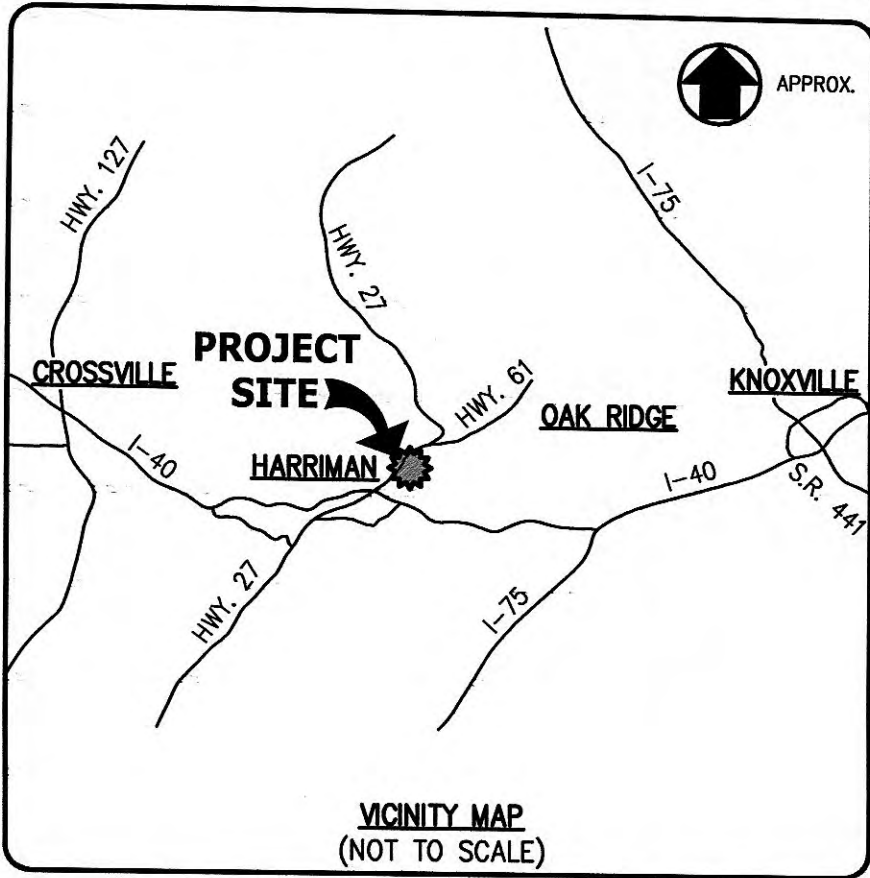


HARRIMAN UTILITY BOARD

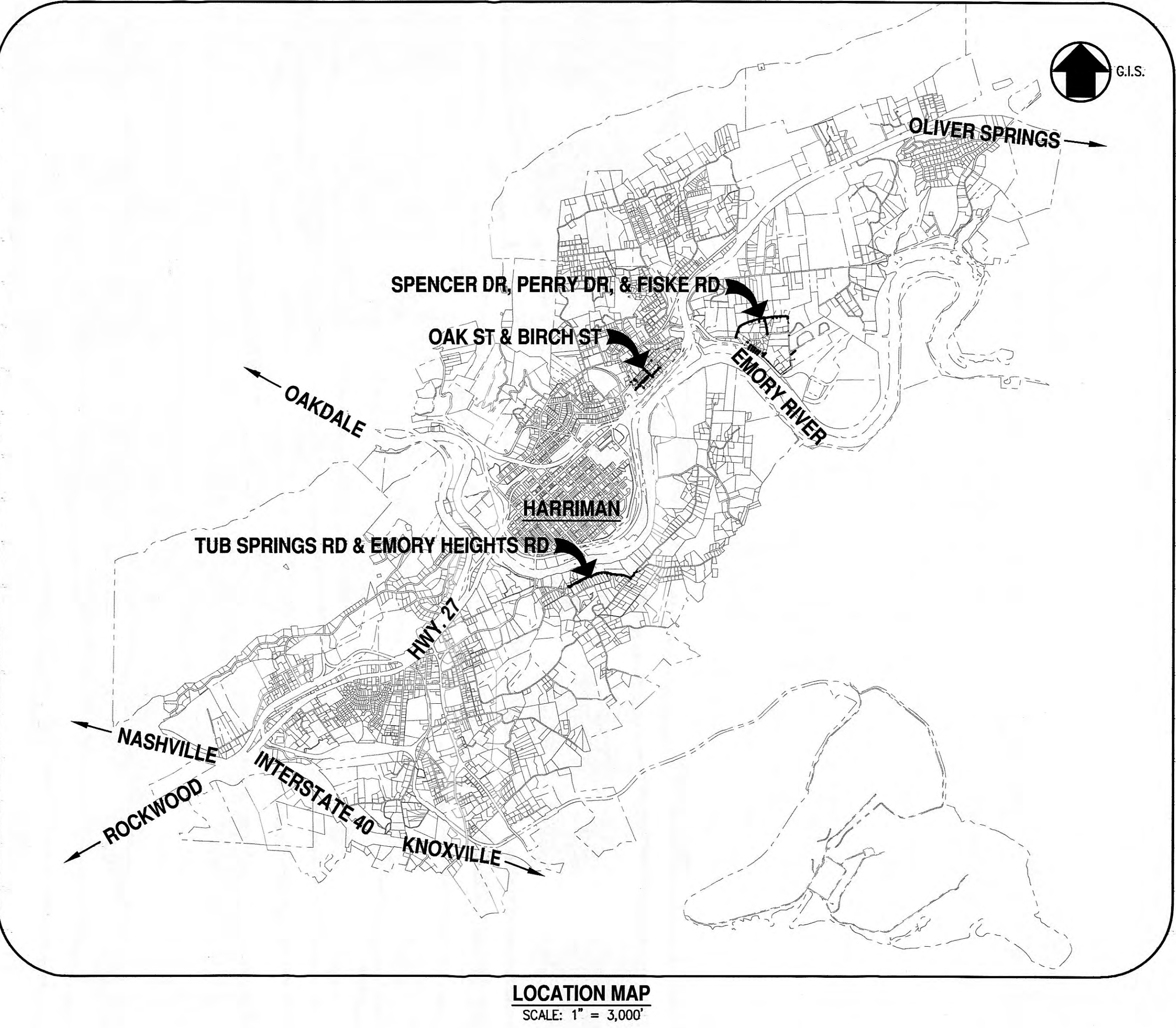
SRF DISTRIBUTION SYSTEM REPAIRS CONTRACT II

HARRIMAN, TENNESSEE



DRAWING INDEX

W0.01	COVER SHEET
W0.02	NOTES & LEGEND
W1.01	OAK ST. WATER LINE "A" PLAN - STA. 0+00 TO STA. 7+73± (E.O.L.) BIRCH ST. WATER LINE "B" PLAN - STA. 0+00 TO STA. 4+89± (E.O.L.) OAK ST. WATER LINE "C" PLAN - STA. 0+00 TO STA. 0+44± (E.O.L.) BIRCH ST. WATER LINE "D" PLAN - STA. 0+00 TO STA. 2+37± (E.O.L.)
W1.02	TUB SPRINGS RD. WATER LINE "E" PLAN - STA. 0+00 TO STA. 12+56
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D1.01	TYPICAL DETAILS (PART 1 OF 2)
D1.02	TYPICAL DETAILS (PART 2 OF 2)



REVISIONS		DATE
CANNON & CANNON INC CONSULTING ENGINEERS - FIELD SURVEYORS TEL 865.670.8555 8650 Kingston Pike WWW.CANNON-CANNON.COM Knoxville, TN 37919		
CLIENT: HARRIMAN UTILITY BOARD 300 NORTH ROANE STREET HARRIMAN, TN 37748 (865) 882-3242		
PROJECT: SRF DISTRIBUTION SYSTEM REPAIRS CONTRACT II HARRIMAN, TN		
COVER SHEET		
	CCI PROJECT NO. 00923-0002	
	DRAWING DATE MARCH 27, 2015	
	PM TFT	QC SAF
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W0 01		

GENERAL NOTES:

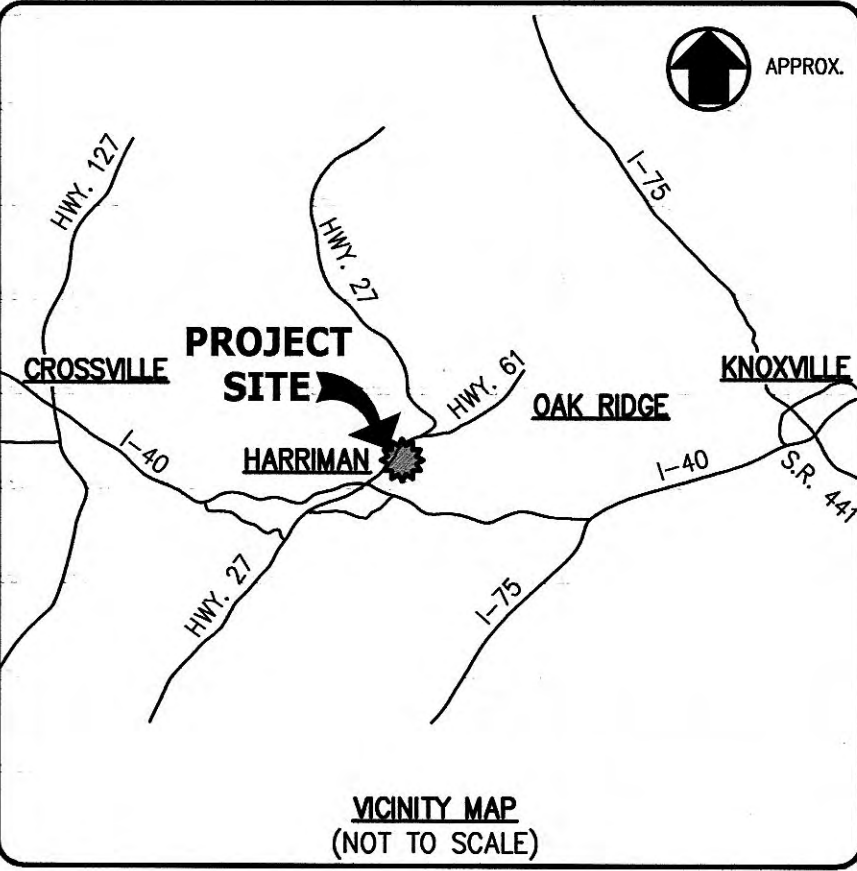
1. THE LOCATIONS OF THE EXISTING UTILITIES SHOWN ON THESE DRAWINGS ARE APPROXIMATE AND INCOMPLETE. THE EXACT LOCATIONS SHALL BE DETERMINED IN THE FIELD BY CONTACTING THE UTILITY COMPANIES INVOLVED AND POT-HOLING AS NECESSARY.
2. EXISTING WATER LINE DIAMETERS AND MATERIALS ARE FROM HISTORICAL RECORDS. CONTRACTOR SHALL VERIFY BY POT-HOLING PRIOR TO ORDERING MATERIAL FOR TIE-INS, CUT AND CAPS, AND BANDING.
3. PROVIDE ALL NECESSARY PROTECTIVE MEASURES TO SAFEGUARD THE EXISTING UTILITIES FROM DAMAGE DURING THE CONSTRUCTION OF THIS PROJECT. FURNISH ANY SPECIAL EQUIPMENT REQUIRED TO WORK OVER AND AROUND THE UTILITIES WITHOUT CAUSING THEM DAMAGE. IF DAMAGE DOES OCCUR, IMMEDIATELY NOTIFY UTILITY OWNER AND WORK TO RESTORE SERVICE. COST OF REPAIR OR REPLACEMENT OF DAMAGED LINES SHALL BE CONTRACTOR'S RESPONSIBILITY.
4. PRIOR TO COMMENCING WORK, THE CONTRACTOR SHALL CONTACT THE UTILITY OWNERS TO NOTIFY THEM OF WORK IN THE AREA AND REQUEST THEM TO PROPERLY LOCATE THEIR RESPECTIVE UTILITY. NOTIFICATION SHALL BE GIVEN AT LEAST THREE BUSINESS DAYS PRIOR TO COMMENCEMENT OF OPERATIONS AROUND THE UTILITY.
5. UTILITIES CAN BE LOCATED BY CALLING THE TENNESSEE ONE CALL SYSTEM, AT 811.
6. TRENCH DESIGN AND SAFETY FOR PIPELINE CONSTRUCTION IS SOLELY THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL CONFORM WITH ALL APPLICABLE LOCAL, STATE, AND OSHA REGULATIONS.
7. STONE BEDDING AND BACKFILL SHALL BE INSTALLED IN STRICT COMPLIANCE WITH THE PROJECT SPECIFICATIONS.
8. ALL WATER LINES AND APPURTENANCES SHALL BE INSTALLED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
9. WATER MAIN PIPE SHALL BE PRESSURE CLASS 350 D.I.P. OR SDR 17 PVC PER PROJECT SPECIFICATIONS.
10. CONTRACTOR SHALL INSTALL WATER LINES AT A POSITIVE GRADE BETWEEN DESIGNATED HIGH AND LOW POINTS TO PREVENT TRAPPING OF AIR.
11. PROPOSED 1" AIR RELEASE VALVES SHALL BE INSTALLED AT HIGH POINTS IN THE PROPOSED WATER LINE, AND SHALL BE FIELD LOCATED BY THE RESIDENT PROJECT REPRESENTATIVE.
12. CONTRACTOR TO COORDINATE FIELD LOCATIONS OF PROPOSED FIRE HYDRANTS, WATER SERVICES AND METERS WITH RESIDENT PROJECT REPRESENTATIVE.
13. VALVES, HYDRANTS AND METER ASSEMBLIES SHALL BE ORIENTED SO AS TO ASSURE WATER LINE APPURTENANCES ARE NOT LOCATED WITHIN SIDEWALK AND/OR CURB/CURB & GUTTER AREAS.
14. CONTRACTOR SHALL USE RESTRAINED JOINT FITTINGS FOR ALL WATER PIPE FITTINGS, EXCEPT FOR FITTINGS AT TIE-IN CONNECTIONS WHICH SHALL BE RESTRAINED WITH CONCRETE THRUST BLOCKS.
15. CONTRACTOR SHALL INSTALL DETECTION WIRE AND WARNING TAPE PER PROJECT SPECIFICATIONS.
16. WATER MAIN MIN. COVER SHALL BE 30"AND MAX. COVER SHALL BE 54", UNLESS OTHERWISE APPROVED BY HUB.
17. PAVEMENT SHALL BE SAW CUT IN RECTANGULAR SECTIONS WITH NEAT SQUARED EDGES.
18. BACKFILL IN PAVED AREAS SHALL BE COMPACTED IN MAXIMUM 6" LIFTS USING JUMPING JACK.
19. ALL INCIDENTAL WORK, INCLUDING LABOR AND MATERIALS, NECESSARY TO COMPLETE THE PROJECT AS SHOWN IN THE CONTRACT DOCUMENTS, FOR WHICH A SEPERATE PAY ITEM IS NOT SHOWN SHALL BE PERFORMED BY THE CONTRACTOR AND NO ADDITIONAL PAYMENT SHALL BE MADE. THE COST OF THIS WORK SHALL BE MERGED INTO THE UNIT PRICES BID FOR THE BID ITEMS SHOWN.
20. ALL 1/2" WATER METERS AND 1/2" WATER SERVICE PIPE SHALL BE REPLACED WITH 3/4" WATER METERS AND 3/4" WATER SERVICE PIPE.
21. WATER TAPS MUST BE PERFORMED WITH "HOT" LINES. TEMPORARY SHUT-DOWNS ARE NOT ALLOWED.
22. METER CONNECTIONS TO EXISTING METERS SHALL INCLUDE NEW CURB STOP AND SPUD TO METER AND NEW RUBBER GASKET ON METER.

EXISTING LEGEND

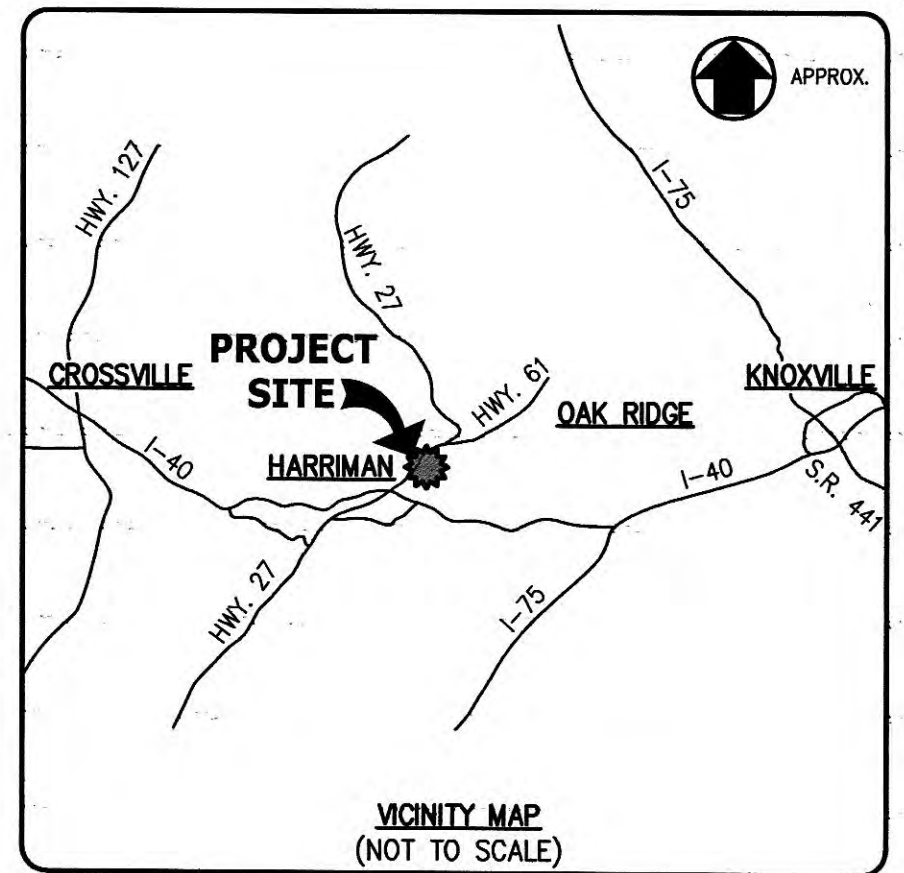
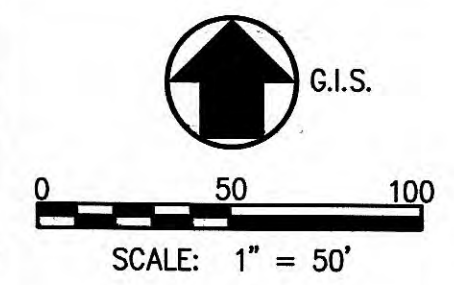
---	EXISTING PROPERTY LINE
==ST==	STORM SEWER LINE
---SA---	SANITARY SEWER LINE
---W---	EXISTING WATER LINE
-X-X-	FENCE LINE
-GAS-GAS-	EXISTING UNDERGROUND GAS LINE
-F-F-	EXISTING FIBER OPTIC LINE
WV	EXISTING WATER VALVE
FD	EXISTING FIRE HYDRANT
GM	GAS METER
WM	EXISTING WATER METER
SGN	SIGN
SMH	EXISTING SANITARY MANHOLE

PROPOSED LEGEND

---	PROPOSED WATER LINE
///X///	EXISTING WATER LINE TO BE RETIRED
WV	PROPOSED WATER VALVE
BO	PROPOSED BLOW OFF
FD	PROPOSED FIRE HYDRANT
WM	WATER METER TO BE REPLACED

