and not more than 80 deg F (27 deg C) at point of placement.

1. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
2. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise accepted in mix designs.

H. Hot-Weather Placement: When hot weather conditions exist that would impair quality and strength of concrete, place concrete complying with ACI 305 and as specified.

1. Cool ingredients before mixing to maintain concrete temperature at time of placement to below 90 deg F (32 deg C). Mixing water may be chilled or chopped

ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.

2. Cover reinforcing steel with water-soaked burlap if it becomes too hot, so that steel temperature will not exceed the ambient air temperature immediately before embedding in concrete.
3. Fog spray forms, reinforcing steel, and subgrade just before placing concrete. Keep subgrade moisture uniform without puddles or dry areas.
4. Use water-reducing retarding admixture when required by high temperatures, low humidity, or other adverse placing conditions.

3.9 FINISHING FORMED SURFACES

A. Rough-Formed Finish: Provide a rough-formed finish on formed concrete surfaces not exposed to view in the finished Work or concealed by other construction. This is the concrete surface having texture imparted by form-facing material used, with tie holes and defective areas repaired and patched, and fins and other projections exceeding 1/4 inch (6 mm) in height rubbed down or chipped off.

B. Smooth-Formed Finish: Provide a smooth-formed finish on formed concrete surfaces exposed to view or to be covered with a coating material applied directly to concrete, or a covering material applied directly to concrete, such as waterproofing, dampproofing, veneer plaster, painting, or another similar system. This is an as-cast concrete surface obtained with selected form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch defective areas with fins and other projections completely removed and smoothed.

C. Smooth-Rubbed Finish: Unless otherwise shown or scheduled, provide smooth-rubbed finish on all exposed, vertical concrete surfaces that have received smooth-formed finish treatment not later than 1 day after form removal.

1. Moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.

D. Grout-Cleaned Finish: Provide grout-cleaned finish on scheduled concrete surfaces that have received smooth-formed finish treatment.

1. Combine one part portland cement to one and one-half parts fine sand by volume, and a 50:50 mixture of acrylic or styrene butadiene-based bonding admixture and water to form the consistency of thick paint. Blend standard portland cement and white portland cement in amounts determined by trial patches so that final color of dry grout will match adjacent surfaces.
2. Thoroughly wet concrete surfaces, apply grout to coat surfaces, and fill small holes. Remove excess grout by scraping and rubbing with clean burlap. Keep damp by fog spray for at least 36 hours after rubbing.

E. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike-off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.10 MONOLITHIC SLAB FINISHES

A. Scratch Finish: Apply scratch finish to monolithic slab surfaces to receive concrete floor topping or mortar setting beds for tile, portland cement terrazzo, and other bonded applied cementitious finish flooring material, and where indicated.

1. After placing slabs, finish surface to tolerances of F(F) 15 (floor flatness) and F(L) 13 (floor levelness) measured according to ASTM E 1155 (ASTM E 1155M). Slope surfaces uniformly to drains where required. After leveling, roughen surface before final set with stiff brushes, brooms, or rakes.

B. Float Finish: Apply float finish to monolithic slab surfaces to receive trowel finish and other finishes as specified; slab surfaces to be covered with membrane or elastic waterproofing, membrane or elastic roofing, or sand-bed terrazzo; and where indicated.

1. After screeding, consolidating, and leveling concrete slabs, do not work surface until ready for floating. Begin floating, using float blades or float shoes only, when surface water has disappeared, or when concrete has stiffened sufficiently to permit operation of power-driven floats, or both. Consolidate surface with power-driven floats or by hand-floating if area is small or inaccessible to power units. Finish surfaces to tolerances of F(F) 18 (floor flatness) and F(L) 15 (floor levelness) measured according to ASTM E 1155 (ASTM E 1155M). Cut down high spots and fill low spots. Uniformly slope surfaces to drains. Immediately after leveling, refloat surface to a uniform, smooth, granular texture.

C. Trowel Finish: Apply a trowel finish to monolithic slab surfaces exposed to view and slab surfaces to be covered with resilient flooring, carpet, ceramic or quarry tile, paint, or another thin film-finish coating system.

1. After floating, begin first trowel-finish operation using a power-driven trowel. Begin final troweling when surface produces a ringing sound as trowel is moved over surface. Consolidate concrete surface by final hand-troweling operation, free of trowel marks, uniform in texture and appearance, and finish surfaces to tolerances of F(F) 20 (floor flatness) and F(L) 17 (floor levelness) measured according to ASTM E 1155 (ASTM E 1155M). Grind smooth any surface defects that would telegraph through applied floor covering system.

D. Trowel and Fine Broom Finish: Where ceramic or quarry tile is to be installed with thin-set mortar, apply a trowel finish as specified, then immediately follow by slightly scarifying the surface with a fine broom.

E. Nonslip Broom Finish: Apply a nonslip broom finish to exterior concrete platforms, steps, and ramps, and elsewhere as indicated.

1. Immediately after float finishing, slightly roughen concrete surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with before application.

F. Nonslip Aggregate Finish: Apply nonslip aggregate finish to concrete stair treads, platforms, ramps, sloped walks, and where indicated.

1. After completing float finishing and before starting trowel finish, uniformly spread dampened nonslip aggregate at a rate of 25 lb per 100 sq. ft. (12 kg/10 sq. m) of surface. Tamp aggregate flush with surface using a steel trowel, but do not force below surface. After broadcasting and tamping, apply trowel finishing as specified.
2. After curing, lightly work surface with a steel wire brush or an abrasive stone, and water to expose nonslip aggregate.

3.11 MISCELLANEOUS CONCRETE ITEMS

A. Filling In: Fill in holes and openings left in concrete structures for passage of work by other trades, unless otherwise shown or directed, after work of other trades is in place. Mix, place, and cure concrete as specified to blend with in-place construction. Provide other miscellaneous concrete filling shown or required to complete Work.

B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

C. Equipment Bases and Foundations: Provide machine and equipment bases and foundations as shown on drawings. Set anchor bolts for machines and equipment to template at correct elevations, complying with diagrams or templates of manufacturer furnishing machines and equipment.

D. Steel Pan Stairs: Provide concrete fill for steel pan stair treads, landings, and associated items. Cast-in safety inserts and accessories as shown on drawings. Screed, tamp, and trowel-finish concrete surfaces.

3.12 CONCRETE CURING AND PROTECTION

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. In hot, dry, and windy weather protect concrete from rapid moisture loss before and during finishing operations with an evaporation-control material. Apply according to manufacturer's instructions after screeding and bull floating, but before power floating and troweling.

B. Start initial curing as soon as free water has disappeared from concrete surface after placing and finishing. Weather permitting, keep continuously moist for not less than 7 days.

C. Curing Methods: Cure concrete by curing compound, by moist curing, by moisture-retaining cover curing, or by combining these methods, as specified.

D. Provide moisture curing by the following methods:

1. Keep concrete surface continuously wet by covering with water.
2. Use continuous water-fog spray.
3. Cover concrete surface with specified absorptive cover, thoroughly saturate cover with water, and keep continuously wet. Place absorptive cover to provide coverage of concrete surfaces and edges, with a 4 inch (100 mm) lap over adjacent absorptive covers.

E. Provide moisture-retaining cover curing as follows:

1. Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width with sides and ends lapped at least 3 inches (75 mm) and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during curing period using cover material and waterproof tape.