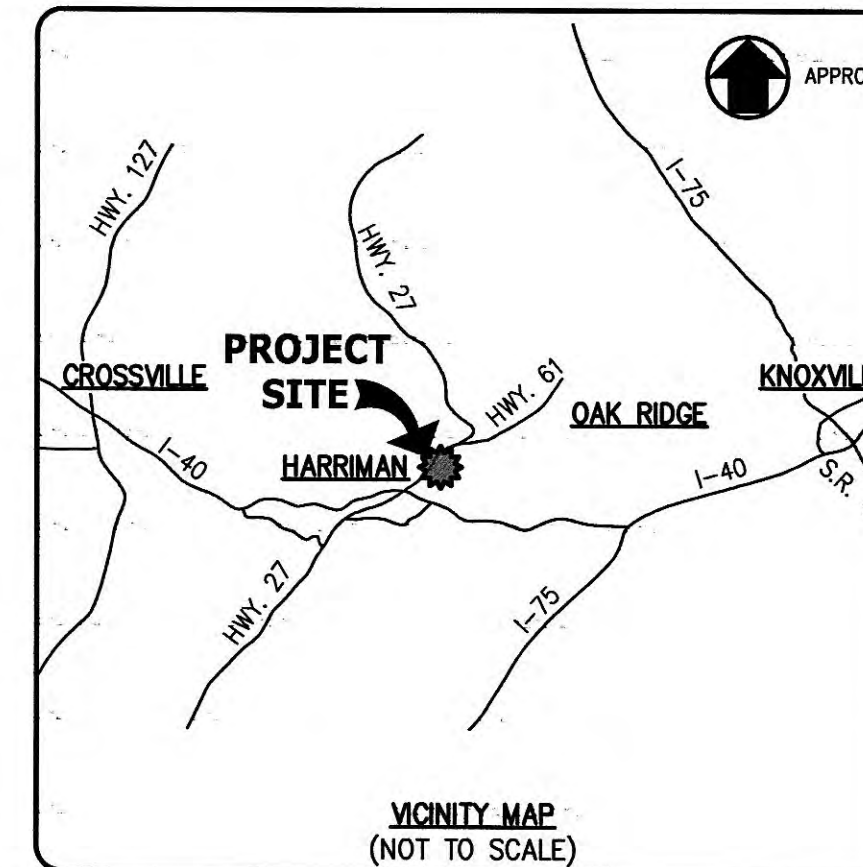
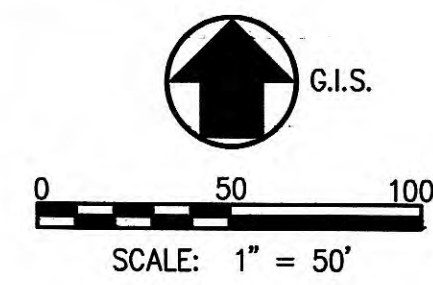


REVISIONS		DATE
CANNON & CANNON INC. CONSULTING ENGINEERS · FIELD SURVEYORS TEL 865.670.8555 8560 Kingston Pike WWW.CANNON-CANNON.COM Knoxville, TN 37919		
CLIENT: HARRIMAN UTILITY BOARD 300 NORTH ROANE STREET HARRIMAN, TN 37748 (865) 882-3242		
PROJECT: SRF DISTRIBUTION SYSTEM REPAIRS CONTRACT II HARRIMAN, TN		
NOTES & LEGEND		
CCI PROJECT NO. 00923-0002		DRAWING DATE MARCH 27, 2015
PM TFF	QC SAF	
DRAWN WBW	CR	
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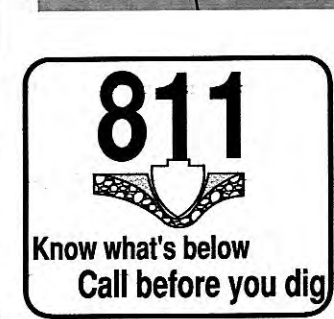
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 3. WATER LINES SHALL BE INSTALLED WITH A MINIMUM OF 10' HORIZONTAL SEPARATION FROM EXISTING SANITARY SEWER. WHERE 10' SEPARATION CANNOT BE ACHIEVED, WATER LINE SHALL BE MINIMUM 18" ABOVE SANITARY SEWER.
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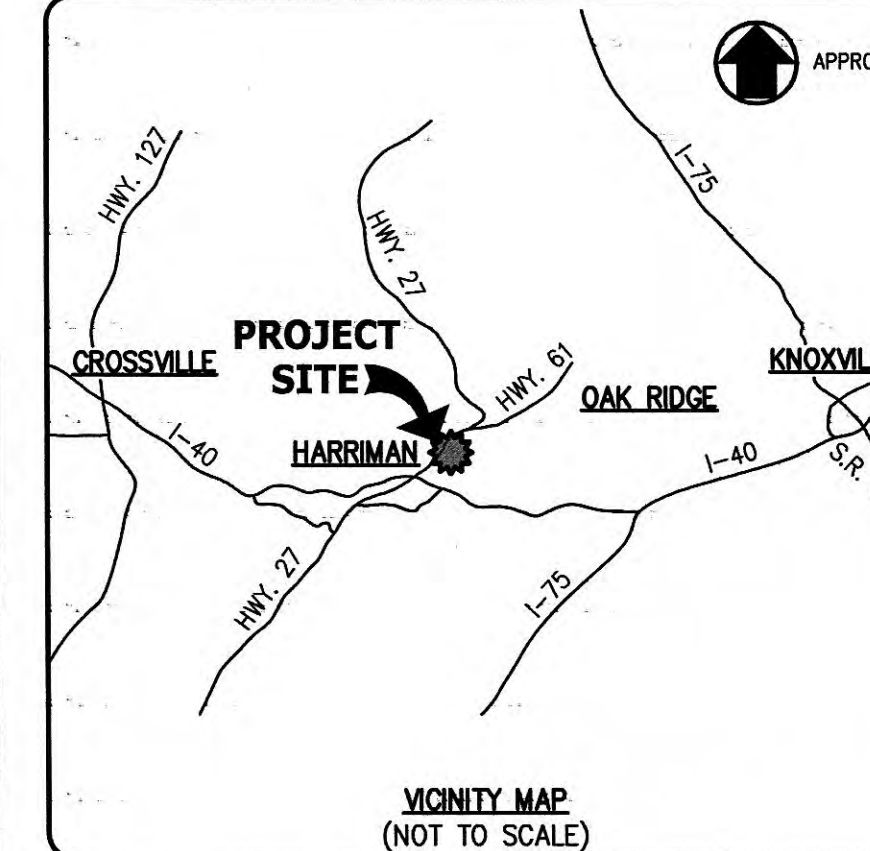
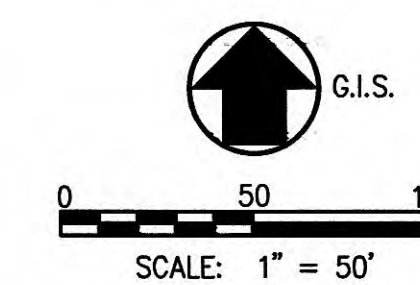
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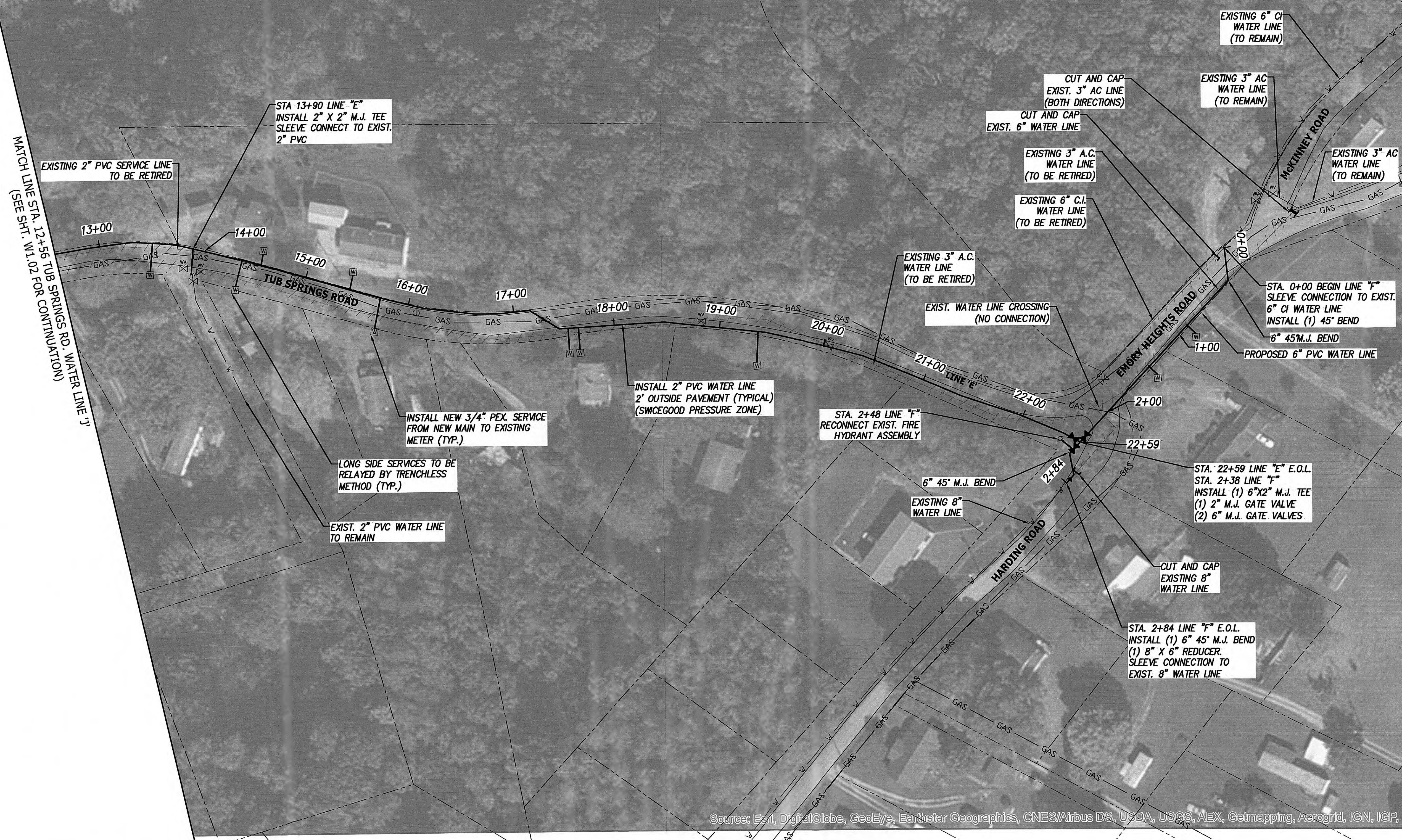
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PROJECT: SRF DISTRIBUTION SYSTEM REPAIRS CONTRACT II HARRIMAN, TN		
TUB SPRINGS RD. WATER LINE "E" PLAN STA. 0+00 TO STA. 12+56		
CCI PROJECT NO. 00923-0002		
DRAWING DATE	MARCH 27, 2015	
PM	TFT	QC SAF
DRAWN	WBW	CR
		W1.02





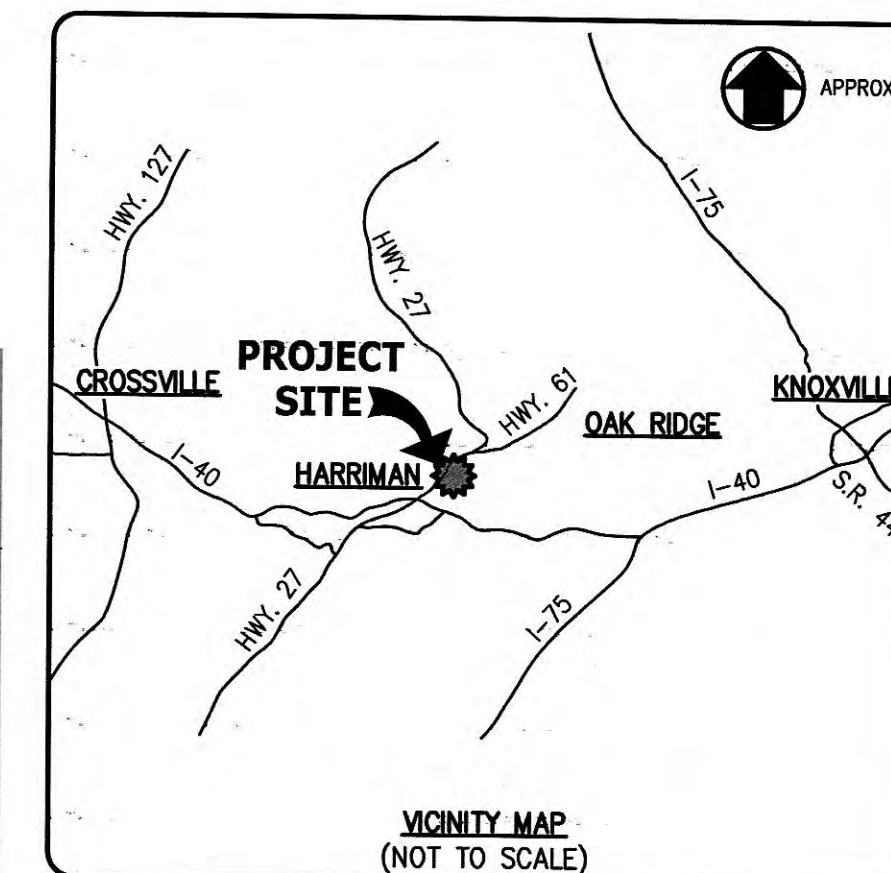
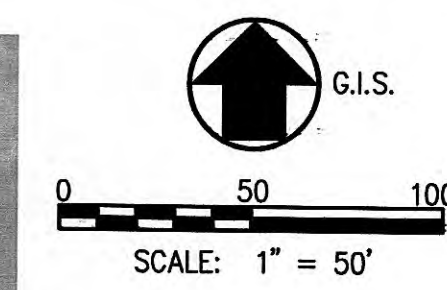
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Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, s



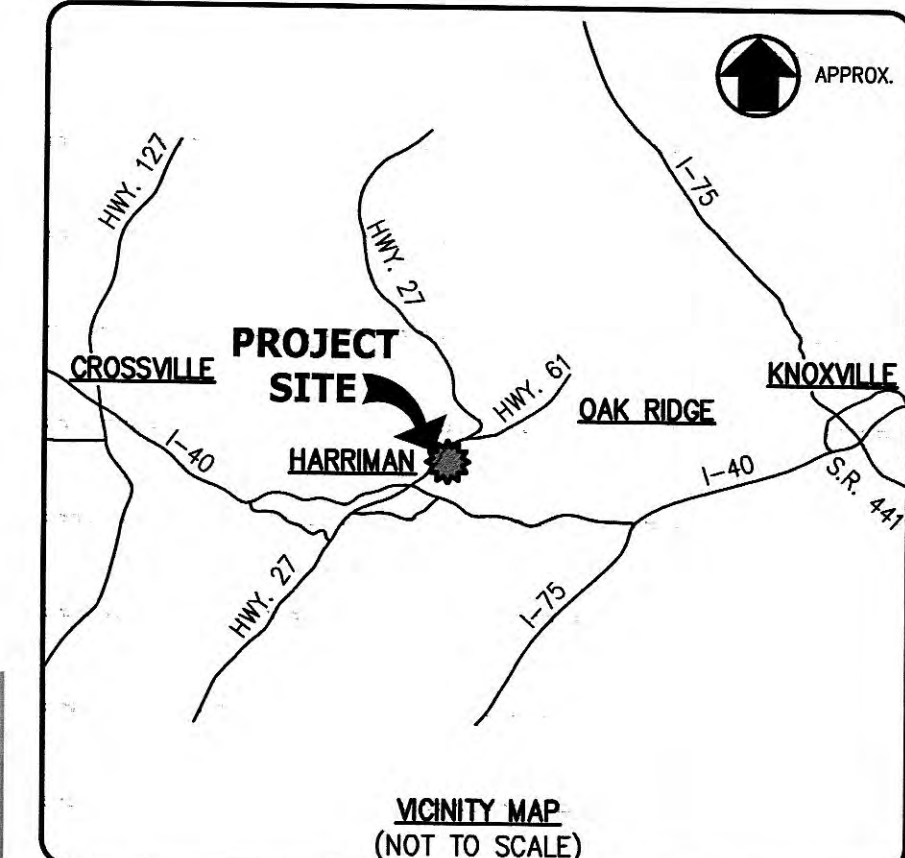
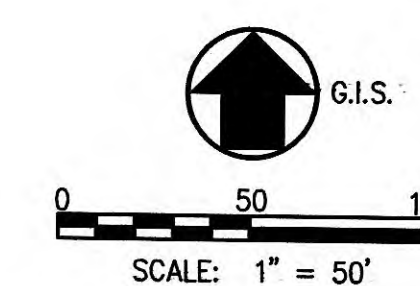
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CLIENT: HARRIMAN UTILITY BOARD 300 NORTH ROANE STREET HARRIMAN, TN 37748 (865) 862-3242		
PROJECT: SRF DISTRIBUTION SYSTEM REPAIRS CONTRACT II HARRIMAN, TN		
TUB SPRINGS RD. WATER LINE "E" PLAN STA. 12+56+ TO STA. 22+59+ (E.O.L.) EMORY HEIGHTS RD. WATER LINE "F" PLAN STA. 0+00 TO 2+84+ (E.O.L.)		
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W1.03		



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 7. REMOVE METER AND BOX BEHIND HOUSE. RUN 3/4" PEX WATER SERVICE TO FRONT, SET NEW METER & BOX. TAP 6" P.V.C. IN FISKE ROAD. INSTALL LONG SIDE SERVICE BENEATH FISKE ROAD BY TRENCHLESS METHOD.

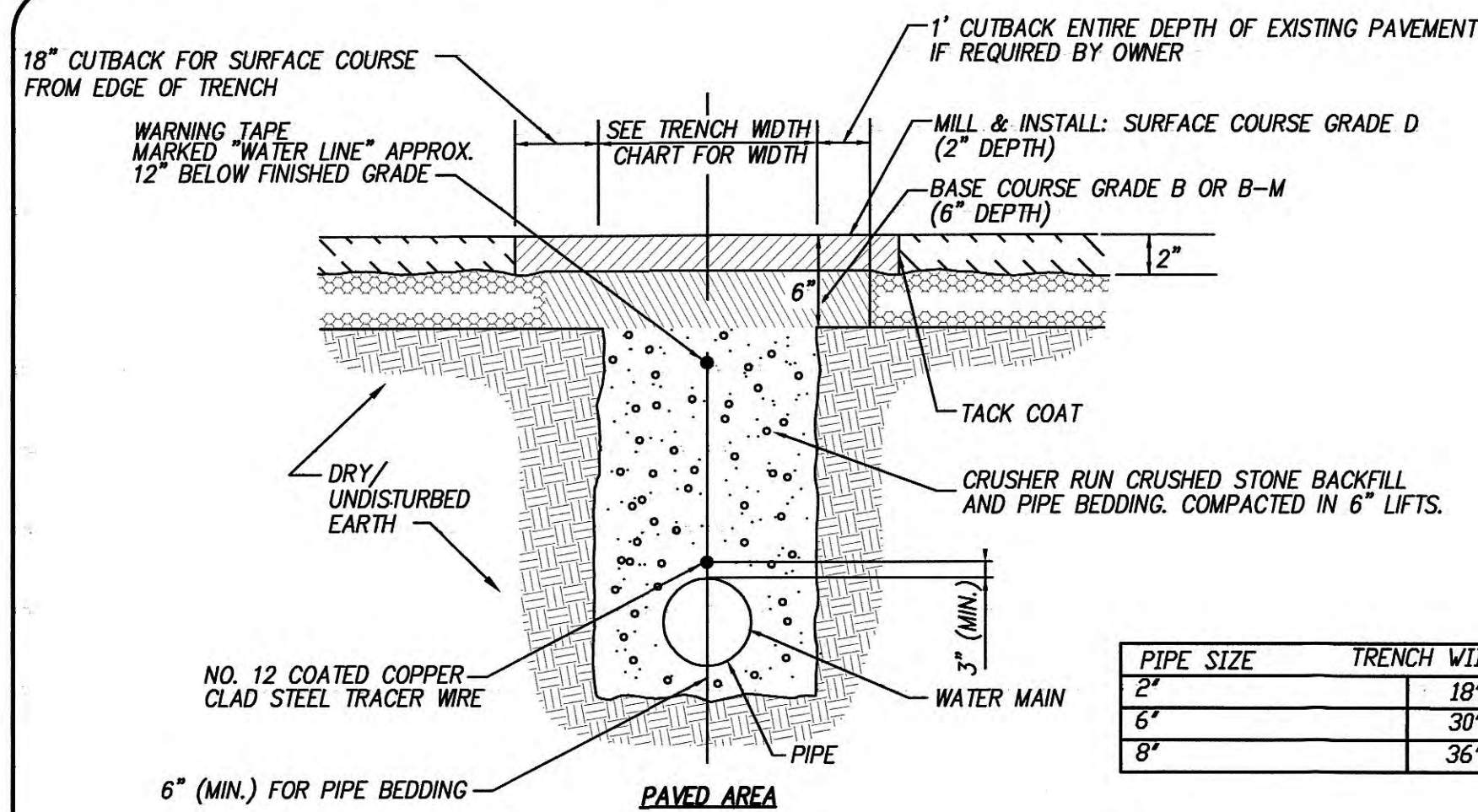
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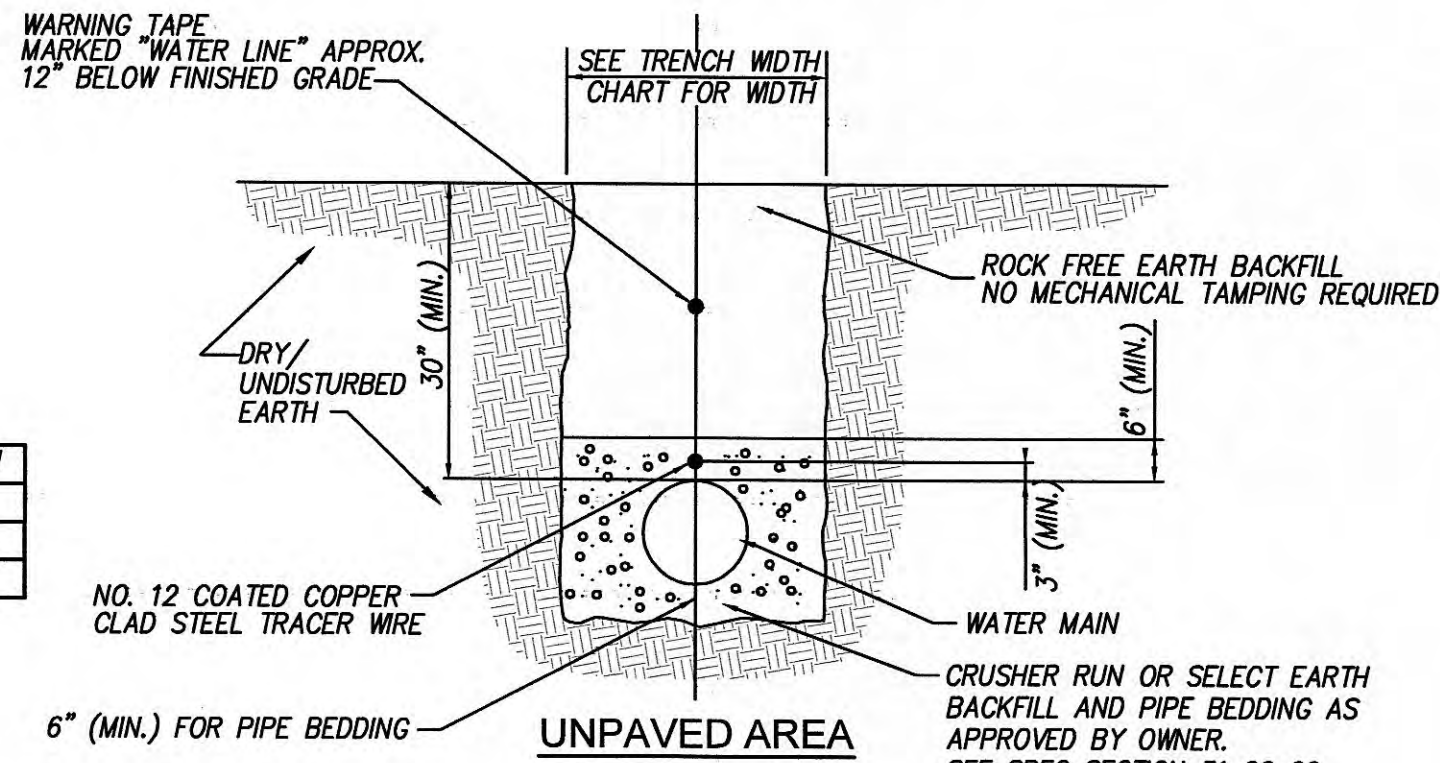