F. Apply curing compound on exposed interior slabs and on exterior slabs, walks, and curbs as follows:

1. Apply curing compound to concrete slabs as soon as final finishing operations are complete (within 2 hours and after surface water sheen has disappeared). Apply uniformly in continuous operation by power spray or roller according to manufacturer's directions. Recoat areas subjected to heavy rainfall within 3 hours after initial application. Maintain continuity of coating and repair damage during curing period.
2. Use membrane curing compounds that will not affect surfaces to be covered with finish materials applied directly to concrete.

G. Curing Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces, by moist curing with forms in place for the full curing period or until forms are removed. If forms are removed, continue curing by methods specified above, as applicable.

H. Curing Unformed Surfaces: Cure unformed surfaces, including slabs, floor topping, and other flat surfaces, by applying the appropriate curing method.

1. Final cure concrete surfaces to receive finish flooring with a moisture-retaining cover, unless otherwise directed.

3.13 SHORES AND SUPPORTS

A. General: Comply with ACI 347 for shoring and reshoring in multistory construction, and as specified.

B. Extend shoring from ground to roof for structures four stories or less, unless otherwise permitted.

C. Extend shoring at least three floors under floor or roof being placed for structures over four stories. Shore floor directly under floor or roof being placed, so that loads from construction above will transfer directly to these shores. Space shoring in stories below this level in such a manner that no floor or member will be excessively loaded or will induce tensile stress in concrete members where no reinforcing steel is provided. Extend shores beyond minimums to ensure proper distribution of loads throughout structure.

D. Remove shores and reshore in a planned sequence to avoid damage to partially cured concrete. Locate and provide adequate reshoring to support work without excessive stress or deflection.

E. Keep reshores in place a minimum of 15 days after placing upper tier, or longer, if required, until concrete has attained its required 28-day strength and heavy loads due to construction operations have been removed.

3.14 REMOVING FORMS

A. General: Formwork not supporting weight of concrete, such as sides of beams, walls, columns, and similar parts of the work, may be removed after cumulatively curing at not less than 50 deg F (10 deg C) for 24 hours after placing concrete, provided concrete is sufficiently hard to not be damaged by form-removal operations, and provided curing and protection operations are maintained.

B. Formwork supporting weight of concrete, such as beam soffits, joists, slabs, and other structural elements, may not be removed in less than 14 days or until concrete has attained at least 75 percent of design minimum compressive strength at 28 days. Determine potential compressive strength of in-place concrete by testing field-cured specimens representative of concrete location or members.

C. Form-facing material may be removed 4 days after placement only if shores and other vertical supports have been arranged to permit removal of form-facing material without loosening or disturbing shores and supports.

3.15 REUSING FORMS

A. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-coating compound as specified for new formwork.

B. When forms are extended for successive concrete placement, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close joints. Align and secure joint to avoid offsets. Do not use patched forms for exposed concrete surfaces except as acceptable.

3.16 CONCRETE SURFACE REPAIRS

A. Patching Defective Areas: Repair and patch defective areas with cement mortar immediately after removing forms, when acceptable.

B. Mix dry-pack mortar, consisting of one part portland cement to 2-1/2 parts fine aggregate passing a No. 16 mesh (1.2 mm) sieve, using only enough water as required for handling and placing.

1. Cut out honeycombs, rock pockets, voids over 1/4 inch (6 mm) in any dimension, and holes left by tie rods and bolts down to solid concrete but in no case to a depth less than 1 inch (25 mm). Make edges of cuts perpendicular to the concrete surface. Thoroughly clean, dampen with water, and brush-coat the area to be patched with bonding agent. Place patching mortar before bonding agent has dried.

2. For surfaces exposed to view, blend white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding color. Provide test areas at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike-off slightly higher than surrounding surface.

C. Repairing Formed Surfaces: Remove and replace concrete having defective surfaces if defects cannot be repaired to satisfaction of Owner. Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycomb, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning. Flush out form tie holes and fill with dry-pack mortar or precast cement cone plugs secured in place with bonding agent.

1. Repair concealed formed surfaces, where possible, containing defects that affect the concrete's durability. If defects cannot be repaired, remove and replace the concrete.

D. Repairing Unformed Surfaces: Test unformed surfaces, such as monolithic slabs, for smoothness and verify surface tolerances specified for each surface and finish. Correct low and high areas as specified. Test unformed surfaces sloped to drain for trueness of slope and smoothness by using a template having the required slope.

1. Repair finished unformed surfaces containing defects that affect the concrete's durability. Surface defects include crazing and cracks in excess of 0.01 inch (0.25 mm) wide or that penetrate to the reinforcement or completely through nonreinforced sections regardless of width, spalling, popouts, honeycombs, rock pockets, and other

objectionable conditions.

2. Correct high areas in unformed surfaces by grinding after concrete has cured at least 14 days.

3. Correct low areas in unformed surfaces during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete. Proprietary underlayment compounds may be used when acceptable.

4. Repair defective areas, except random cracks and single holes not exceeding 1 inch (25 mm) in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose reinforcing steel with at least 3/4 inch (19 mm) clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials to provide concrete of same type or class as original concrete. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.

E. Repair isolated random cracks and single holes 1 inch (25 mm) or less in diameter by dry-pack method. Groove top of cracks and cut out holes to sound concrete and clean of dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding compound. Place dry-pack before bonding agent has dried. Compact dry-pack mixture in place and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

F. Perform structural repairs with prior approval of ENGINEER for method and procedure, using specified epoxy adhesive and mortar.

G. Repair methods not specified above may be used, subject to acceptance of ENGINEER.

3.17 QUALITY CONTROL TESTING DURING CONSTRUCTION

A. General: The CONTRACTOR will employ a testing agency to perform tests and to submit test reports, at no additional cost to the OWNER.

B. Sampling and testing for quality control during concrete placement may include the following, as directed by ENGINEER.

1. Sampling Fresh Concrete: ASTM C 172, except modified for slump to comply with ASTM C 94.

a. Slump: ASTM C 143; one test at point of discharge for each day's pour of each type of concrete; additional tests when concrete consistency seems to have changed.

b. Air Content: ASTM C 173, volumetric method for lightweight or normal weight concrete; ASTM C 231, pressure method for normal weight concrete; one for each day's pour of each type of air-entrained concrete.
c. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F (4 deg C) and below, when 80 deg F (27 deg C) and above, and one test for each set of compressive-strength specimens.
d. Compression Test Specimen: ASTM C 31; one set of four standard cylinders for each compressive-strength test, unless otherwise directed. Mold and store cylinders for laboratory-cured test specimens except when field-cured test specimens are required.
e. Compressive-Strength Tests: ASTM C 39; one set for each day's pour exceeding 5 cu. yd. (4 cu. m) plus additional sets for each 50 cu. yd. (38 cu. m) more than the first 25 cu. yd. (19 cu. m) of each concrete class placed in any one day; one specimen tested at 7 days, two specimens tested at 28 days, and one specimen retained in reserve for later testing if required.