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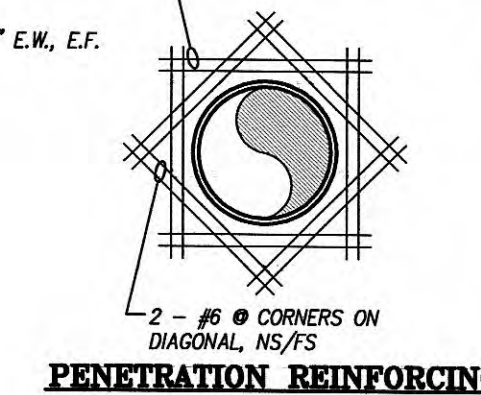
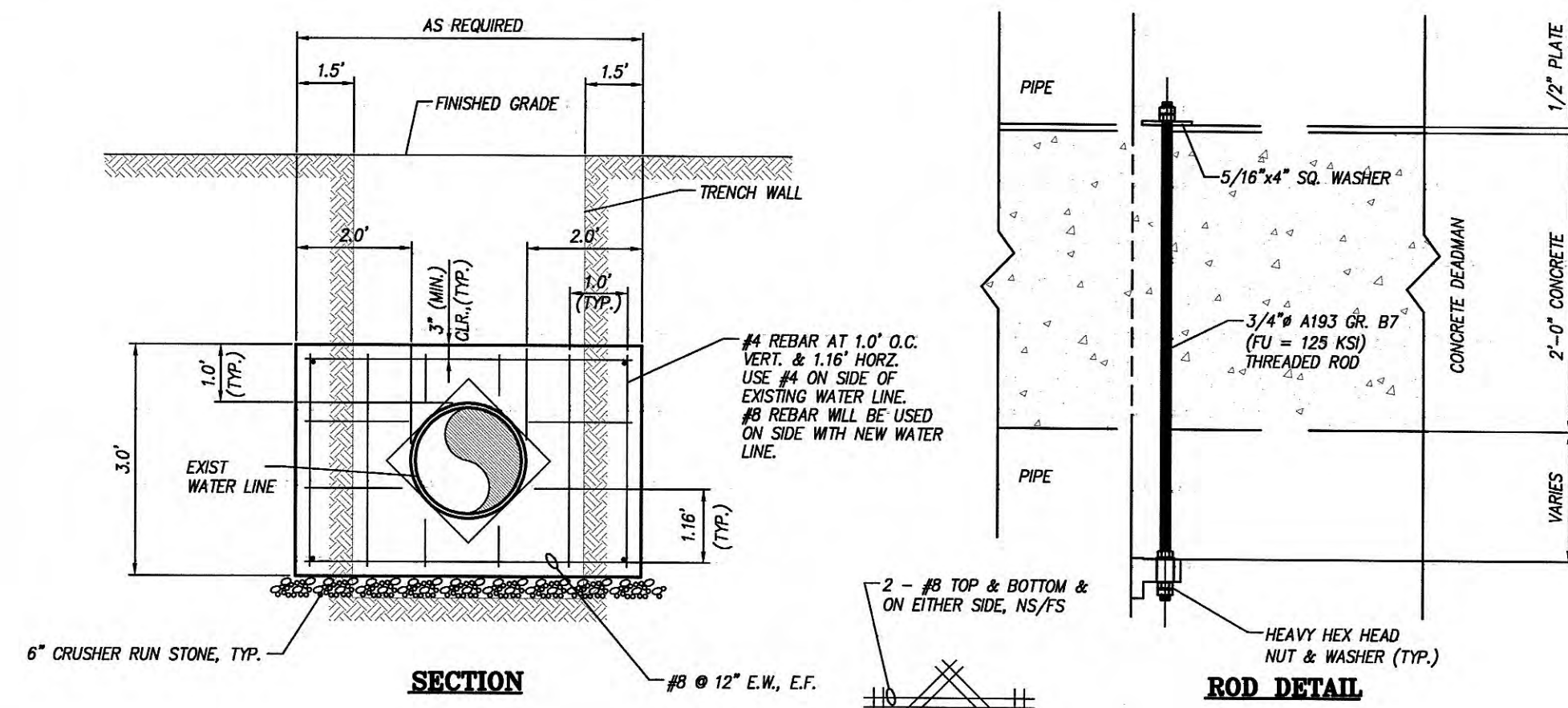
PIPE SIZE	TRENCH WIDTH
2"	18"
4" THRU 6"	30"
8" THRU 12"	36"



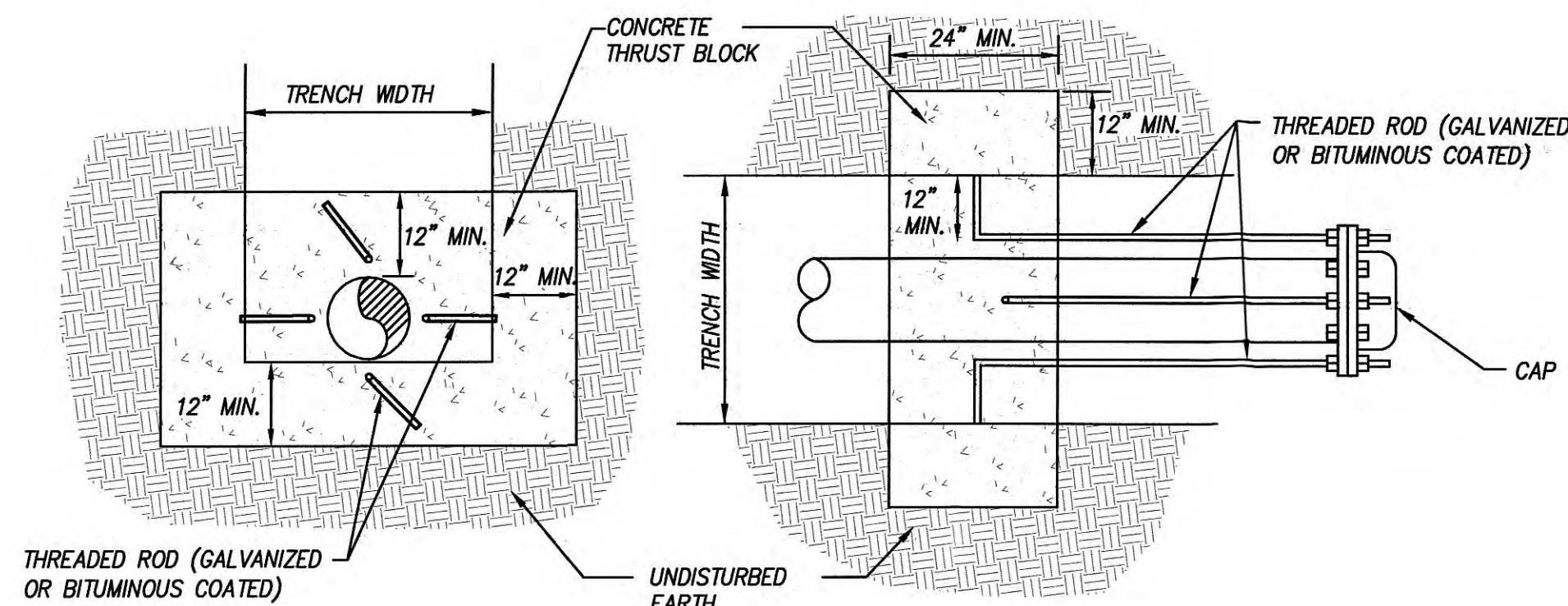
PIPE SIZE	TRENCH WIDTH
2"	18"
4" THRU 6"	30"
8" THRU 12"	36"

TYPICAL BACKFILL & BEDDING METHOD

- NOTES:
- EDGE TO BE SAWED WITH A CONCRETE SAW TO A NEAT SQUARED EDGE. ALL PATCHES SHALL BE SQUARE OR RECTANGULAR PARALLEL TO CURB. CUTS SHALL BE BROOMED CLEAN OF DUST BEFORE TACK COAT IS APPLIED.
 - EDGES TO BE TACKED WITH EMULSIFIED ASPHALT TACK CRS-I OR CRS-II
 - CUTTING AND REPAIRING EXISTING PAVEMENT CONCRETE OR GRAVEL SHALL BE IN ACCORDANCE WITH OWNER'S REQUIREMENTS.
 - BACKFILL AND BEDDING MATERIAL SHALL BE COMPACTED IN 6" LIFTS WITH JUMPING JACK COMPACTOR TO 95% DENSITY PRIOR TO PLACING SUCCEEDING LIFTS.

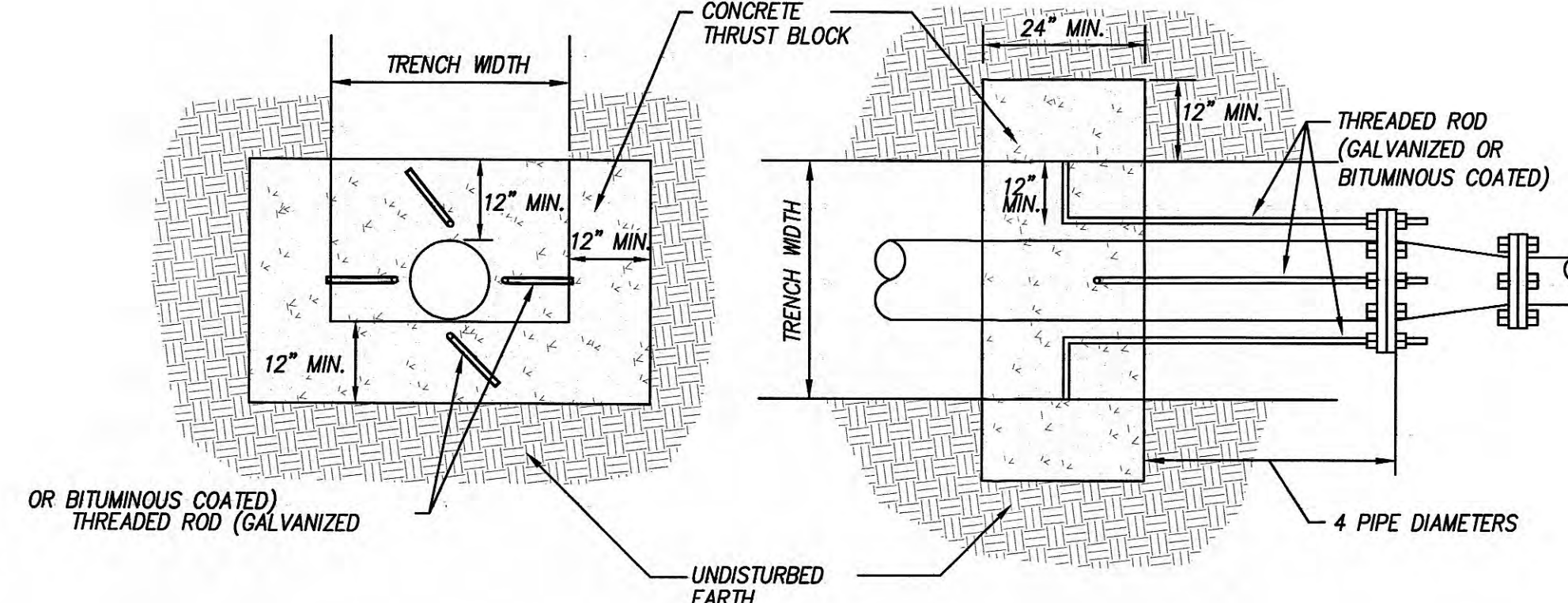


TYPICAL THRUST BLOCKS FOR STRAIGHT TIE-IN TO EXISTING PIPE

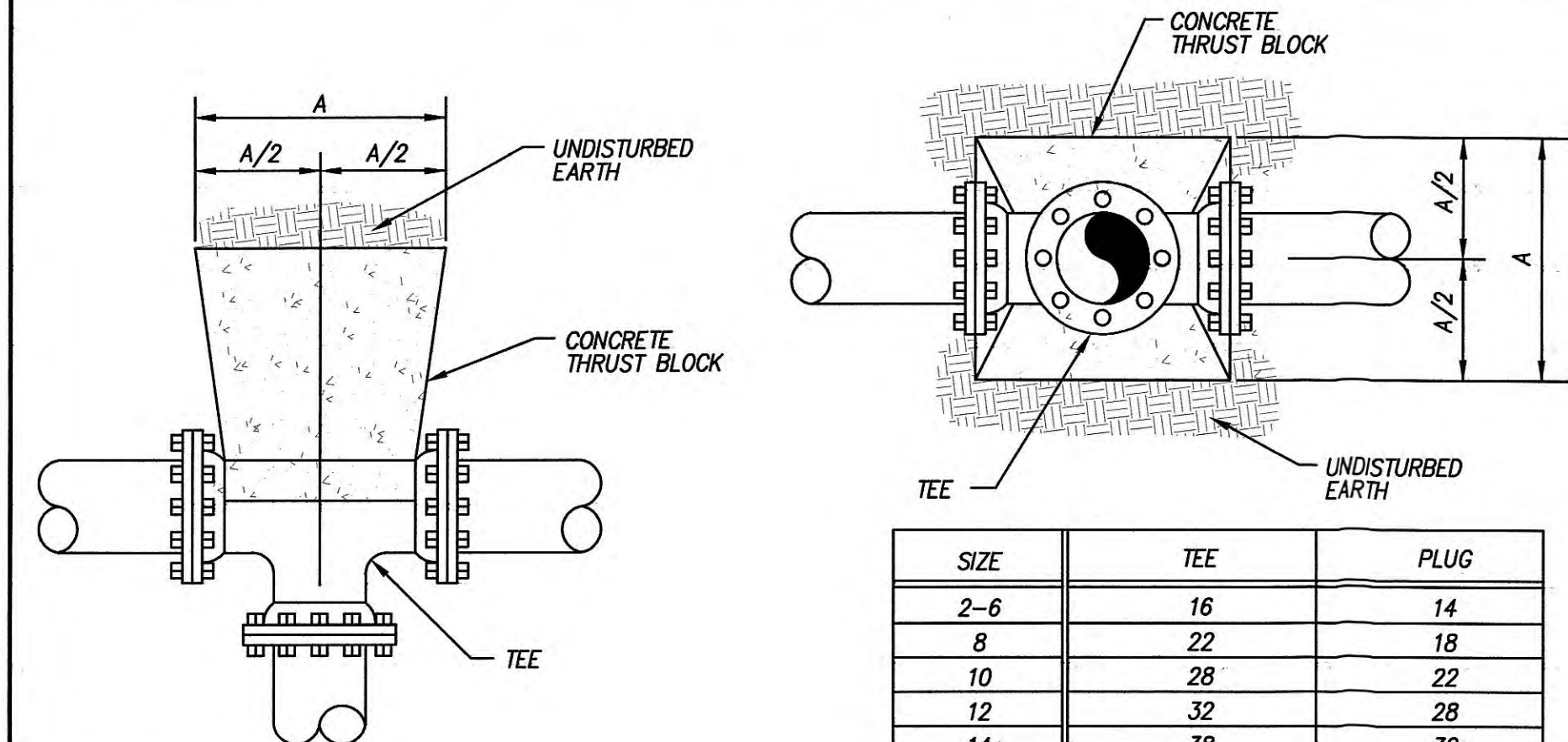


- NOTES:
- HUB WILL ASSIST WITH THROTTLING DOWN WATER PRESSURE FOR CUT & CAPS AND BANDING. WATER WILL NOT BE COMPLETELY SHUT OFF. ALL CUT AND CAPS AND BANDING SHALL BE PERFORMED WET.
 - CONTRACTOR SHALL PROVIDE CAP WITH 2" OUTLET TO RELIEVE PRESSURE, AND 2" GATE VALVE (PER SPECIFICATIONS) TO CAP LINES UNDER POSITIVE WATER PRESSURE AS APPROVED BY RESIDENT PROJECT REPRESENTATIVE. CAPS SHALL BE PAID BY WEIGHT UNDER DIP FITTINGS. VALVES SHALL BE PAID AS 2" GATE VALVE WITHOUT BOX FOR CUT AND CAP. WATER ABANDONMENT LUMP SUM PRICES SHALL BE COMPENSATION FOR EXCAVATION, THRUST BLOCK, MECHANICAL RESTRAINTS, UNSCREWING EXISTING WATER LINE, BANDING, BACKFILL, SITE RESTORATION AND ANY OTHER LABOR AND MATERIALS REQUIRED TO ABANDON WATER LINES AND INFRASTRUCTURE AT EACH PROJECT SITE.

TYPICAL CUT AND CAP DETAIL/ THRUST BLOCKS FOR CAPS.



TYPICAL THRUST BLOCK FOR REDUCERS



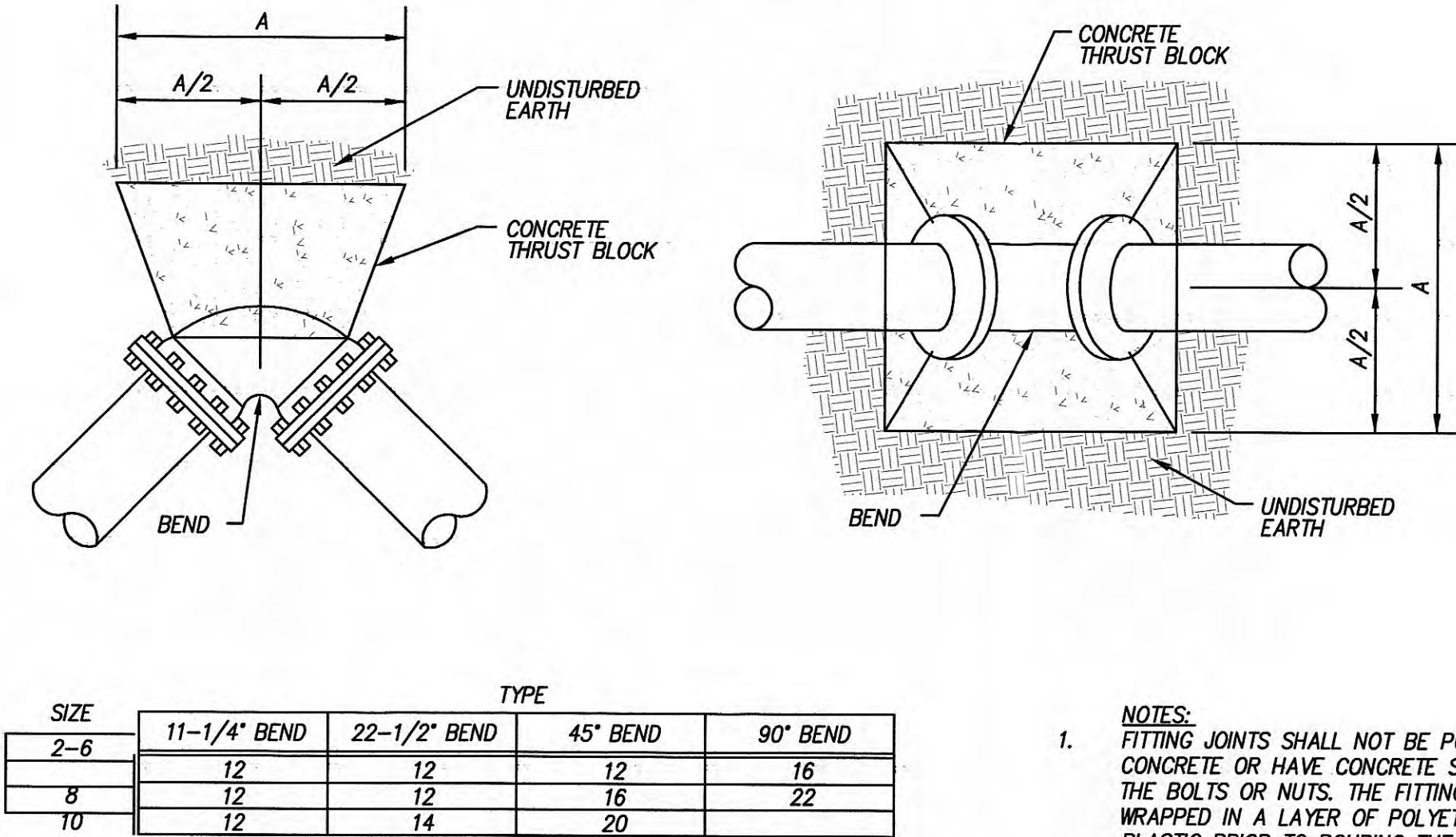
- NOTES:
- FITTING JOINTS SHALL NOT BE POURED IN CONCRETE OR HAVE CONCRETE SPILLED ON THE BOLTS OR NUTS. THE FITTING SHALL BE WRAPPED IN A LAYER OF POLYETHYLENE PLASTIC PRIOR TO POURING THE THRUST BLOCK.
 - ROD AND EYE BOLT DIAMETER SHALL BE A MINIMUM OF 3/4" AND SHALL MATCH THE SIZE OF THE BOLT PROVIDED WITH THE FITTING.
 - CONTRACTOR SHALL REPLACE FITTING BOLTS WITH THREADED ROD FOR 1/2 OF THE BOLTS SUPPLIED WITH EACH FITTING. RODS SHALL BE EQUALLY SPACED.

SIZE	TEE	PLUG
2-6	16	14
8	22	18
10	28	22
12	32	28
14	38	32
16	42	36
18	48	40
20	52	44
24	64	54
30	78	66
36	94	80
42	108	92
48	124	104

THRUST BLOCK DIMENSION "A"

NOT TO SCALE

TYPICAL THRUST BLOCKS FOR TEES



SIZE	11-1/4" BEND	22-1/2" BEND	45" BEND	90" BEND
2-6	12	12	12	16
8	12	12	16	22
10	12	14	20	

THRUST BLOCK DIMENSION "A"

NOT TO SCALE

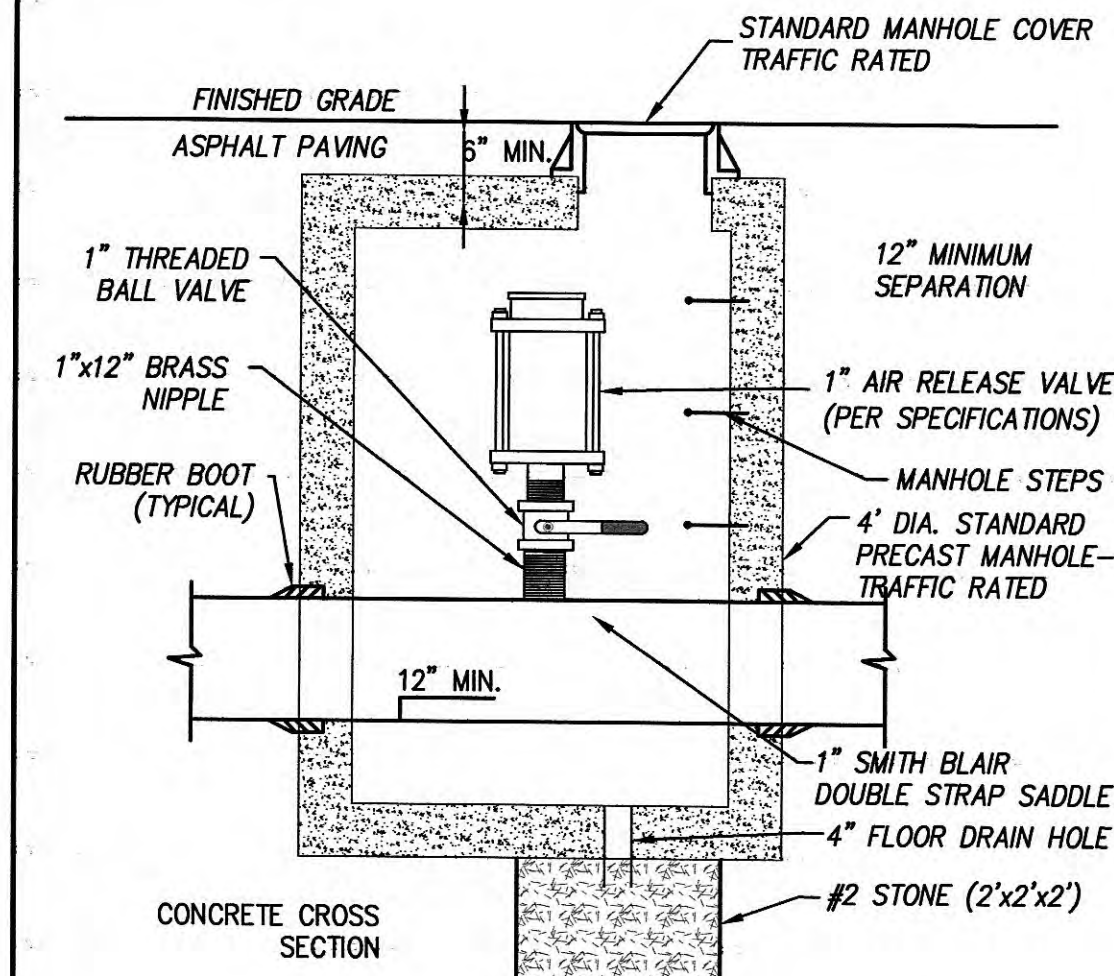
- NOTES:
- FITTING JOINTS SHALL NOT BE POURED IN CONCRETE OR HAVE CONCRETE SPILLED ON THE BOLTS OR NUTS. THE FITTING SHALL BE WRAPPED IN A LAYER OF POLYETHYLENE PLASTIC PRIOR TO POURING THE THRUST BLOCK.
 - ROD AND EYE BOLT DIAMETER SHALL BE A MINIMUM OF 3/4" AND SHALL MATCH THE SIZE OF THE BOLT PROVIDED WITH THE FITTING.
 - CONTRACTOR SHALL REPLACE FITTING BOLTS WITH THREADED ROD FOR 1/2 OF THE BOLTS SUPPLIED WITH EACH FITTING. RODS SHALL BE EQUALLY SPACED.

TYPICAL THRUST BLOCK FOR BENDS

Fitting/Valve Type	Pipe Size (inches)			
	2	4	6	8
Plug	40	40	60	80
Inline Valve	40	40	60	80
Tee	40	40	60	80
90° Bend	20	40	40	40
45° Bend	20	20	20	20
22.5° Bend	20	20	20	20
11.25° Bend	20	20	20	20
5° Bend	20	20	20	20

- NOTES:
- CONTRACTOR SHALL USE RESTRAINED JOINT FITTINGS FOR EVERY FITTING INSTALLED ON THE PROJECT. REACTION BLOCKING SHALL ONLY BE USED AT TIE-IN CONNECTIONS TO SECURE NEW PIPE TO EXISTING PIPE.
 - WHERE RESTRAINED JOINT FITTINGS ARE REQUIRED BY THE PLANS OR SPECIFICATIONS, RESTRAINED JOINT FITTINGS MUST BE INSTALLED AS REQUIRED BY THE TABLES AND NOTES FOUND WITHIN THE PLANS AND SPECIFICATIONS.
 - MECHANICAL RESTRAINED JOINT FITTINGS SHALL BE "MEGALUG" AS MANUFACTURED BY EBAA IRON, INC. OR APPROVED EQUAL AND SHALL BE INSTALLED ON EVERY FITTING.
 - CONTRACTOR SHALL INSTALL RESTRAINING GASKETS FOR PUSH-ON JOINT PIPE A MINIMUM DISTANCE FROM EACH VALVE OR FITTING AS REQUIRED IN THE ABOVE TABLE.
 - RESTRAINING GASKETS FOR PUSH-ON JOINT PIPE SHALL MEET UTILITY OWNER SPECIFICATIONS.

THRUST RESTRAINT JOINT TABLE



STANDARD AIR RELEASE VALVE

REVISIONS

DATE

CANNON & CANNON INC

CONSULTING ENGINEERS · FIELD SURVEYORS

TEL 865.670.0555

8550 Kingston Pike
Knoxville, TN 37919

CLIENT:

HARRIMAN UTILITY BOARD
300 NORTH ROANE STREET
HARRIMAN, TN 37748
(865) 882-3242

PROJECT:

SRF DISTRIBUTION SYSTEM REPAIRS CONTRACT II
HARRIMAN, TN

TYPICAL DETAILS
(PART 1 OF 2)

CCJ PROJECT NO.

00923-0002

DRAWING DATE

MARCH 27, 2015

PM

RGL

PC

SEB/TJ

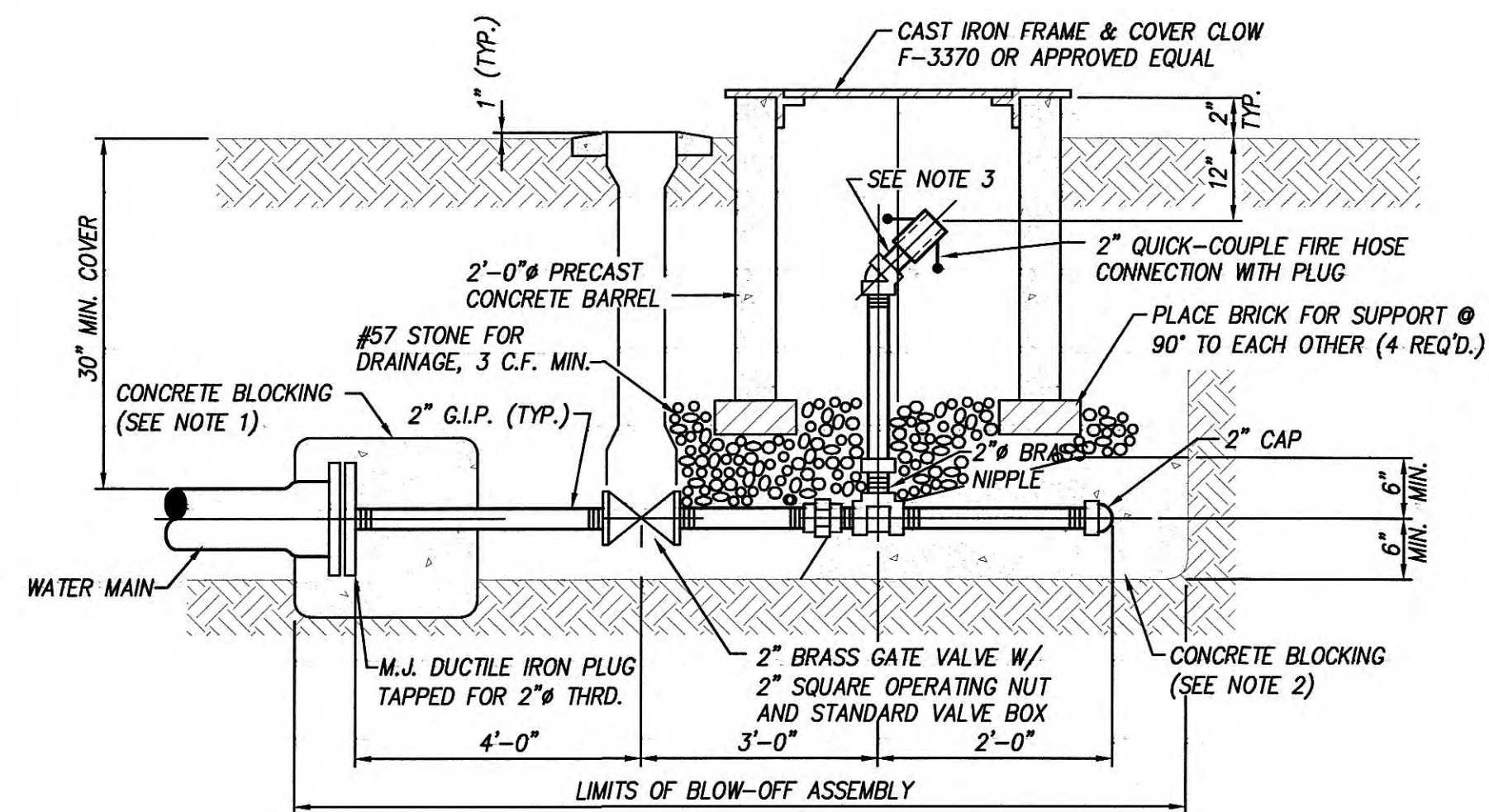
DRAWN

WBW

FR

SEB

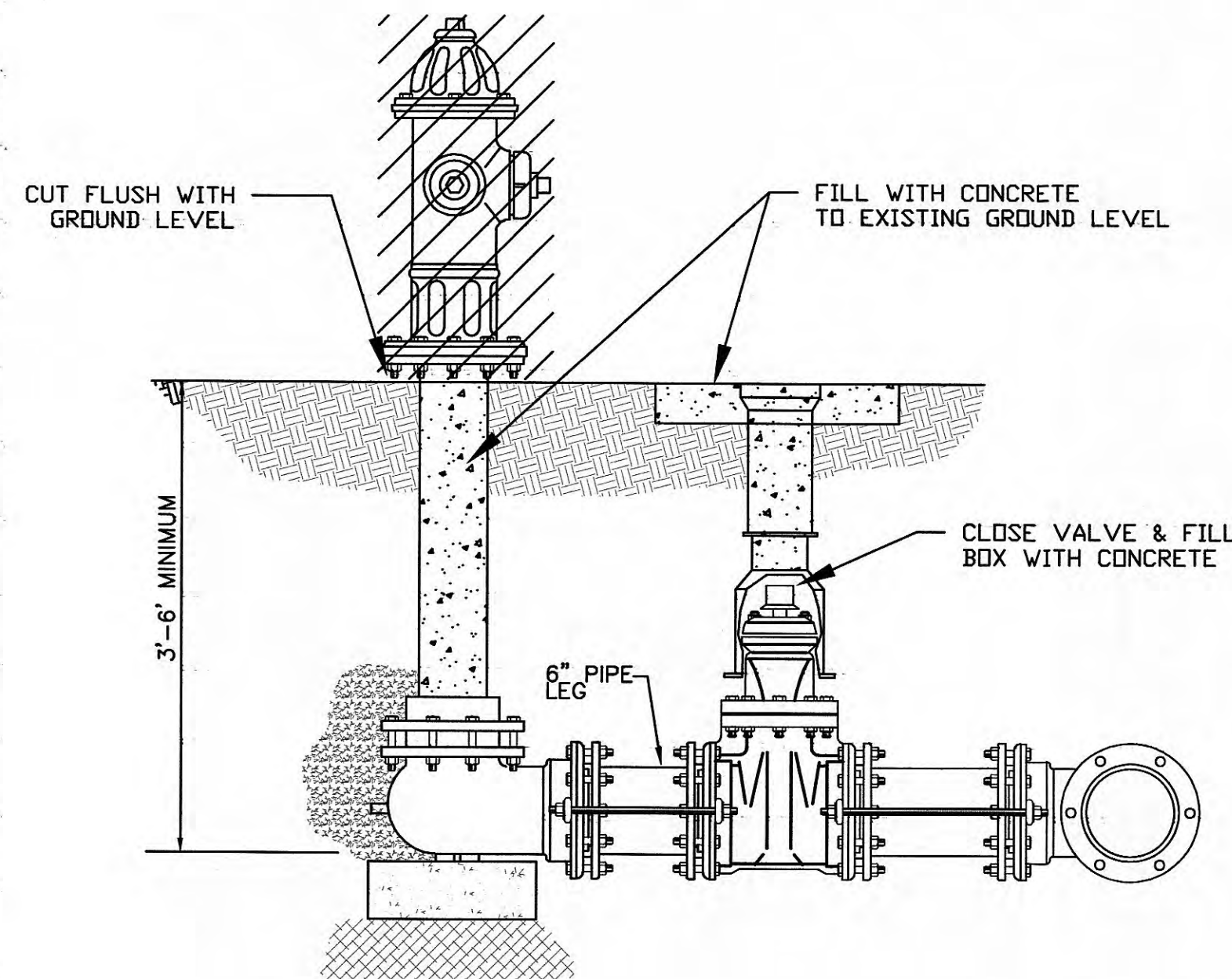
D1.01



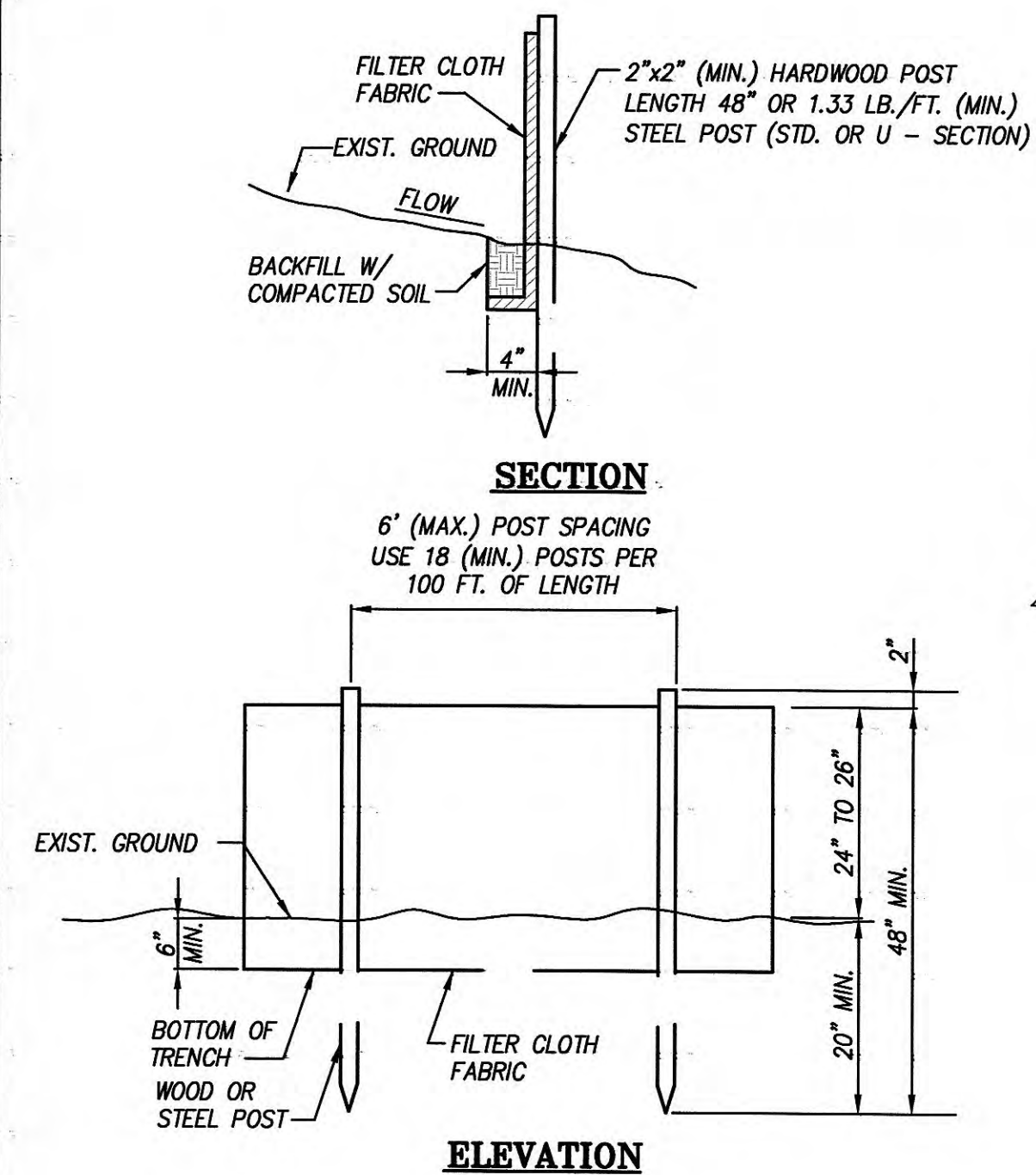
NOTES:

1. CONCRETE BLOCKING AT WATER MAIN PLUG FOR BLOW-OFF PIPE CONNECTION SHALL BE A MINIMUM OF 1'-6\"/>

TYPICAL BLOW-OFF ASSEMBLY
N.T.S.