2. When frequency of testing will provide fewer than five strength tests for a given class of concrete, conduct testing from at least five randomly selected batches or from each batch if fewer than five are used.
3. When total quantity of a given class of concrete is less than 50 cu. yd. (38 cu. m), ENGINEER may waive strength testing if adequate evidence of satisfactory strength is provided.
4. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, evaluate current operations and provide corrective procedures for protecting and curing the in-place concrete.
5. Strength level of concrete will be considered satisfactory if averages of sets of three consecutive strength test results equal or exceed specified compressive strength and no individual strength test result falls below specified compressive strength by more than 500 psi (3.4 MPa).

C. Test results will be reported in writing to ENGINEER within 3 days. Reports of compressive strength tests shall contain the Project identification name and number, date of concrete placement, name of concrete testing service, concrete type and class, location of concrete batch in structure, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for both 7-day tests and 28-day tests.

D. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted but shall not be used as the sole basis for acceptance or rejection.

E. Additional Tests: The testing agency will make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure. Testing agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42, or by other methods as directed.

END OF SECTION

SECTION 03310
FLOWABLE FILL CONCRETE

PART 1 GENERAL

1.1 DESCRIPTION

Flowable fill is a low strength mixture of portland cement, sand, Class F fly ash, and water. It is proportioned to flow under and around the pipe requiring no compaction and little or no finishing. Flowable fill may be used by the CONTRACTOR as backfill material for pipe. When using flowable fill with aluminum pipe, an approved means of separation must be provided, such as bituminous coating.

PART 2 PRODUCT

2.2 MATERIALS

Ingredient materials shall meet the requirements specified in the following sections of the Standard Specifications:

Portland Cement, Type I	801
Sand	804
Fly Ash, Class F	844
Water	803

The flowable fill shall be initially mixed in the following proportions per cubic yard:

Cement (Minimum)	40 lbs.
Fly Ash	300 lbs.
Sand (SSD)	3000 lbs.
Water (Maximum)	550 lbs.

To expedite settlement of the flowable fill it will be necessary for bleed water to appear on the surface within 5 to 10 minutes after placement. A delay in bleeding indicates there are too many fines in the mixture or insufficient water. If the maximum water was added, the fly ash quantity shall be reduced in increments of 50 lbs. until mixture is bleeding freely. Approximately 60 lbs. of sand shall be added to replace each 50 lbs. increment of fly ash to maintain the original yield. The flowable fill is too dry when cracks develop as it flows into place.

A set of test cylinders shall be cast for each 300 cubic yards of flowable fill. Cylinders shall not be rodded, but the sides of the mold shall be tapped lightly after each layer. The test cylinders should be allowed to bleed for about 30 minutes, refilled, and then covered with a sheet of tough durable impervious plastic. Secure the plastic in place around the

mold, within one inch of the top, with a rubber band or string prior to covering with wet burlap. Remove the burlap after 24 hours and cure at 60E F to 90E F, in the shade, until 28 days old. Then remove the plastic covering and mold and perform compressive strength test. The average of the 28 days compressive strength tests is expected to be approximately 50 PSI.

PART 3 EXECUTION

3.3 CONSTRUCTION

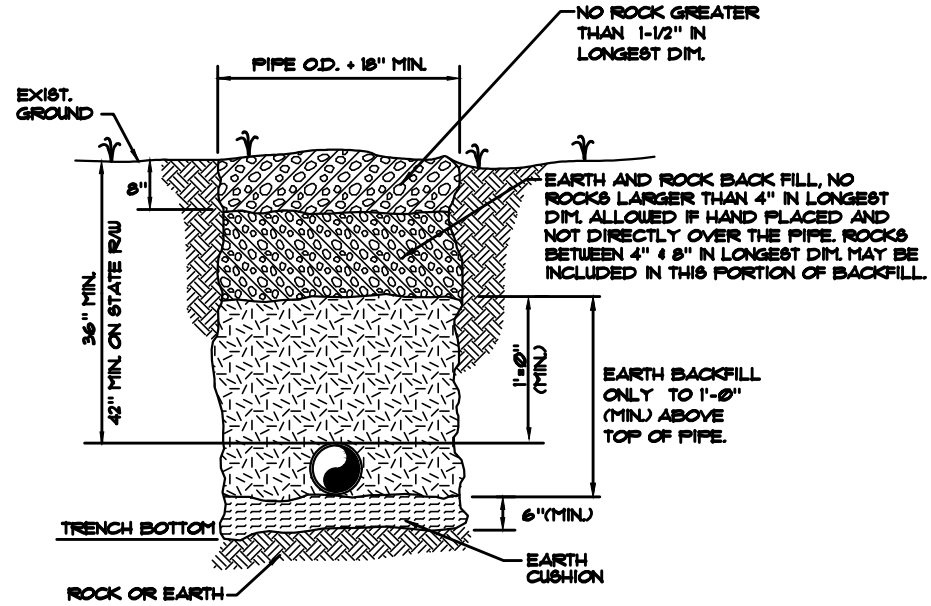
Flowable fill shall be delivered in a revolving drum truck mixer conforming to Section 601 to insure that the mixture is in suspension when placed. Agitation is required during transportation and waiting time. Subsidence may occur if the mixture is not agitated. Normally, a trench can be backfilled directly from the truck chute or a pump may be used.

The flowable fill may extend from the top of the compacted bedding to the bottom of the pavement structure. Flowable fill shall be a minimum of 2 hours of age prior to the addition and compaction of any material above it.

When flowable fill is used, the CONTRACTOR may reduce the trench width to a minimum of 6 inches clear on each side of the pipe. Standing water in the trench does not have to be pumped out before backfilling with flowable fill.

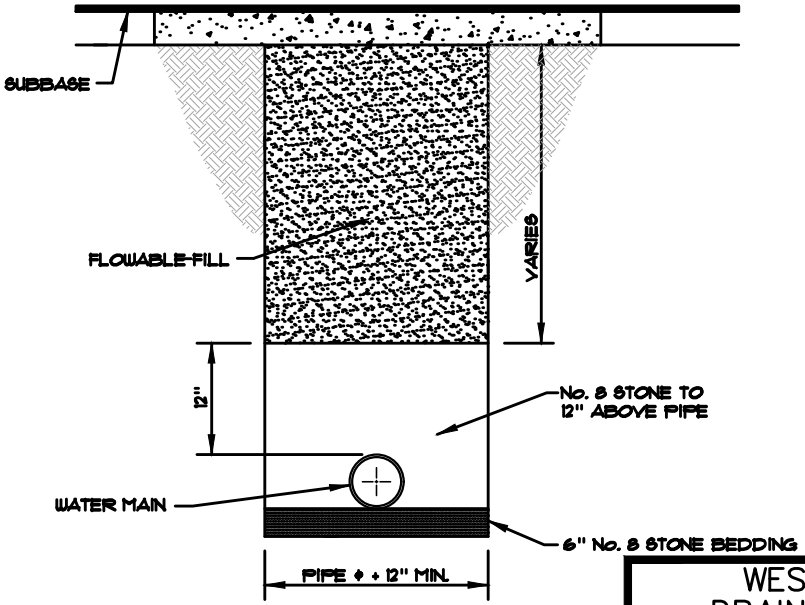
Certain types of pipe may float, therefore backfilling may have to be done in lifts or else the pipe will need to be anchored. Backfilling in lifts is generally more applicable to long lines of pipe, allowing time for a substantial amount of the water to dissipate prior to applying the next lift. Anchors can be made of small lumber, metal straps, and must be adequately spaced. For larger diameter pipe, it may be possible to maintain a surge of flowable fill on top of the pipe to help prevent floating. Generally floating is not a problem after the level of the backfill is above the springline of the pipe. The CONTRACTOR is responsible to take whatever action is necessary to insure that the pipe remains in the correct horizontal position and at the specified elevation.