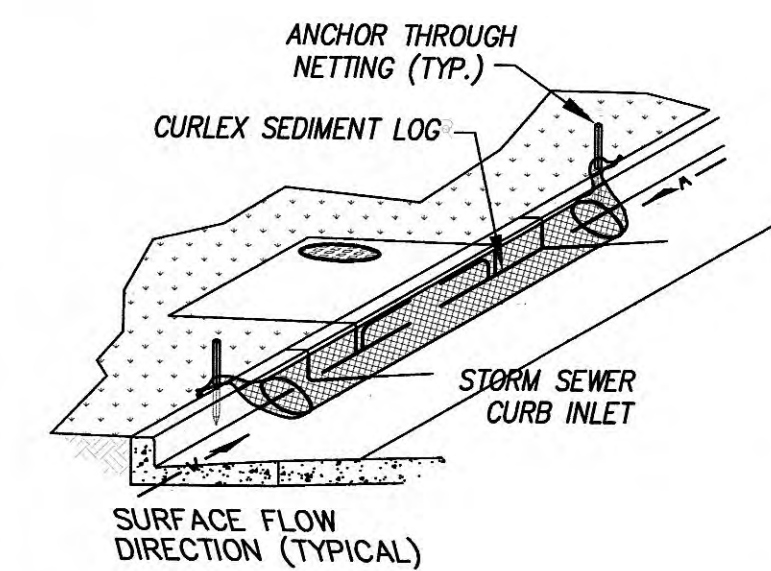
PINE STREET HYDRANT RETIRE DETAIL
N.T.S.



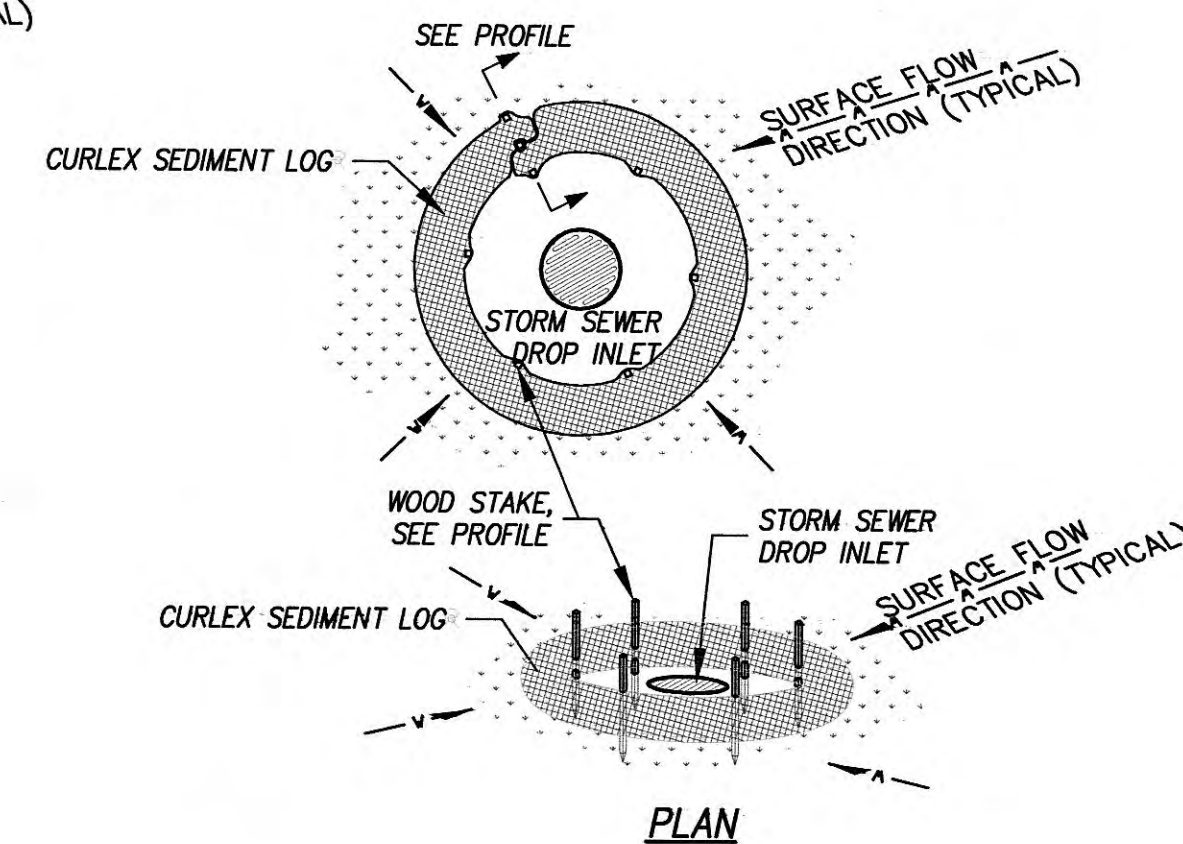
NOTES:

1. SILT FENCE SHALL BE RE-ASSEMBLED AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS.
2. SILT FENCE SHALL HAVE AN APPROVED BACKING OR A BUILT-IN REINFORCED STRUCTURE AS RECOMMENDED BY THE MANUFACTURER TO SUPPORT THE GEOTEXTILE FABRIC.

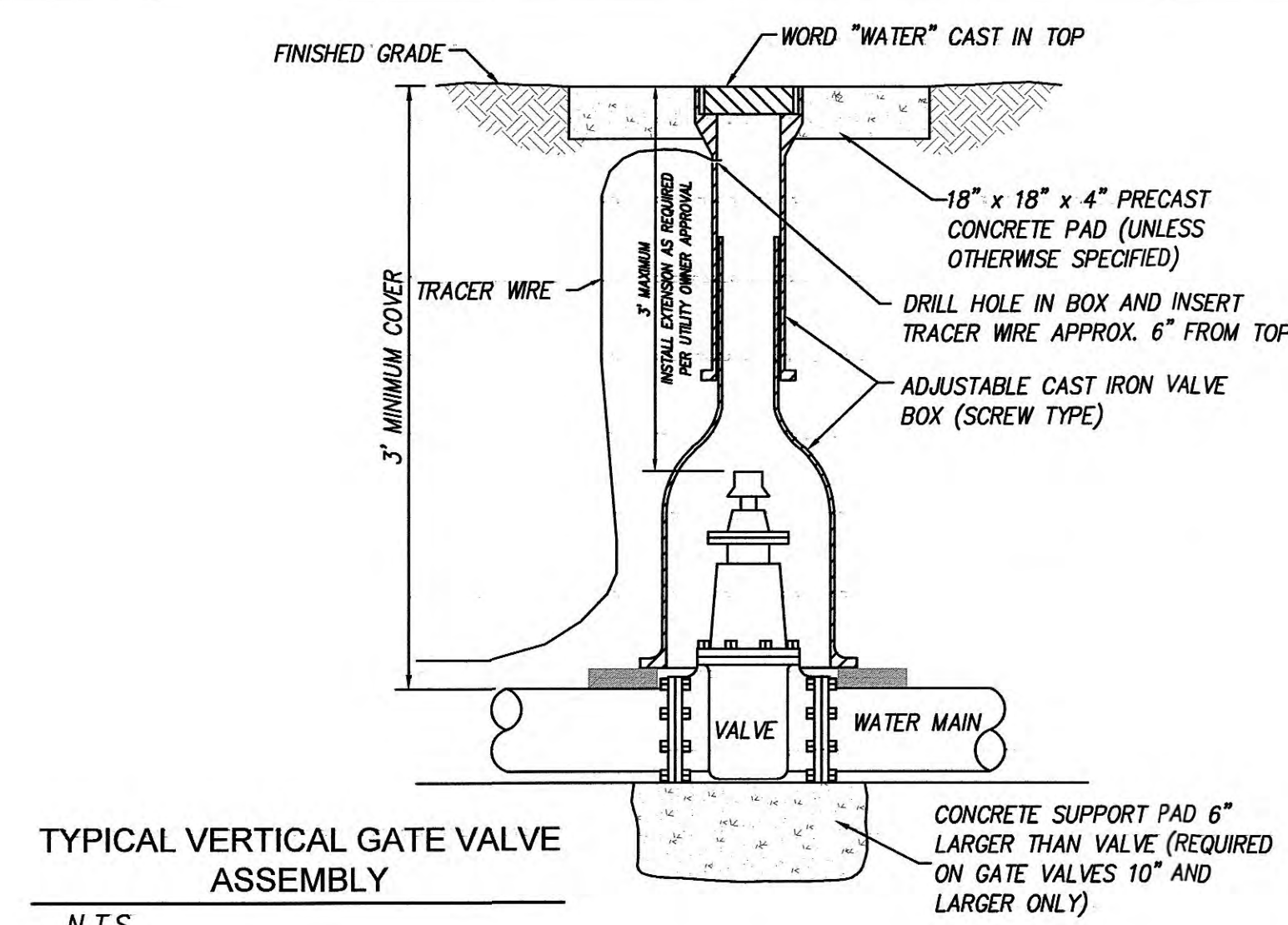
TEMPORARY TYPE A SILT FENCE
N.T.S.



	TYPE I	TYPE II	TYPE III	TYPE IV
NORMAL DIAMETER	50 CM (20 IN)	30 CM (12 IN)	23 CM (9 IN)	15 CM (6 IN)
LENGTH	3.05 M (10 FT.)	3.05 M (10 FT.)	7.62 M (25 FT.)	7.62 M (25 FT.)
WEIGHT (±10%)	13.62 KG (30 LB)	9.08 KG (20 LB)	11.35 KG (25 LB)	5.45 KG (12 LB)
NET OPENING (HEXAGONAL-SHAPED)	2.5 CM (1 IN)	2.5 CM (1 IN)	1.9 CM (.75 IN)	1.3 CM (.5 IN)

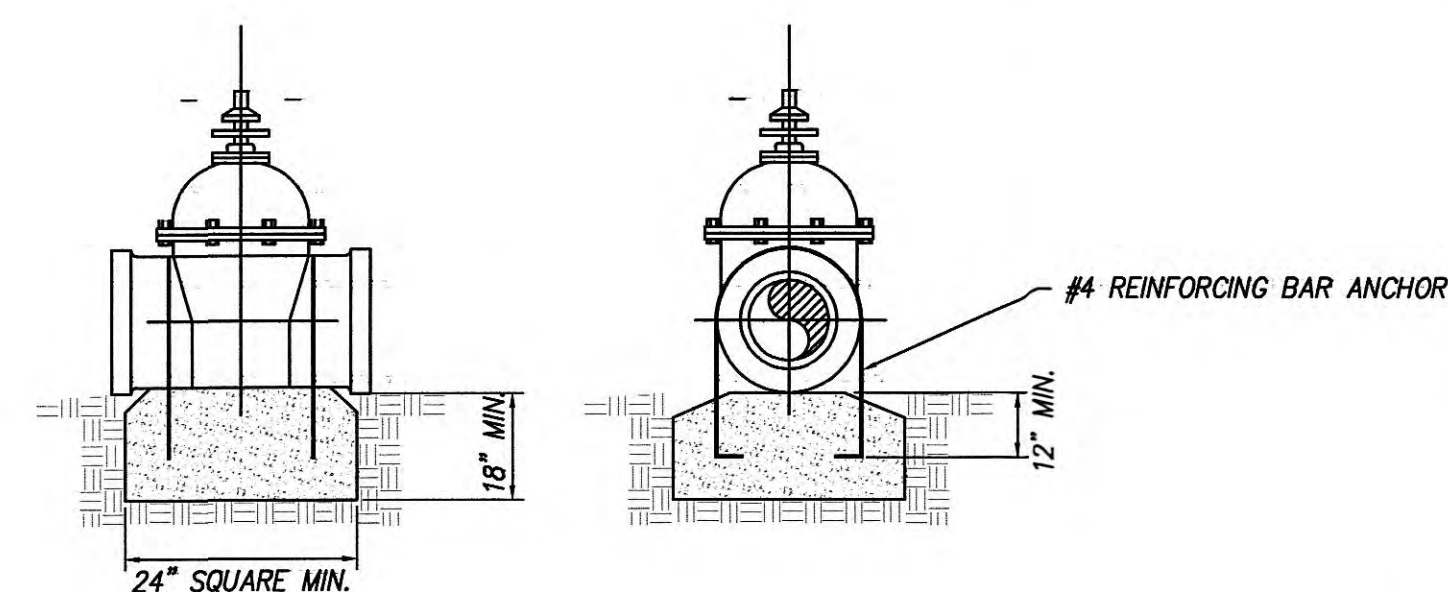


INLET PROTECTION
N.T.S.

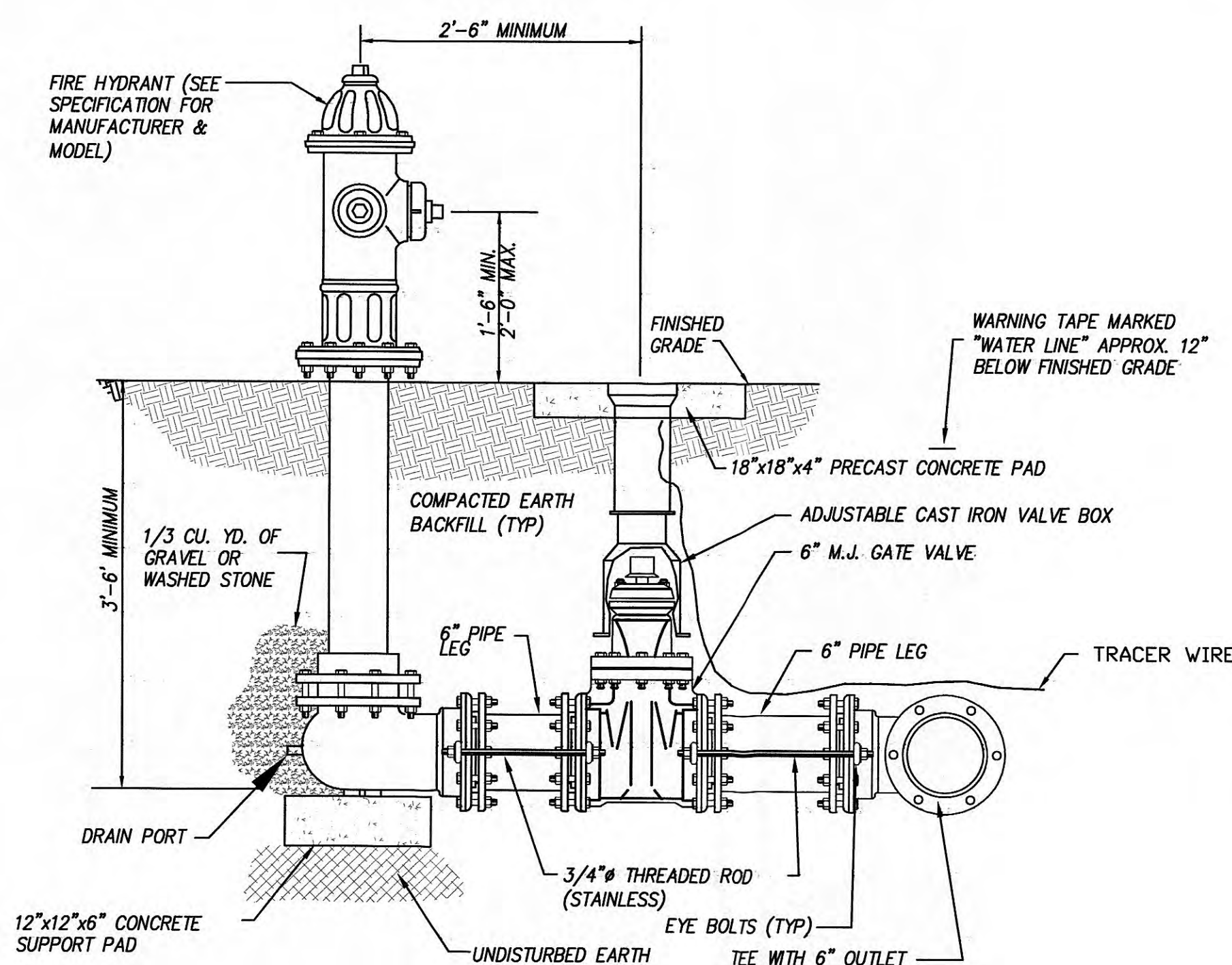


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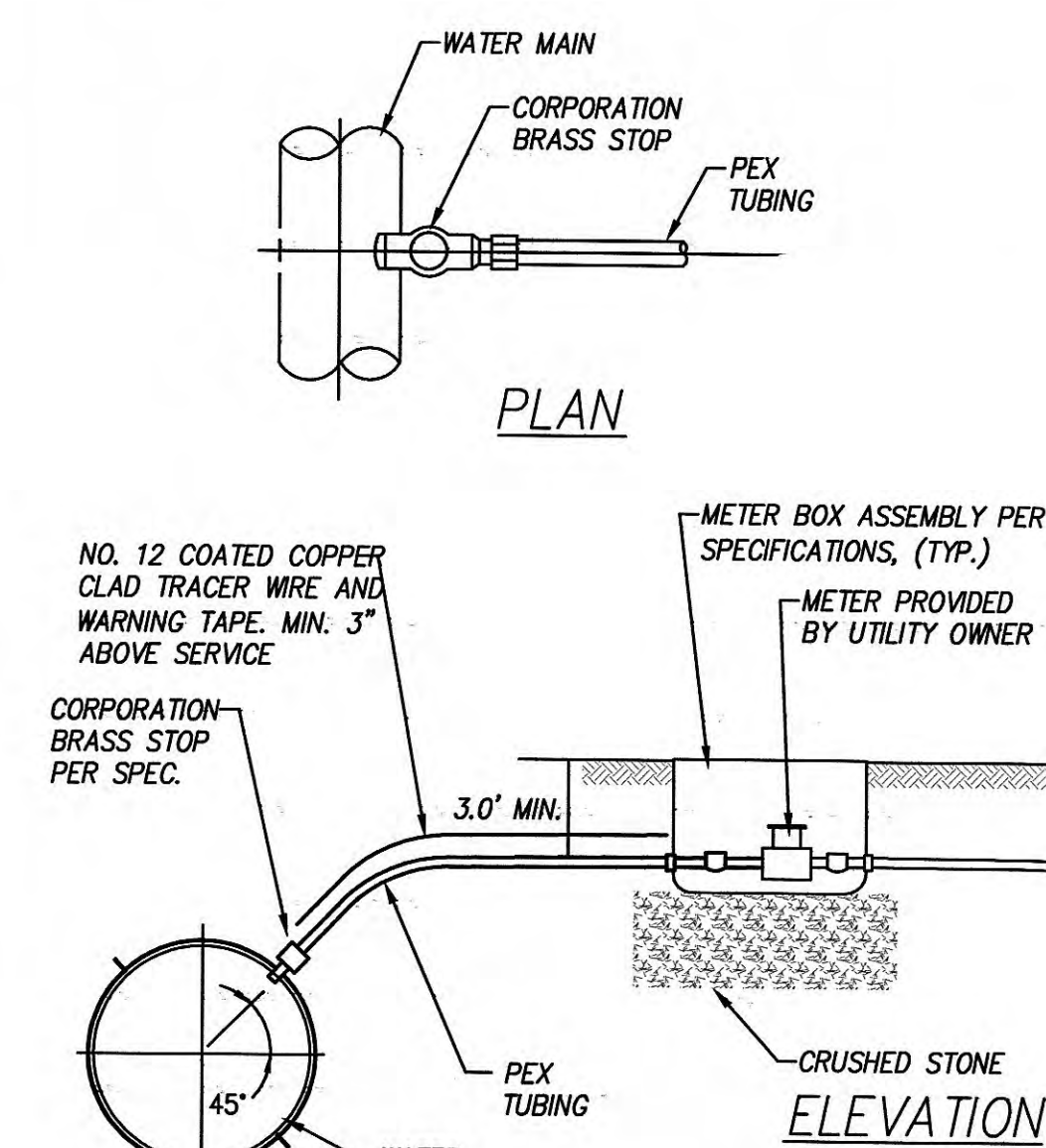
SIZE OF VALVE	CONCRETE CU. FT.
2" & 2 1/4"	1.0
3" & 4"	1.0
6"	1.3
8"	1.5
10"	1.8



TYPICAL THRUST BLOCKS FOR VALVES
N.T.S.



TEMPORARY FIRE HYDRANT ASSEMBLY DETAIL
N.T.S.



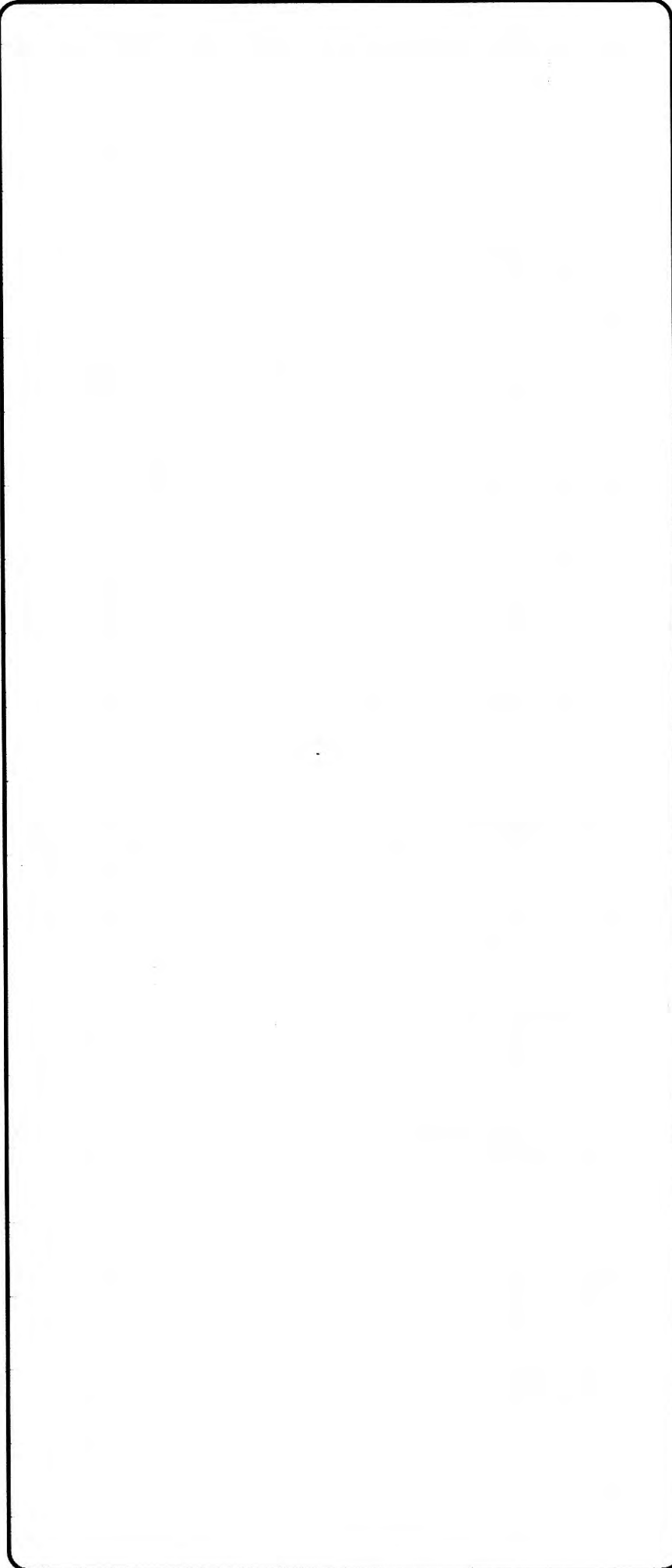
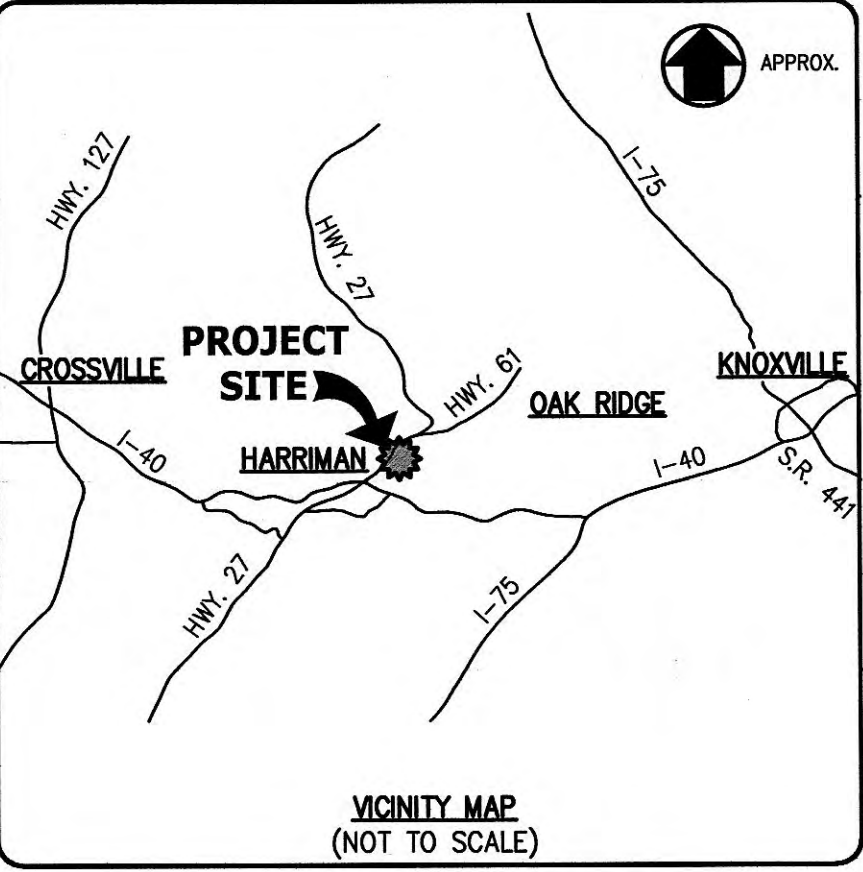
WATER SERVICE DETAIL
N.T.S.

REVISIONS		DATE
CANNON & CANNON INC. CONSULTING ENGINEERS - FIELD SURVEYORS TEL: 865.670.8555 8650 Kingston Pike WWW.CANNON-CANNON.COM Knoxville, TN 37919		
CLIENT: HARRIMAN UTILITY BOARD 300 NORTH ROANE STREET HARRIMAN, TN 37748 (865) 882-3242		
PROJECT: SRF DISTRIBUTION SYSTEM REPAIRS CONTRACT II HARRIMAN, TN		
TYPICAL DETAILS (PART 2 OF 2)		
	CCI PROJECT NO. 00923-0002	
	DRAWING DATE MARCH 27, 2015	
	PM RGL	PC SEB/TJ
	DRAWN WBW	FR SEB
D1.02		

HARRIMAN UTILITY BOARD

SRF DISTRIBUTION SYSTEM REPAIRS CONTRACT I

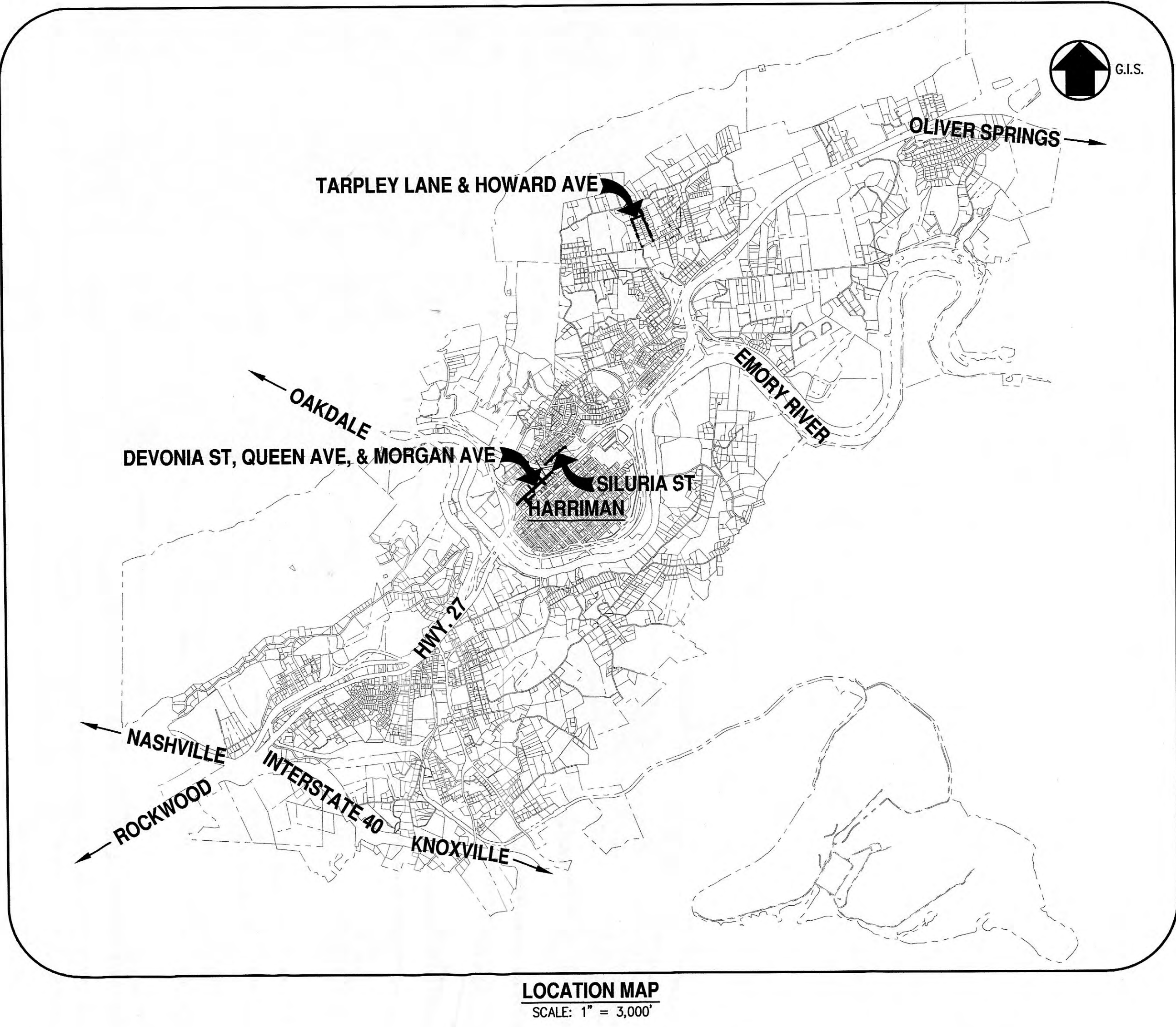
HARRIMAN, TENNESSEE

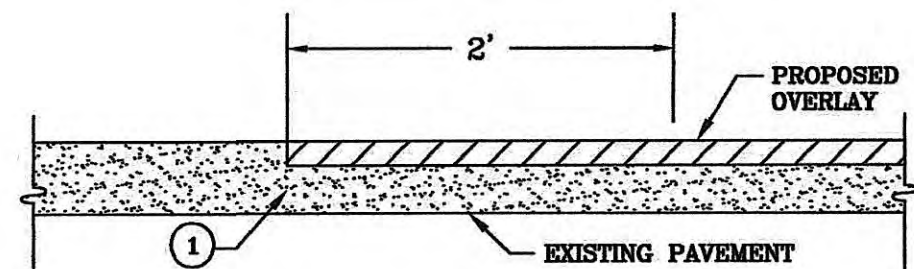


REVISIONS		DATE
CANNON & CANNON INC CONSULTING ENGINEERS - FIELD SURVEYORS TEL 865.670.8555 8550 Kingston Pike WWW.CANNON-CANNON.COM Knoxville, TN 37919		
CLIENT:	HARRIMAN UTILITY BOARD 300 NORTH ROANE STREET HARRIMAN, TN 37748 (865) 682-3242	
PROJECT:	SRF DISTRIBUTION SYSTEM REPAIRS CONTRACT I HARRIMAN, TN	
COVER SHEET		
	CCI PROJECT NO.	00923-0002
	DRAWING DATE	MARCH 27, 2015
	PM	TFT QC SAF
	DRAWN	WBW CR
W0 01		

DRAWING INDEX

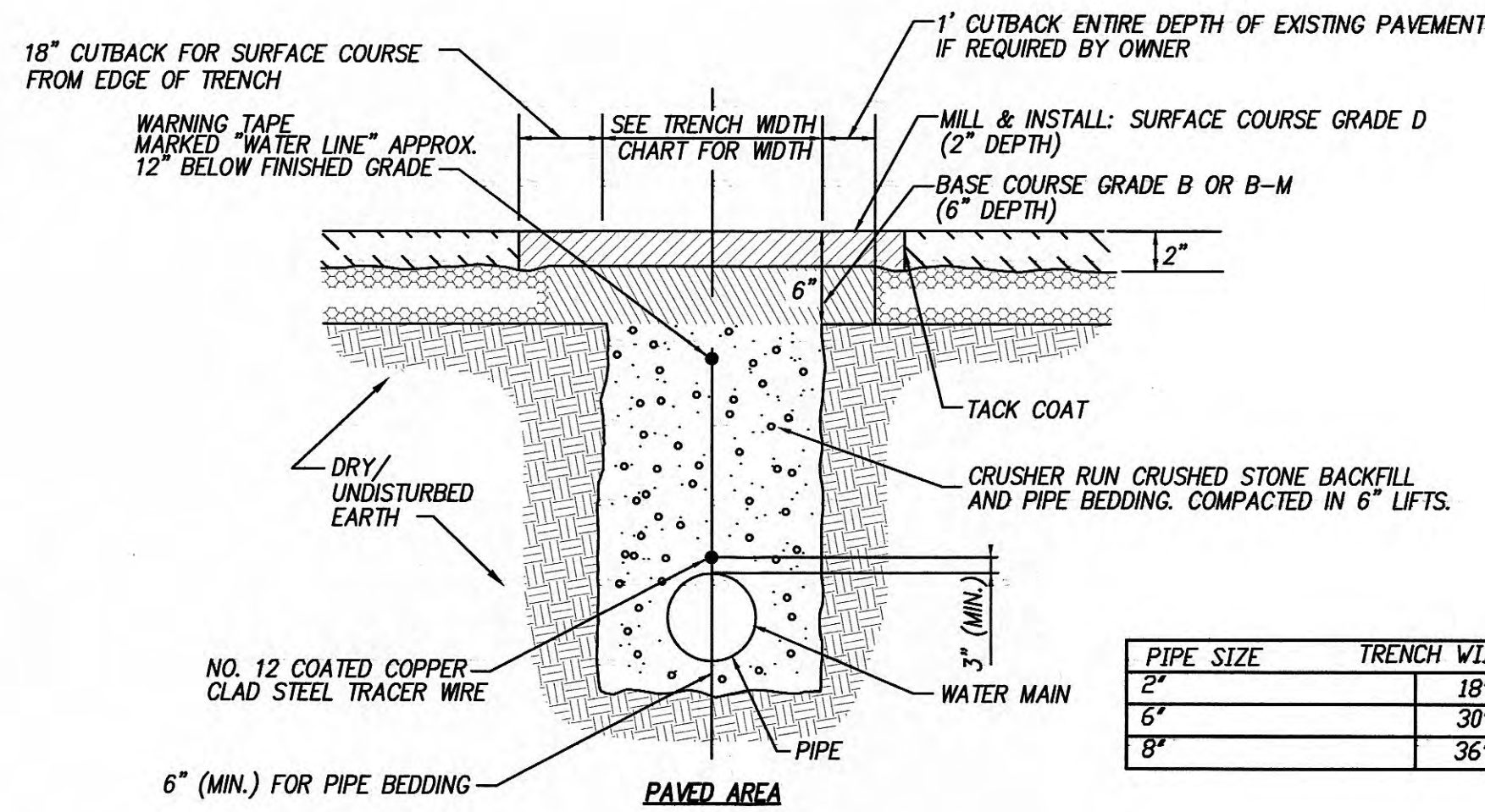
- W0.01 COVER SHEET
- W0.02 NOTES & LEGEND
- W1.01 SILURIA ST. WATER LINE "A" PLAN - STA. 0+00 TO STA. 9+24± (E.O.L.)
- W1.02 DEVONIA ST. WATER LINE "B" PLAN - STA. 0+00 TO STA. 12+10
- MORGAN AVE. WATER LINE "C" PLAN - STA. 0+00 TO STA. 3+13± (E.O.L.)
- ALLEY WATER LINE "D" PLAN - STA. 0+00 TO STA. 3+51± (E.O.L.)
- QUEEN AVE. WATER LINE "E" PLAN - STA. 8+10± TO STA. 9+70± (E.O.L.)
- W1.03 DEVONIA ST. WATER LINE "B" PLAN - STA. 12+10± TO STA. 16+40± (E.O.L.)
- QUEEN AVE. WATER LINE "C" PLAN - STA. 0+00 TO STA. 8+10
- W1.04 ALTERNATE 1
- HOWARD AVE. WATER LINE "F" PLAN - STA. 0+00 TO STA. 12+61± (E.O.L.)
- TARPLEY LN. WATER LINE "G" PLAN - STA. 0+00 TO STA. 5+09± (E.O.L.)
- D1.01 TYPICAL DETAILS (PART 1 OF 3)
- D1.02 TYPICAL DETAILS (PART 2 OF 3)
- D1.03 TYPICAL DETAILS (PART 3 OF 3)