END OF SECTION



BEDDING/BACKFILL

SCALE : N.T.S.



BEDDING/BACKFILL IN ROADWAY

SCALE : N.T.S.

WEST LIBERTY DRAINAGE REPAIR UTILITY RELOCATION STANDARD DETAILS—WATER

HMB PROFESSIONAL ENGINEERS, INC

SCALE : N.T.S.
DATE : JAN. 2021
DRAWN BY : SAB
CHECKED BY : BGB

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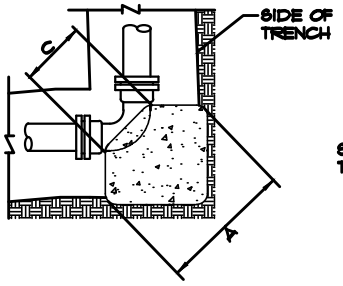
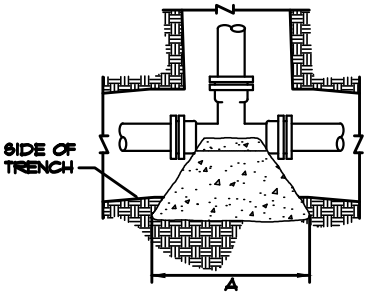


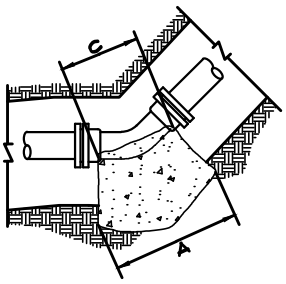
90° BEND



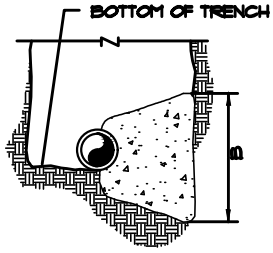
TEE

NOTES:

1. THRUST BLOCKS DESIGNED FOR 100 PSI PRESSURE AND 1000 PSF SOIL BEARING. FOR GREATER PRESSURE OR LESS SOIL BEARING, QUANTITIES WILL HAVE TO BE RECALCULATED.
2. THRUST BLOCKING TO BE POURED AGAINST UNDISTURBED EARTH.
3. IF EXACT SIZE PIPE BLOCKING IS NOT SHOWN, USE NEXT LARGER SIZE.
4. THRUST BLOCKING TO BE POURED IN PLACE CLASS B CONC.



45°-22 1/2°-11 1/4° BEND



TYPICAL SECTION

90° BEND

SIZE	24"	20"	18"	16"	12"	10"	8"	6"	4"	2"
A	88	88	72	64	50	40	33	26	16	16
B	88	88	72	64	50	40	33	24	16	16
C	48	38	32	30	16	15	12	12	9	9
D	48	48	36	32	25	20	16	12	8	8

45° BEND

SIZE	24"	20"	18"	16"	12"	10"	8"	6"	4"	2"
A	72	60	54	48	37	31	24	18	12	12
B	72	60	54	48	37	31	24	18	12	12
C	22	20	16	15	16	14	12	12	8	8
D	32	28	25	22	18	15	12	9	6	6

45° VERTICAL BEND

SIZE	24"	20"	18"	16"	12"	10"	8"	6"	4"	2"
A	72	60	60	48	36	36	36	36	24	24
B	60	48	48	48	36	36	36	36	24	24
C	108	84	84	72	60	60	60	60	48	48
D	84	72	72	60	48	48	48	48	36	36
E	84	72	72	60	48	48	48	48	36	36
F	84	72	72	60	48	48	48	48	36	36

22 1/2° BEND

SIZE	24"	20"	18"	16"	12"	10"	8"	6"	4"	2"
A	50	42	36	34	26	23	18	13	9	9
B	50	42	36	34	26	23	18	13	9	9
C	22	20	16	18	16	14	12	10	8	8
D	26	22	18	16	13	11	9	6	4	4

11 1/4° BEND

SIZE	24"	20"	18"	16"	12"	10"	8"	6"	4"	2"
A	36	30	27	24	18	16	13	11	9	9
B	36	30	27	24	18	16	13	11	9	9
C	22	20	16	18	16	14	12	10	8	8
D	22	18	14	12	9	8	6	5	4	4

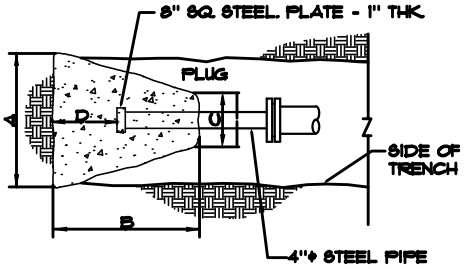
PLUG

SIZE	24"	20"	18"	16"	12"	10"	8"	6"	4"	2"
A	60	66	60	54	32	43	34	26	26	26
B	60	66	60	54	32	43	34	26	26	26
C	12	12	12	12	12	12	12	12	12	12
D	72	60	54	44	32	22	18	11	11	11

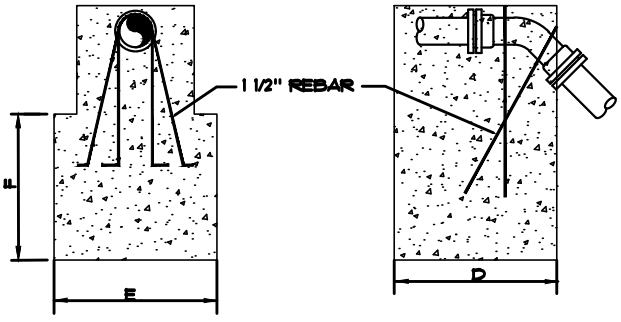
TEE

SIZE	MAIN 24"	20"	18"	16"	12"	10"	8"	6"	4"	2"
A	60	66	60	54	32	42	26	43	26	26
B	60	66	60	54	32	43	26	43	26	26
C	48	36	32	30	12	12	12	12	12	12
D	48	48	36	30	26	21	18	21	18	18

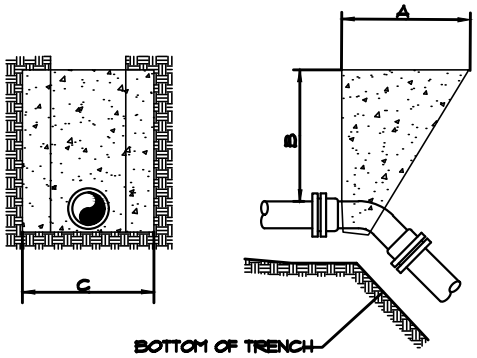
DIMENSIONS ARE IN INCHES



PLUG



45° VERTICAL BEND



45° VERTICAL BEND

THRUST BLOCKING

SCALE : N.T.S.

WEST LIBERTY
DRAINAGE REPAIR
UTILITY RELOCATION
STANDARD DETAILS—WATER

HMB PROFESSIONAL ENGINEERS, INC

SCALE : N.T.S.
DATE : JAN. 2021
DRAWN BY : SAB
CHECKED BY : BGB

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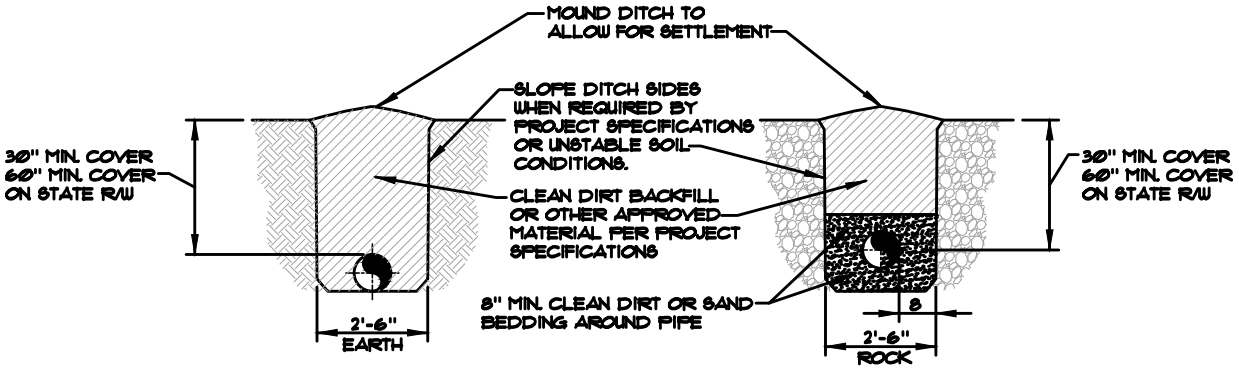
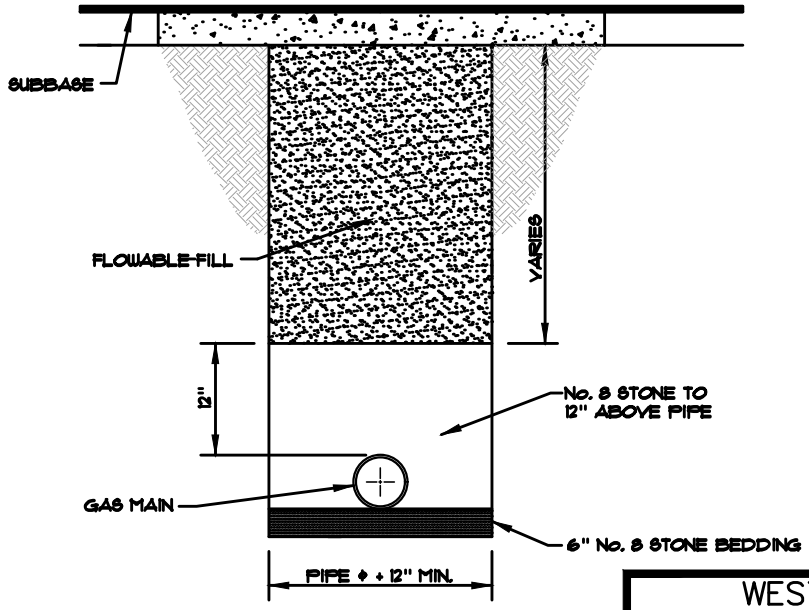


BEDDING/BACKFILL

SCALE : N.T.S.



BEDDING/BACKFILL IN ROADWAY

SCALE : N.T.S.

WEST LIBERTY DRAINAGE REPAIR UTILITY RELOCATION STANDARD DETAILS–GAS

HMB PROFESSIONAL ENGINEERS, INC

SCALE : N.T.S.
DATE : JAN. 2021
DRAWN BY : SAB
CHECKED BY : BGB

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Special Note for Fixed Completion Date and Liquidated Damages
US 460
Morgan County
Item No. 10-293.20

Contrary to Section 108.09, Liquidated Damages of $2,500 per calendar day will be assessed for each day work remains uncompleted beyond the Specified Completion Date. This project has a Fixed Completion Date of October 31, 2021.

KENTUCKY TRANSPORTATION CABINET
Department of Highways
DIVISION OF RIGHT OF WAY & UTILITIES

TC 62-226
Rev. 01/2016
Page 1 of 1

RIGHT OF WAY CERTIFICATION

☒ Original	☐ Re-Certification	RIGHT OF WAY CERTIFICATION	
ITEM #	**COUNTY**	**PROJECT # (STATE)**	**PROJECT # (FEDERAL)**
10.293.2	Morgan	1100 FD04 097 8731004R	
PROJECT DESCRIPTION			

DRAINAGE SYSTEM REPAIRS FOR MORGAN COUNTY US 460 (MAIN STREET) IN WEST LIBERTY, KENTUCKY.

☐ **No Additional Right of Way Required**

Construction will be within the limits of the existing right of way. The right of way was acquired in accordance to FHWA regulations under the Uniform Relocation Assistance and Real Property Acquisitions Policy Act of 1970, as amended. No additional right of way or relocation assistance were required for this project.

☒ **Condition # 1 (Additional Right of Way Required and Cleared)**

All necessary right of way, including control of access rights when applicable, have been acquired including legal and physical possession. Trial or appeal of cases may be pending in court but legal possession has been obtained. There may be some improvements remaining on the right-of-way, but all occupants have vacated the lands and improvements, and KYTC has physical possession and the rights to remove, salvage, or demolish all improvements and enter on all land. Just Compensation has been paid or deposited with the court. All relocations have been relocated to decent, safe, and sanitary housing or that KYTC has made available to displaced persons adequate replacement housing in accordance with the provisions of the current FHWA directive.

☐ **Condition # 2 (Additional Right of Way Required with Exception)**

The right of way has not been fully acquired, the right to occupy and to use all rights-of-way required for the proper execution of the project has been acquired. Some parcels may be pending in court and on other parcels full legal possession has not been obtained, but right of entry has been obtained, the occupants of all lands and improvements have vacated, and KYTC has physical possession and right to remove, salvage, or demolish all improvements. Just Compensation has been paid or deposited with the court for most parcels. Just Compensation for all pending parcels will be paid or deposited with the court prior to AWARD of construction contract

☐ **Condition # 3 (Additional Right of Way Required with Exception)**

The acquisition or right of occupancy and use of a few remaining parcels are not complete and/or some parcels still have occupants. All remaining occupants have had replacement housing made available to them in accordance with 49 CFR 24.204. KYTC is hereby requesting authorization to advertise this project for bids and to proceed with bid letting even though the necessary right of way will not be fully acquired, and/or some occupants will not be relocated, and/or the just compensation will not be paid or deposited with the court for some parcels until after bid letting. KYTC will fully meet all the requirements outlined in 23 CFR 635.309(c)(3) and 49 CFR 24.102(j) and will expedite completion of all acquisitions, relocations, and full payments after bid letting and prior to AWARD of the construction contract or force account construction.

Total Number of Parcels on Project	6	EXCEPTION (S) Parcel #	ANTICIPATED DATE OF POSSESSION WITH EXPLANATION
Number of Parcels That Have Been Acquired			
Signed Deed	6		
Condemnation			
Signed ROE			

Notes/ Comments (Use Additional Sheet if necessary)

LPA RW Project Manager		Right of Way Supervisor	
Printed Name		Printed Name	James R. Mason
Signature		Signature	Digitally signed by James Mason Date: 2021.07.16 11:41:53 -04'00'
Date		Date	

Right of Way Director		FHWA	
Printed Name		Printed Name	
Signature	DM Loy Digitally signed by DM Loy Date: 2021.07.16 11:52:19 -04'00'	Signature	
Date		Date	

UTILITIES AND RAIL CERTIFICATION NOTE

Morgan County

FD04 088 87310 02U

Mile point: TO
DRAINAGE SYSTEM REPAIRS FOR MORGAN COUNTY US 460 (MAIN STREET) IN WEST LIBERTY, KENTUCKY.
ITEM NUMBER: 10-293.20

PROJECT NOTES ON UTILITIES

The contractor will be responsible for contacting all utility facility owners on the subject project to coordinate his activities. The contractor will coordinate his activities to minimize and, where possible, avoid conflicts with utility facilities. Due to the nature of the work proposed, it is unlikely to conflict with the existing utilities beyond minor facility adjustments. Where conflicts with utility facilities are unavoidable, the contractor will coordinate any necessary relocation work with the facility owner and Resident Engineer. The Kentucky Transportation Cabinet maintains the right to remove or alter portions of this contract if a utility conflict occurs. The utility facilities as noted in the previous section(s) have been determined using data garnered by varied means and with varying degrees of accuracy: from the facility owners, a result of S.U.E., field inspections, and/or reviews of record drawings. The facilities defined may not be inclusive of all utilities in the project scope and are not Level A quality, unless specified as such. It is the contractor's responsibility to verify all utilities and their respective locations before excavating.

NOTE: DO NOT DISTURB THE FOLLOWING FACILITIES LOCATED WITHIN THE PROJECT DISTURB LIMITS

City of West Liberty Water and Gas Line. Please see attached plan.

The Contractor is fully responsible for protection of all utilities listed above

THE FOLLOWING FACILITY OWNERS ARE RELOCATING/ADJUSTING THEIR FACILITIES WITHIN THE PROJECT LIMITS AND WILL BE COMPLETE PRIOR TO CONSTRUCTION

Not Applicable

UTILITIES AND RAIL CERTIFICATION NOTE

Morgan County
STP 4602 093
088 0460 017-018

Mile point: TO
DRAINAGE SYSTEM REPAIRS FOR MORGAN COUNTY US 460 (MAIN STREET) IN WEST LIBERTY, KENTUCKY.
ITEM NUMBER: 10-293.20

THE FOLLOWING FACILITY OWNERS HAVE FACILITIES TO BE RELOCATED/ADJUSTED BY THE OWNER OR THEIR SUBCONTRACTOR AND IS TO BE COORDINATED WITH THE ROAD CONTRACT

City of West Liberty - Water, Completion date: 7/30/2021

THE FOLLOWING FACILITY OWNERS HAVE FACILITIES TO BE RELOCATED/ADJUSTED BY THE ROAD CONTRACTOR AS INCLUDED IN THIS CONTRACT

Not Applicable

RAIL COMPANIES HAVE FACILITIES IN CONJUNCTION WITH THIS PROJECT AS NOTED

☒**No Rail Involvement** ☐**Rail Involved** ☐**Rail Adjacent**

Form Revised 6/24/16

UTILITIES AND RAIL CERTIFICATION NOTE

Morgan County
STP 4602 093
088 0460 017-018

Mile point: TO
DRAINAGE SYSTEM REPAIRS FOR MORGAN COUNTY US 460 (MAIN STREET) IN WEST LIBERTY, KENTUCKY.
ITEM NUMBER: 10-293.20

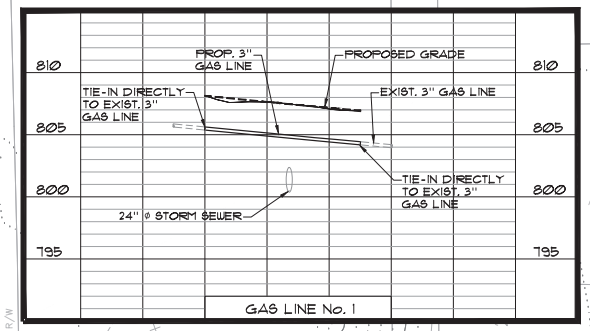
AREA FACILITY OWNER CONTACT LIST

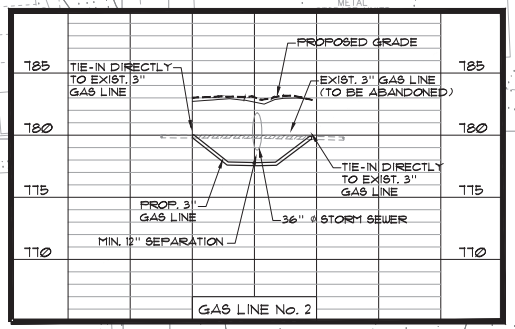
Facility Owner	Address	Contact Name	Phone	Email
City of West Liberty - Water	565 Main Street West Liberty KY 41472	Sally Barker	6067433330	WLiberty@mrtc.com

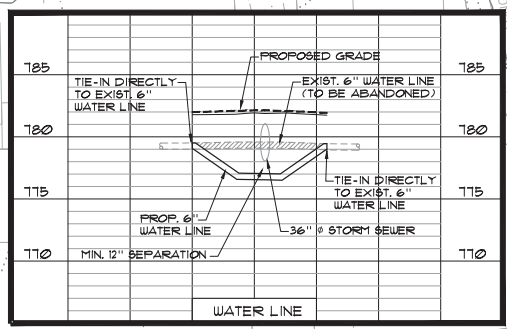
COUNTY OF	ITEM NO.	SHEET NO.
MORGAN	10-293.20	R4

BEFORE YOU DIG

The contractor is instructed to call 1-800-752-6007 to reach KY 811, the one-call system for information on the location of existing underground utilities. The call is to be placed a minimum of two (2) and no more than ten (10) business days prior to excavation. The contractor should be aware that owners of underground facilities are not required to be members of the KY 811 one-call Before-U-Dig (BUD) service. The contractor must coordinate excavation with the utility owners, including those whom do not subscribe to KY811. It may be necessary for the contractor to contact the County Court Clerk to determine what utility companies have facilities in the area.







EXIST. 6" WATER LINE

EXIST. 3" GAS LINE

WATER LINE
PROPOSED 6" PVC WATER LINE
(SEE PROFILE THIS SHEET)

CONNECT PROPOSED GAS LINE DIRECTLY TO EXISTING 3" GAS LINE.

GAS LINE No. 2
PROPOSED 3" PVC GAS LINE
(SEE PROFILE THIS SHEET)

CONNECT PROPOSED WATER LINE DIRECTLY TO EXISTING 6" GAS LINE.

EXIST. 3" GAS LINE

GAS LINE No. 1
PROPOSED 3" PVC GAS LINE
(SEE PROFILE THIS SHEET)

CONNECT PROPOSED GAS LINE DIRECTLY TO EXISTING 3" GAS LINE.

NOTE:
1. CONTRACTOR SHALL RELOCATE GAS LINE No.1 BY MAKING 2 - 3" PE TIE-INS WITH BYPASS AND 2 - CUT 4 CAPS. GAS LINE SHALL BE CONSTRUCTED WITH A MINIMUM OF 12" SEPARATION FROM PROPOSED STORM SEWER.
2. CONTRACTOR SHALL LOWER GAS LINE No. 2 BY MAKING 2 - 3" PE TIE-INS WITH BYPASS AND 2 - CUT 4 CAPS. GAS LINE SHALL BE CONSTRUCTED A MINIMUM OF 12" BELOW PROPOSED 36" STORM SEWER.
3. CONTRACTOR SHALL LOWER WATER LINE BY MAKING 2 - 6" DIRECT TIE-INS. THE CONTRACTOR SHALL TAKE ALL MEASURES NECESSARY TO MINIMIZE THE DURATION OF WATER SERVICE INTERRUPTION.
4. CONTRACTOR SHALL COORDINATE WITH UTILITY OWNER TO DETERMINE LOCATION OF WATER AND GAS UTILITIES.

WARNING

THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION WHEN WORKING NEAR GASLINES.

SCALE: 1"=20'

WEST LIBERTY DRAINAGE REPAIR
UTILITY RELOCATION

KENTUCKY TRANSPORTATION CABINET
COMMUNICATING ALL PROMISES (CAP)

Item No. **10 - 293.2** **County:** **Morgan** **Route:** **7** **Project Manager:** **DARREN BACK**

Item No. **10 - 293.2** **County:** **Morgan** **Route:** **460** **Project Manager:** **DARREN BACK**

Item No. **10 - 293.2** **County:** **Morgan** **Route:** **9,999** **Project Manager:** **DARREN BACK**

CAP #	Date of Promise	Promise made to:	Location of Promise:	CAP Description
1	5/14/21	Grant and Ashley Sorrell	P53, approx. left station 12+80	Owner has given KYTC permission to access the driveway in order to resurface it in conjunction with the culvert replacement and associated asphalt work. The driveway is approximately 20' x 30' in total and the required asphalt quantities have been included in the roadway plan set.

PART II

SPECIFICATIONS AND STANDARD DRAWINGS

SPECIFICATIONS REFERENCE

Any reference in the plans or proposal to previous editions of the *Standard Specifications for Road and Bridge Construction* and *Standard Drawings* are superseded by *Standard Specifications for Road and Bridge Construction, Edition of 2019* and *Standard Drawings, Edition of 2020.*

SUPPLEMENTAL SPECIFICATIONS

The contractor shall use the Supplemental Specifications that are effective at the time of letting. The Supplemental Specifications can be found at the following link:

http://transportation.ky.gov/Construction/Pages/Kentucky-Standard-Specifications.aspx

PART III

EMPLOYMENT, WAGE AND RECORD REQUIREMENTS

TRANSPORTATION CABINET
DEPARTMENT OF HIGHWAYS

LABOR AND WAGE REQUIREMENTS
APPLICABLE TO OTHER THAN FEDERAL-AID SYSTEM PROJECTS

I. APPLICATION

1. These contract provisions shall apply to all work performed on the contract by the contractor with his own organization and with the assistance of workmen under his immediate superintendence and to all work performed on the contract by piecework, station work or by subcontract. The contractor's organization shall be construed to include only workmen employed and paid directly by the contractor and equipment owned or rented by him, with or without operators.

2. The contractor shall insert in each of his subcontracts all of the stipulations contained in these Required Provisions and such other stipulations as may be required.

3. A breach of any of the stipulations contained in these Required Provisions may be grounds for termination of the contract.

II. NONDISCRIMINATION OF EMPLOYEES

AN ACT OF THE KENTUCKY
GENERAL ASSEMBLY TO PREVENT
DISCRIMINATION IN EMPLOYMENT
KRS CHAPTER 344
EFFECTIVE JUNE 16, 1972

The contract on this project, in accordance with KRS Chapter 344, provides that during the performance of this contract, the contractor agrees as follows:

1. The contractor shall not fail or refuse to hire, or shall not discharge any individual, or otherwise discriminate against an individual with respect to his compensation, terms, conditions, or privileges of employment, because of such individual's race, color, religion, national origin, sex, disability or age (forty and above); or limit, segregate, or classify his employees in any way which would deprive or tend to deprive an individual of employment opportunities or otherwise adversely affect his status as an employee, because of such individual's race, color, religion, national origin, sex, disability or age forty (40) and over. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

2. The contractor shall not print or publish or cause to be printed or published a notice or advertisement relating to employment by such an employer or membership in or any classification or referral for employment by the employment agency, indicating any preference, limitation, specification, or discrimination, based on race, color, religion, national origin, sex, or age forty (40) and over, or because the person is a qualified individual with a disability, except that such a notice or advertisement may indicate a preference, limitation, or specification based on religion, national origin, sex, or age forty (40) and over, or because the person is a qualified individual with a disability, when religion, national origin, sex, or age forty (40) and over, or because the person is a qualified individual with a disability, is a bona fide occupational qualification for employment.

3. If the contractor is in control of apprenticeship or other training or retraining, including on-the-job training programs, he shall not discriminate against an individual because of his race, color, religion, national origin, sex, disability or age forty (40) and over, in admission to, or employment in any program established to provide apprenticeship or other training.

4. The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representative of the contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment. The contractor will take such action with respect to any subcontract or purchase order as the administrating agency may direct as a means of enforcing such provisions, including sanctions for non-compliance.

Revised: January 25, 2017

EXECUTIVE BRANCH CODE OF ETHICS

In the 1992 regular legislative session, the General Assembly passed and Governor Brereton Jones signed Senate Bill 63 (codified as KRS 11A), the Executive Branch Code of Ethics, which states, in part:

KRS 11A.040 (7) provides:

No present or former public servant shall, within six (6) months following termination of his office or employment, accept employment, compensation, or other economic benefit from any person or business that contracts or does business with, or is regulated by, the state in matters in which he was directly involved during the last thirty-six (36) months of his tenure. This provision shall not prohibit an individual from returning to the same business, firm, occupation, or profession in which he was involved prior to taking office or beginning his term of employment, or for which he received, prior to his state employment, a professional degree or license, provided that, for a period of six (6) months, he personally refrains from working on any matter in which he was directly involved during the last thirty-six (36) months of his tenure in state government. This subsection shall not prohibit the performance of ministerial functions, including but not limited to filing tax returns, filing applications for permits or licenses, or filing incorporation papers, nor shall it prohibit the former officer or public servant from receiving public funds disbursed through entitlement programs.

KRS 11A.040 (9) states:

A former public servant shall not represent a person or business before a state agency in a matter in which the former public servant was directly involved during the last thirty-six (36) months of his tenure, for a period of one (1) year after the latter of:

a) The date of leaving office or termination of employment; or
b) The date the term of office expires to which the public servant was elected.

This law is intended to promote public confidence in the integrity of state government and to declare as public policy the idea that state employees should view their work as a public trust and not as a way to obtain private benefits.

If you have worked for the executive branch of state government within the past six months, you may be subject to the law's prohibitions. The law's applicability may be different if you hold elected office or are contemplating representation of another before a state agency.

Also, if you are affiliated with a firm which does business with the state and which employs former state executive-branch employees, you should be aware that the law may apply to them.

In case of doubt, the law permits you to request an advisory opinion from the Executive Branch Ethics Commission, 3 Fountain Place, Frankfort, Kentucky 40601; telephone (502) 564-7954.

Revised: January 27, 2017

Kentucky Equal Employment Opportunity Act of 1978

The requirements of the Kentucky Equal Employment Opportunity Act of 1978 (KRS 45.560-45.640) shall apply to this Contract. The apparent low Bidder will be required to submit EEO forms to the Division of Construction Procurement, which will then forward to the Finance and Administration Cabinet for review and approval. No award will become effective until all forms are submitted and EEO/CC has certified compliance. The required EEO forms are as follows:

- EEO-1: Employer Information Report
- Affidavit of Intent to Comply
- Employee Data Sheet
- Subcontractor Report

These forms are available on the Finance and Administration's web page under ***Vendor Information, Standard Attachments and General Terms*** at the following address: **https://www.eProcurement.ky.gov**.

Bidders currently certified as being in compliance by the Finance and Administration Cabinet may submit a copy of their approval letter in lieu of the referenced EEO forms.

For questions or assistance please contact the Finance and Administration Cabinet by email at **finance.contractcompliance@ky.gov** or by phone at 502-564-2874.

EMPLOYEE RIGHTS
UNDER THE FAIR LABOR STANDARDS ACT

THE UNITED STATES DEPARTMENT OF LABOR WAGE AND HOUR DIVISION

FEDERAL MINIMUM WAGE
$7.25 PER HOUR
BEGINNING JULY 24, 2009

OVERTIME PAY

At least 1½ times your regular rate of pay for all hours worked over 40 in a workweek.

CHILD LABOR

An employee must be at least **16** years old to work in most non-farm jobs and at least **18** to work in non-farm jobs declared hazardous by the Secretary of Labor.

Youths **14** and **15** years old may work outside school hours in various non-manufacturing, non-mining, non-hazardous jobs under the following conditions:

No more than

- **3** hours on a school day or **18** hours in a school week;
- **8** hours on a non-school day or **40** hours in a non-school week.

Also, work may not begin before **7 a.m.** or end after **7 p.m.**, except from June 1 through Labor Day, when evening hours are extended to **9 p.m.** Different rules apply in agricultural employment.

TIP CREDIT

Employers of "tipped employees" must pay a cash wage of at least $2.13 per hour if they claim a tip credit against their minimum wage obligation. If an employee's tips combined with the employer's cash wage of at least $2.13 per hour do not equal the minimum hourly wage, the employer must make up the difference. Certain other conditions must also be met.

ENFORCEMENT

The Department of Labor may recover back wages either administratively or through court action, for the employees that have been underpaid in violation of the law. Violations may result in civil or criminal action.

Employers may be assessed civil money penalties of up to $1,100 for each willful or repeated violation of the minimum wage or overtime pay provisions of the law and up to $11,000 for each employee who is the subject of a violation of the Act's child labor provisions. In addition, a civil money penalty of up to $50,000 may be assessed for each child labor violation that causes the death or serious injury of any minor employee, and such assessments may be doubled, up to $100,000, when the violations are determined to be willful or repeated. The law also prohibits discriminating against or discharging workers who file a complaint or participate in any proceeding under the Act.

ADDITIONAL INFORMATION

- Certain occupations and establishments are exempt from the minimum wage and/or overtime pay provisions.
- Special provisions apply to workers in American Samoa and the Commonwealth of the Northern Mariana Islands.
- Some state laws provide greater employee protections; employers must comply with both.
- The law requires employers to display this poster where employees can readily see it.
- Employees under 20 years of age may be paid $4.25 per hour during their first 90 consecutive calendar days of employment with an employer.
- Certain full-time students, student learners, apprentices, and workers with disabilities may be paid less than the minimum wage under special certificates issued by the Department of Labor.

For additional information:

1-866-4-USWAGE

(1-866-487-9243) TTY: 1-877-889-5627

WHD U.S. Wage and Hour Division

WWW.WAGEHOUR.DOL.GOV

U.S. Department of Labor | Wage and Hour Division

WHD Publication 1088 (Revised July 2009)

PART IV

INSURANCE

Refer to
Kentucky Standard Specifications for Road and Bridge Construction,
current edition

PART V

BID ITEMS

211041

PROPOSAL BID ITEMS

Report Date 7/16/21

Section: 0001 - PAVING

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0010	00001		DGA BASE	38.00	TON		$	
0020	00212		CL2 ASPH BASE 1.00D PG64-22	36.00	TON		$	
0030	00301		CL2 ASPH SURF 0.38D PG64-22	18.00	TON		$	
0040	00356		ASPHALT MATERIAL FOR TACK	.10	TON		$	
0050	02677		ASPHALT PAVE MILLING & TEXTURING	4.00	TON		$	

Section: 0002 - ROADWAY

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0060	00020		TRAFFIC BOUND BASE	24.00	TON		$	
0070	02545		CLEARING AND GRUBBING 0.193 ACRES	1.00	LS		$	
0080	02562		TEMPORARY SIGNS	150.00	SQFT		$	
0090	02650		MAINTAIN & CONTROL TRAFFIC	1.00	LS		$	
0100	02701		TEMP SILT FENCE	275.00	LF		$	
0110	02726		STAKING	1.00	LS		$	
0120	05952		TEMP MULCH	3,000.00	SQYD		$	
0130	05953		TEMP SEEDING AND PROTECTION	2,500.00	SQYD		$	
0140	05963		INITIAL FERTILIZER	.30	TON		$	
0150	05964		MAINTENANCE FERTILIZER	.20	TON		$	
0160	05985		SEEDING AND PROTECTION	2,000.00	SQYD		$	
0170	05992		AGRICULTURAL LIMESTONE	3.10	TON		$	
0180	06514		PAVE STRIPING-PERM PAINT-4 IN	70.00	LF		$	

Section: 0003 - DRAINAGE

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0190	00524		STORM SEWER PIPE-24 IN	123.00	LF		$	
0200	00528		STORM SEWER PIPE-36 IN	354.00	LF		$	
0210	01212		PIPE CULVERT HEADWALL-36 IN	1.00	EACH		$	
0220	01434		SLOPED BOX OUTLET TYPE 1-24 IN	2.00	EACH		$	
0230	01499		DROP BOX INLET TYPE 4	1.00	EACH		$	
0240	01500		DROP BOX INLET TYPE 4 MOD	2.00	EACH		$	
0250	01756		MANHOLE TYPE A	1.00	EACH		$	
0260	01761		MANHOLE TYPE B	1.00	EACH		$	
0270	02483		CHANNEL LINING CLASS II	71.00	TON		$	
0280	02607		FABRIC-GEOTEXTILE CLASS 2 FOR PIPE	2,538.00	SQYD	$2.00	$	$5,076.00
0290	23948EC		RESET MANHOLE FRAME AND LID TY 2	2.00	EACH		$	

Section: 0004 - UTILITY

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0300	14057		W PIPE PVC 03 INCH	50.00	LF		$	

PROPOSAL BID ITEMS

211041

Report Date 7/16/21

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0310	14094		W TIE-IN 06 INCH	2.00	EACH		$	
0320	16016		G PIPE POLYETHYLENE/PLASTIC 03 INCH	90.00	LF		$	
0330	16042		G TIE-IN POLYETHYLENE/PLASTIC 03 INCH	4.00	EACH		$	

Section: 0005 - DEMOBILIZATION &/OR MOBILIZATION

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0340	02569		DEMOBILIZATION	1.00	LS		$	