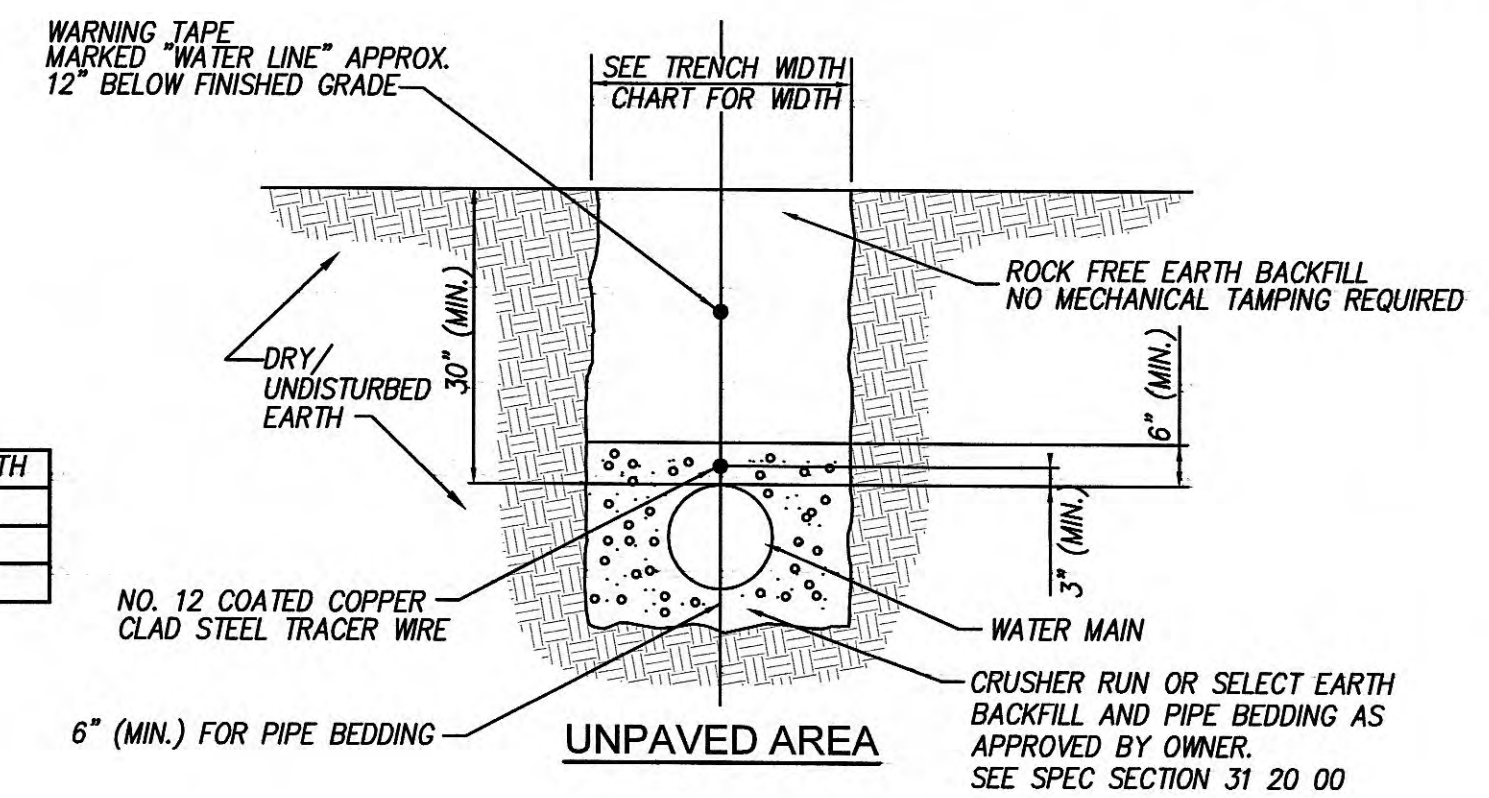


1. ALTERNATE 2 ASPHALT OVERLAY SHALL CONSIST OF 1.5" DEPTH SURFACE OVERLAY (GRADE D) FROM CURB TO CURB FOR THE ENTIRE LENGTH OF ALL CUTS IN DEVONIA STREET, QUEEN AVENUE AND MORGAN AVENUE (W1.02 AND W1.03).
2. ASPHALT "KEY-IN" SHALL BE REQUIRED AT BEGINNING, END, ADJACENT TO EXISTING CURB AND GUTTER, AND ALL APPROACHES OF PROPOSED OVERLAY SURFACE. "KEY-IN" SHALL NOT BE A BID ITEM BUT CONSIDERED AS AN INCIDENTAL EXPENSE.
3. RAISE ALL EXISTING UTILITIES PER UTILITY SPECIFICATIONS, INCLUDING BUT NOT LIMITED TO STORM AND SANITARY COVERS, GAS AND WATER VALVE BOXES, ELECTRIC, COMMUNICATIONS.

ALTERNATE 2 ASPHALT OVERLAY



PIPE SIZE	TRENCH WIDTH
2"	18"
4" THRU 6"	30"
8"	36"

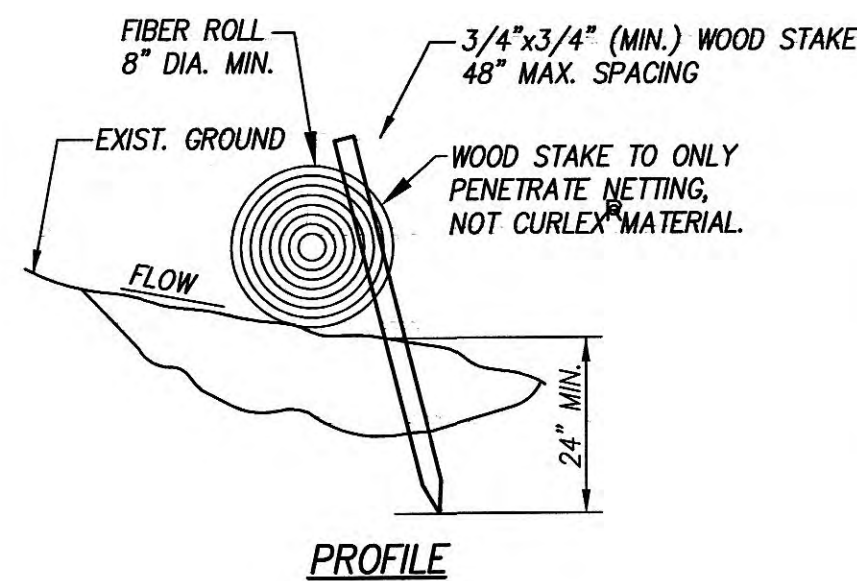
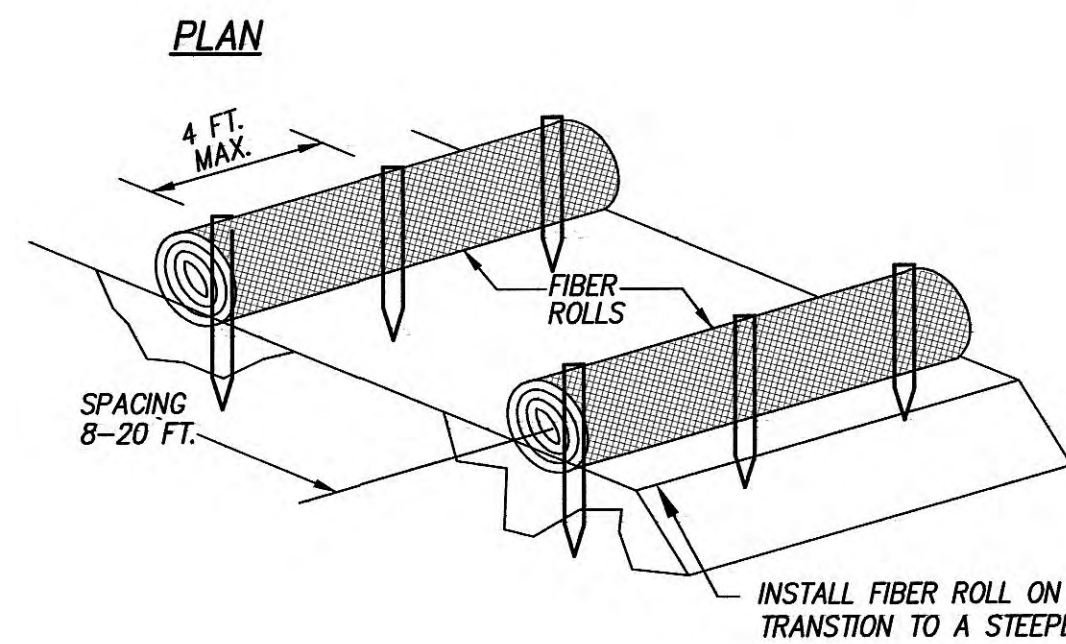


PIPE SIZE	TRENCH WIDTH
2"	18"
4" THRU 6"	30"
8" THRU 12"	36"

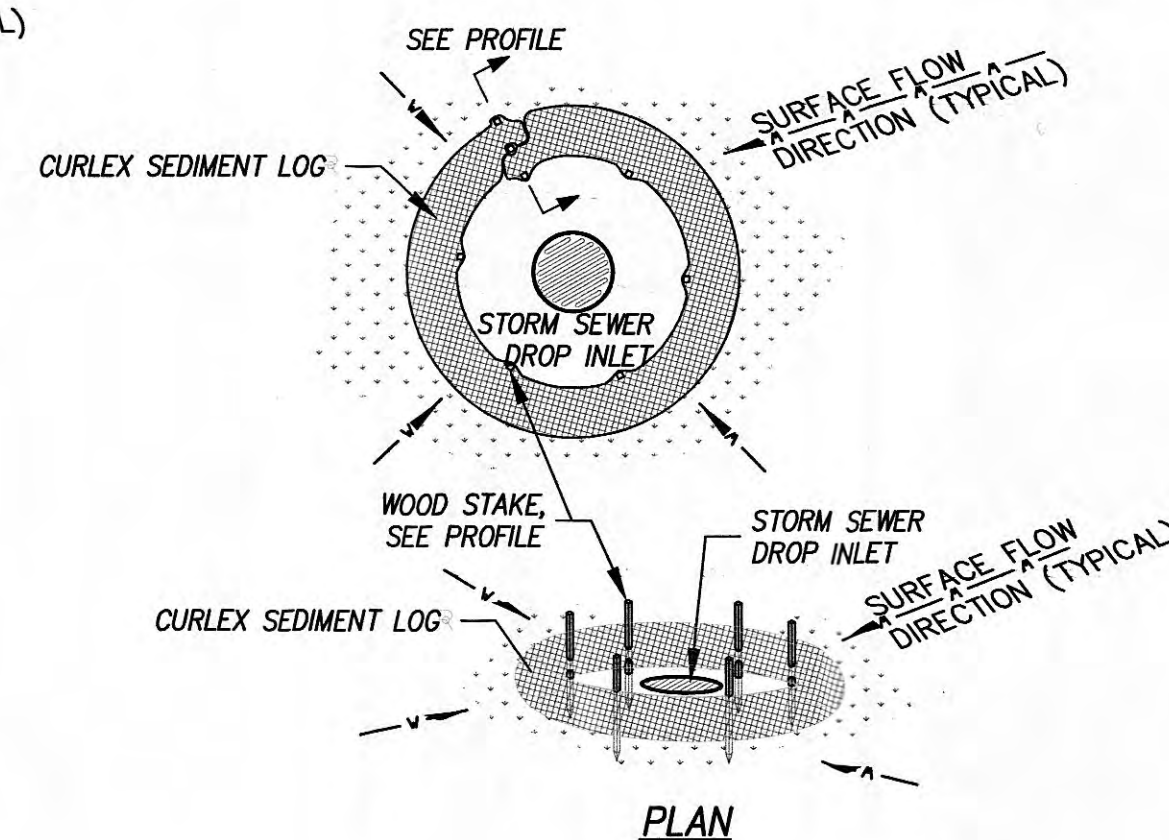
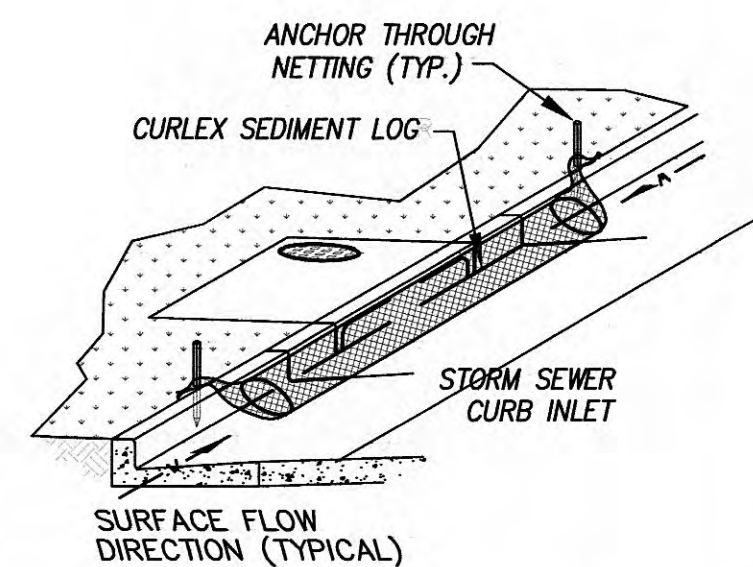
TYPICAL BACKFILL & BEDDING METHOD

NOTES:

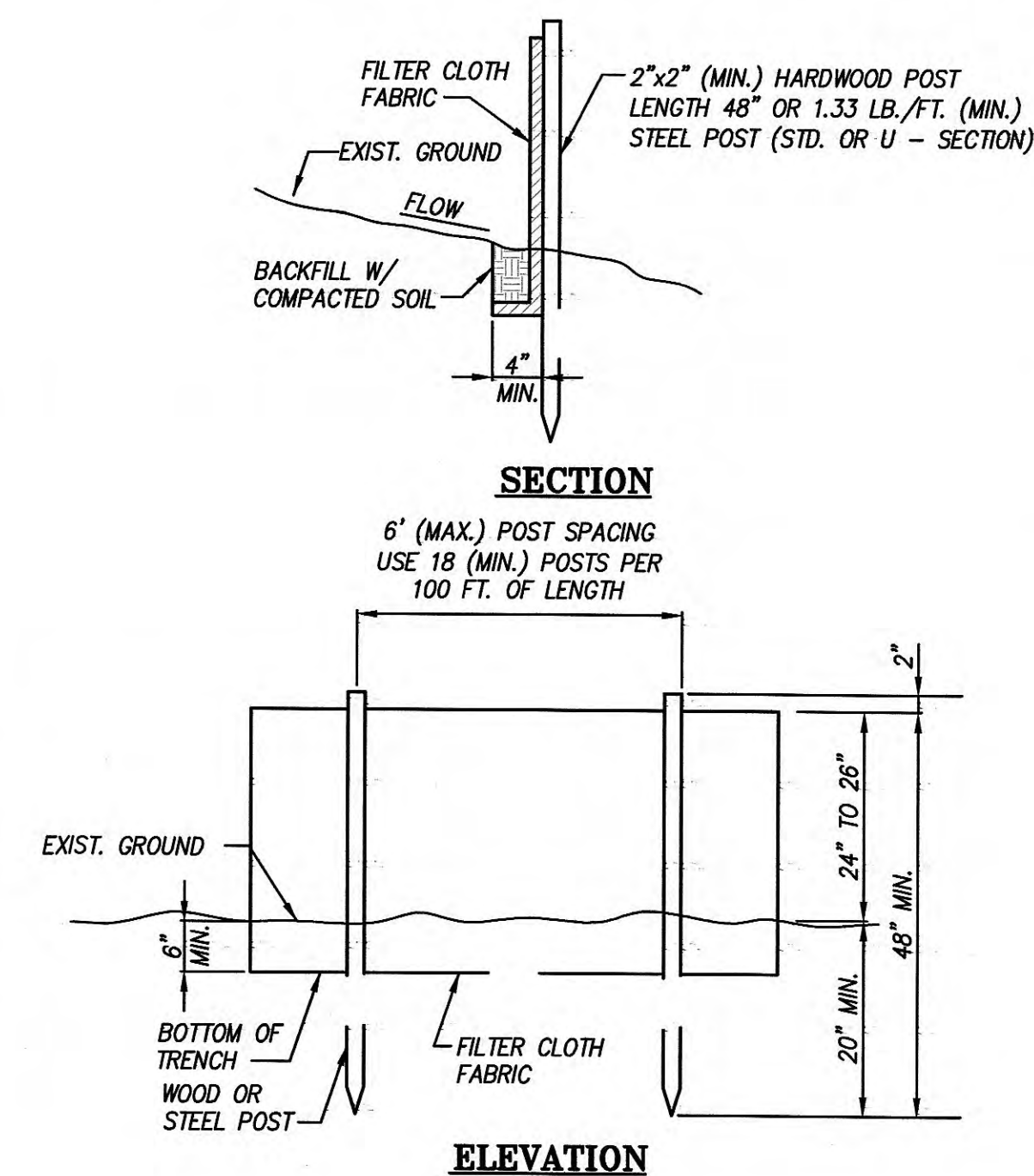
1. EDGE TO BE SAWS WITH A CONCRETE SAW TO A NEAT SQUARED EDGE. ALL PATCHES SHALL BE SQUARE OR RECTANGULAR PARALLEL TO CURB. CUTS SHALL BE BROOMED CLEAN OF DUST BEFORE TACK COAT IS APPLIED.
2. EDGES TO BE TACKED WITH EMULSIFIED ASPHALT TACK CRS-I OR CRS-II
3. CUTTING AND REPAIRING EXISTING PAVEMENT CONCRETE OR GRAVEL SHALL BE IN ACCORDANCE WITH OWNER'S REQUIREMENTS
4. BACKFILL AND BEDDING MATERIAL SHALL BE COMPACTED IN 6" LIFTS WITH JUMPING JACK COMPACTOR TO 95% DENSITY PRIOR TO PLACING SUCCEEDING LIFTS.



TEMPORARY SEDIMENT LOGS
N.T.S.



INLET PROTECTION
N.T.S.



NOTES:

1. SILT FENCE SHALL BE RE-ASSEMBLED AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS.
2. SILT FENCE SHALL HAVE AN APPROVED BACKING OR A BUILT-IN REINFORCED STRUCTURE AS RECOMMENDED BY THE MANUFACTURER TO SUPPORT THE GEOTEXTILE FABRIC.

TEMPORARY TYPE A SILT FENCE
N.T.S.

REVISIONS	DATE
CANNON & CANNON INC. CONSULTING ENGINEERS - FIELD SURVEYORS TEL 865.670.8555 8650 Kingston Pike WWW.CANNON-CANNON.COM Knoxville, TN 37919	
CLIENT:	HARRIMAN UTILITY BOARD 300 NORTH ROANE STREET HARRIMAN, TN 37748 (865) 882-3242
PROJECT:	SRF DISTRIBUTION SYSTEM REPAIRS CONTRACT I HARRIMAN, TN
TYPICAL DETAILS (PART 3 OF 3)	
	CCI PROJECT NO. 00923-0002 DRAWING DATE MARCH 27, 2015 PM RGL PC SEB/TJ DRAWN WDW FR SEB
D1 03	

GENERAL NOTES:

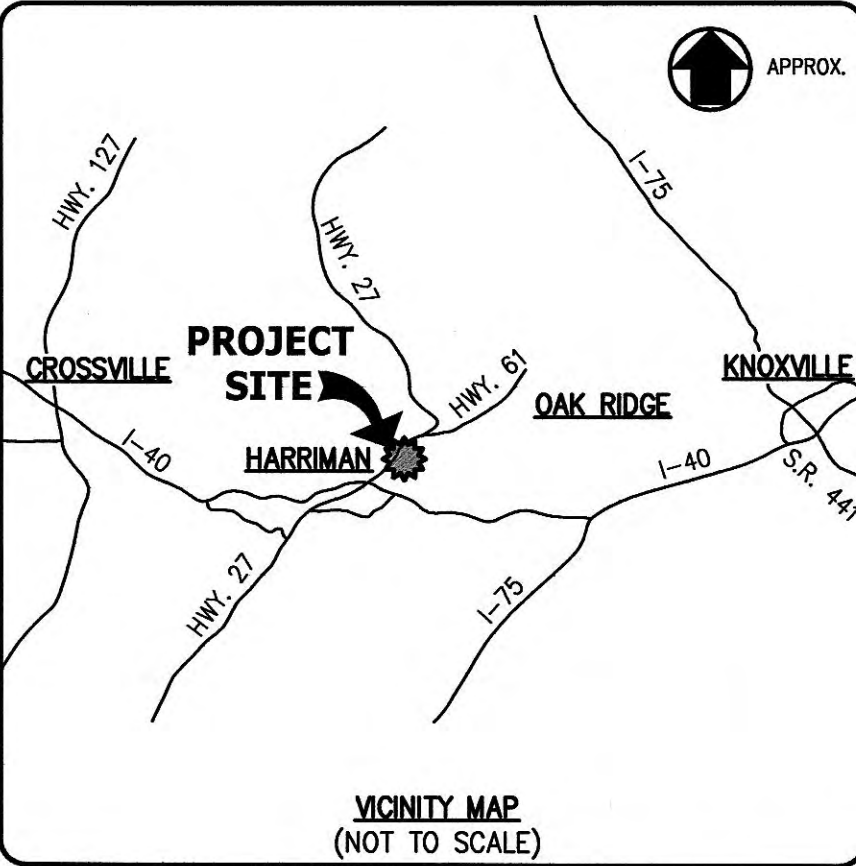
1. THE LOCATIONS OF THE EXISTING UTILITIES SHOWN ON THESE DRAWINGS ARE APPROXIMATE AND INCOMPLETE. THE EXACT LOCATIONS SHALL BE DETERMINED IN THE FIELD BY CONTACTING THE UTILITY COMPANIES INVOLVED AND POT-HOLING AS NECESSARY.
2. EXISTING WATER LINE DIAMETERS AND MATERIALS ARE FROM HISTORICAL RECORDS. CONTRACTOR SHALL VERIFY BY POT-HOLING PRIOR TO ORDERING MATERIAL FOR TIE-INS, CUT AND CAPS, AND BANDING.
3. PROVIDE ALL NECESSARY PROTECTIVE MEASURES TO SAFEGUARD THE EXISTING UTILITIES FROM DAMAGE DURING THE CONSTRUCTION OF THIS PROJECT. FURNISH ANY SPECIAL EQUIPMENT REQUIRED TO WORK OVER AND AROUND THE UTILITIES WITHOUT CAUSING THEM DAMAGE. IF DAMAGE DOES OCCUR, IMMEDIATELY NOTIFY UTILITY OWNER AND WORK TO RESTORE SERVICE. COST OF REPAIR OR REPLACEMENT OF DAMAGED LINES SHALL BE CONTRACTOR'S RESPONSIBILITY.
4. PRIOR TO COMMENCING WORK, THE CONTRACTOR SHALL CONTACT THE UTILITY OWNERS TO NOTIFY THEM OF WORK IN THE AREA AND REQUEST THEM TO PROPERLY LOCATE THEIR RESPECTIVE UTILITY. NOTIFICATION SHALL BE GIVEN AT LEAST THREE BUSINESS DAYS PRIOR TO COMMENCEMENT OF OPERATIONS AROUND THE UTILITY.
5. UTILITIES CAN BE LOCATED BY CALLING THE TENNESSEE ONE CALL SYSTEM, AT 811.
6. TRENCH DESIGN AND SAFETY FOR PIPELINE CONSTRUCTION IS SOLELY THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL CONFORM WITH ALL APPLICABLE LOCAL, STATE, AND OSHA REGULATIONS.
7. STONE BEDDING AND BACKFILL SHALL BE INSTALLED IN STRICT COMPLIANCE WITH THE PROJECT SPECIFICATIONS.
8. ALL WATER LINES AND APPURTENANCES SHALL BE INSTALLED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
9. WATER MAIN PIPE SHALL BE PRESSURE CLASS 350 D.I.P. OR SDR 17 PVC PER PROJECT SPECIFICATIONS.
10. CONTRACTOR SHALL INSTALL WATER LINES AT A POSITIVE GRADE BETWEEN DESIGNATED HIGH AND LOW POINTS TO PREVENT TRAPPING OF AIR.
11. PROPOSED 1" AIR RELEASE VALVES SHALL BE INSTALLED AT HIGH POINTS IN THE PROPOSED WATER LINE, AND SHALL BE FIELD LOCATED BY THE RESIDENT PROJECT REPRESENTATIVE.
12. CONTRACTOR TO COORDINATE FIELD LOCATIONS OF PROPOSED FIRE HYDRANTS, WATER SERVICES AND METERS WITH RESIDENT PROJECT REPRESENTATIVE.
13. VALVES, HYDRANTS AND METER ASSEMBLIES SHALL BE ORIENTED SO AS TO ASSURE WATER LINE APPURTENANCES ARE NOT LOCATED WITHIN SIDEWALK AND/OR CURB/CURB & GUTTER AREAS.
14. CONTRACTOR SHALL USE RESTRAINED JOINT FITTINGS FOR ALL WATER PIPE FITTINGS, EXCEPT FOR FITTINGS AT TIE-IN CONNECTIONS WHICH SHALL BE RESTRAINED WITH CONCRETE THRUST BLOCKS.
15. CONTRACTOR SHALL INSTALL DETECTION WIRE AND WARNING TAPE PER PROJECT SPECIFICATIONS.
16. WATER MAIN MIN. COVER SHALL BE 30"AND MAX. COVER SHALL BE 54", UNLESS OTHERWISE APPROVED BY HUB.
17. PAVEMENT SHALL BE SAW CUT IN RECTANGULAR SECTIONS WITH NEAT SQUARED EDGES.
18. BACKFILL IN PAVED AREAS SHALL BE COMPACTED IN MAXIMUM 6" LIFTS USING JUMPING JACK.
19. ALL INCIDENTAL WORK, INCLUDING LABOR AND MATERIALS, NECESSARY TO COMPLETE THE PROJECT AS SHOWN IN THE CONTRACT DOCUMENTS, FOR WHICH A SEPERATE PAY ITEM IS NOT SHOWN SHALL BE PERFORMED BY THE CONTRACTOR AND NO ADDITIONAL PAYMENT SHALL BE MADE. THE COST OF THIS WORK SHALL BE MERGED INTO THE UNIT PRICES BID FOR THE BID ITEMS SHOWN.
20. ALL 1/2" WATER METERS AND 1/2" WATER SERVICE PIPE SHALL BE REPLACED WITH 3/4" WATER METERS AND 3/4" WATER SERVICE PIPE.
21. WATER TAPS MUST BE PERFORMED WITH "HOT" LINES. TEMPORARY SHUT-DOWNS ARE NOT ALLOWED.
22. METER CONNECTIONS TO EXISTING METERS SHALL INCLUDE NEW CURB STOP AND SPUD TO METER AND NEW RUBBER GASKET ON METER.

EXISTING LEGEND

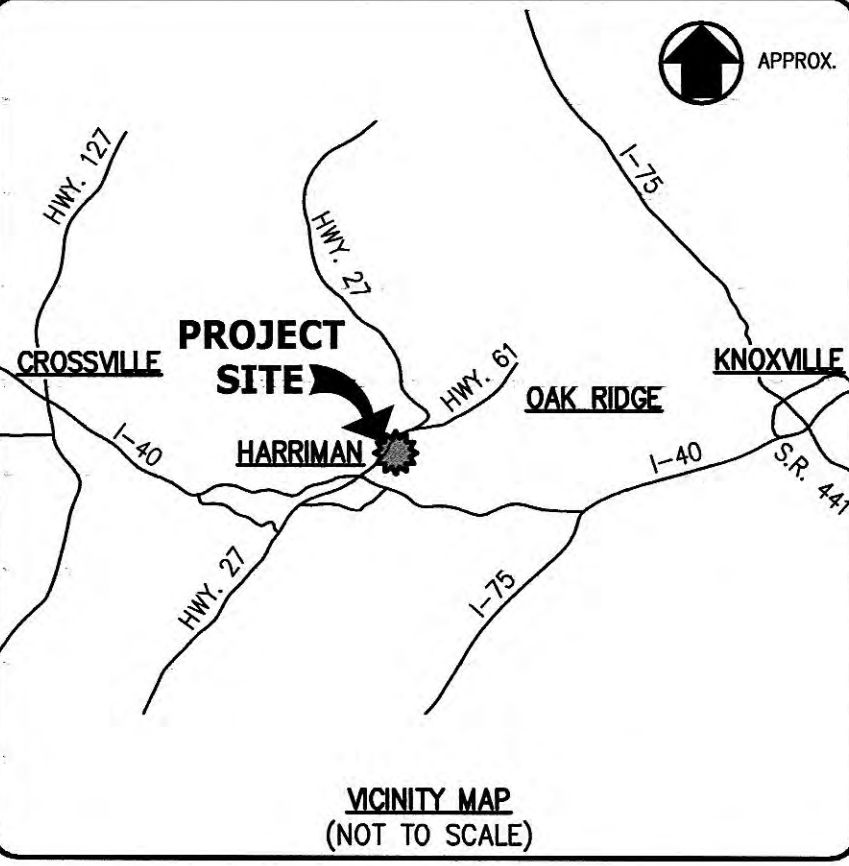
---	EXISTING PROPERTY LINE
==ST==	STORM SEWER LINE
---SA---	SANITARY SEWER LINE
---W---	EXISTING WATER LINE
-X-X-	FENCE LINE
---GAS---GAS---	EXISTING UNDERGROUND GAS LINE
---F---F---	EXISTING FIBER OPTIC LINE
WV	EXISTING WATER VALVE
◇	EXISTING FIRE HYDRANT
⊞	GAS METER
⊞	EXISTING WATER METER
⊞	SIGN
⊞	EXISTING SANITARY MANHOLE

PROPOSED LEGEND

---	PROPOSED WATER LINE
////X////	EXISTING WATER LINE TO BE RETIRED
WV	PROPOSED WATER VALVE
WV	PROPOSED BLOW OFF
◇	PROPOSED FIRE HYDRANT
⊞	WATER METER TO BE REPLACED



REVISIONS		DATE	
CANNON & CANNON INC CONSULTING ENGINEERS · FIELD SURVEYORS TEL 865.670.8555 8560 Kingston Pike WWW.CANNON-CANNON.COM Knoxville, TN 37919			
CLIENT:		HARRIMAN UTILITY BOARD 300 NORTH ROANE STREET HARRIMAN, TN 37748 (865) 882-3242	
PROJECT:		SRF DISTRIBUTION SYSTEM REPAIRS CONTRACT I HARRIMAN, TN	
NOTES & LEGEND			
		CCI PROJECT NO. 00923-0002	
DRAWING DATE		MARCH 27, 2015	
PM	TFT	QC	SAF
DRAWN	WBW	CR	
		W002	

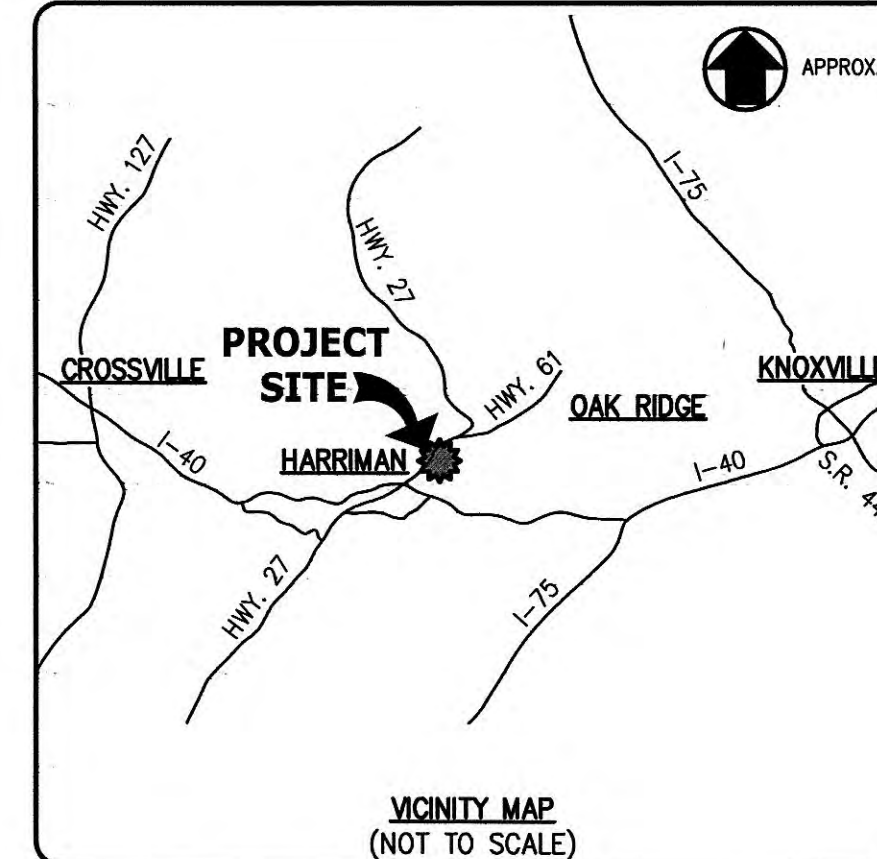
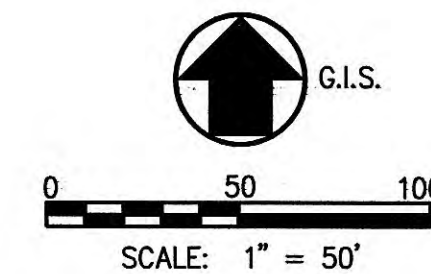


- NOTES:**
1. REFER TO GENERAL NOTES ON DRAWING WD.02 FOR TYPICAL REQUIREMENTS.
 2. PE JOINTS SHALL BE FORMED BY ELECTROFUSE COUPLINGS.
 3. WATER LINES SHALL BE INSTALLED WITH A MINIMUM OF 10' HORIZONTAL SEPARATION FROM EXISTING SANITARY SEWER. WHERE 10' SEPARATION CANNOT BE ACHIEVED, WATER LINE SHALL BE MINIMUM 18" ABOVE SANITARY SEWER.
 4. CONTRACTOR SHALL NOT CLOSE ANY VALVES WITHOUT THE PRESENCE OF HUB STAFF.
 5. HUB WILL ASSIST WITH THROTTLING DOWN WATER PRESSURE FOR TIE-INS AND CUT & CAPS. WATER WILL NOT BE COMPLETELY SHUT OFF. ALL TIE INS AND CUT AND CAPS SHALL BE MADE WET.
 6. PRESSURE TESTING AND DISINFECTION PROCEDURES SHALL BE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
 7. SALVAGE MATERIALS OF VALUE TO BE REMOVED FROM GROUND DURING PROJECT SHALL BE DELIVERED TO HUB. THIS INCLUDES, BUT IS NOT LIMITED TO COPPER TUBING, HYDRANTS, METERS, BOXES, BLOW-OFFS, ETC.

REVISIONS		DATE
CANNON & CANNON INC. CONSULTING ENGINEERS - FIELD SURVEYORS TEL: 865.670.8555 8650 Kingston Pike WWW.CANNON-CANNON.COM KNOXVILLE, TN 37919		
CLIENT:	HARRIMAN UTILITY BOARD 300 NORTH ROANE STREET HARRIMAN, TN 37748 (865) 882-3242	
PROJECT:	SRF DISTRIBUTION SYSTEM REPAIRS CONTRACT I HARRIMAN, TN	
SILURIA ST. WATER LINE "A" PLAN STA. 0+00 TO STA. 9+24± (E.O.L.)		
	CCI PROJECT NO.	00923-0002
	DRAWING DATE	MARCH 26, 2015
	PM	TFT QC SAF
	DRAWN	WBW CR
W1 01		

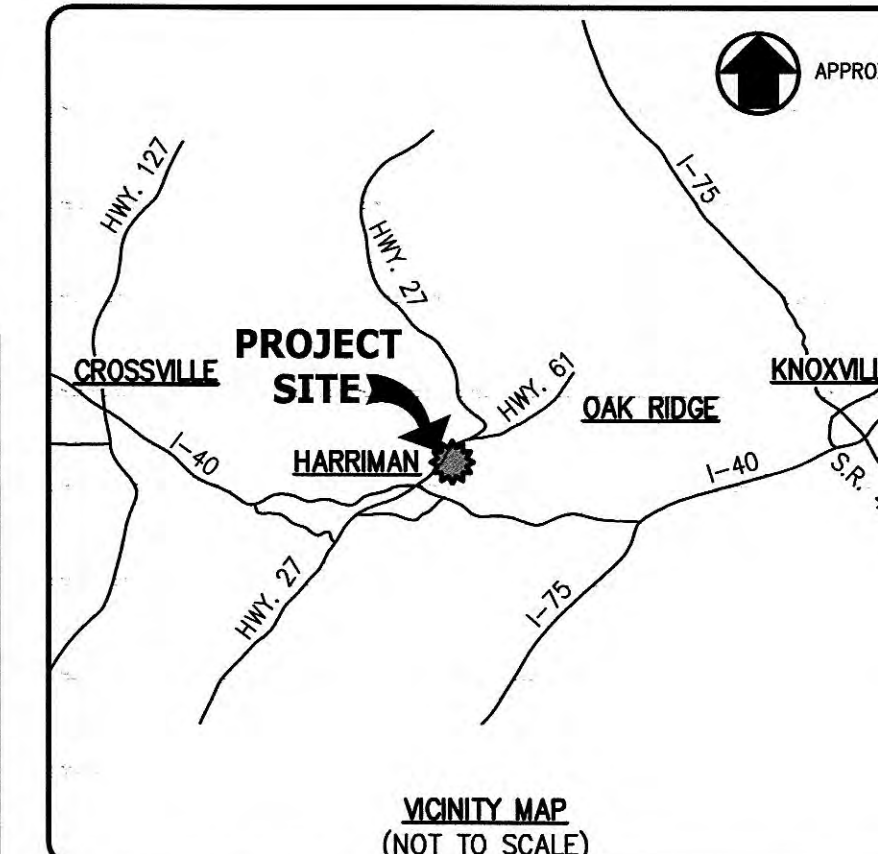
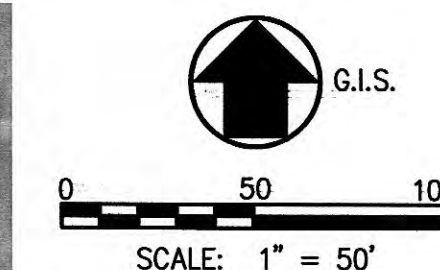
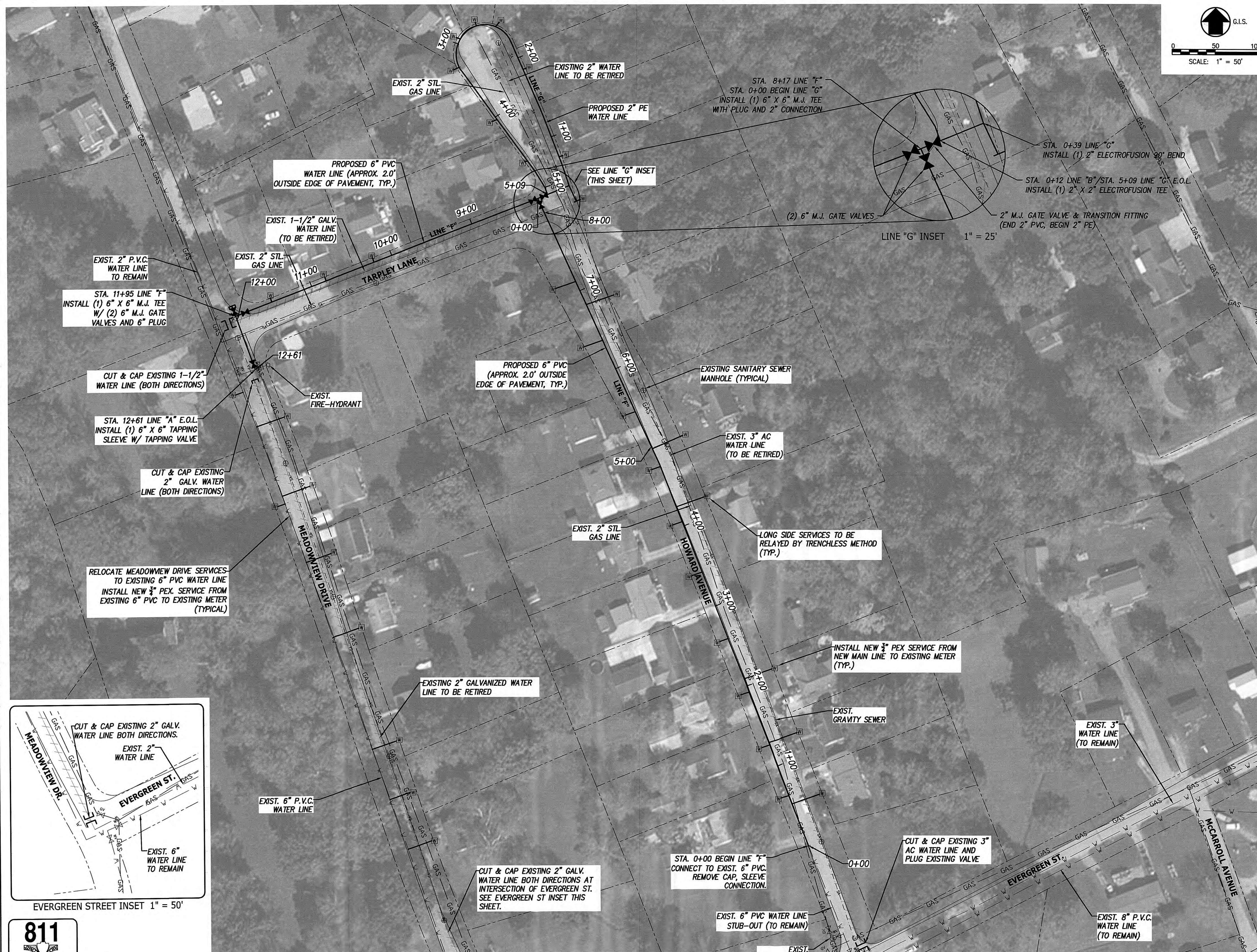


MATCH LINE (SEE SHT. W1.02 FOR CONTINUATION)



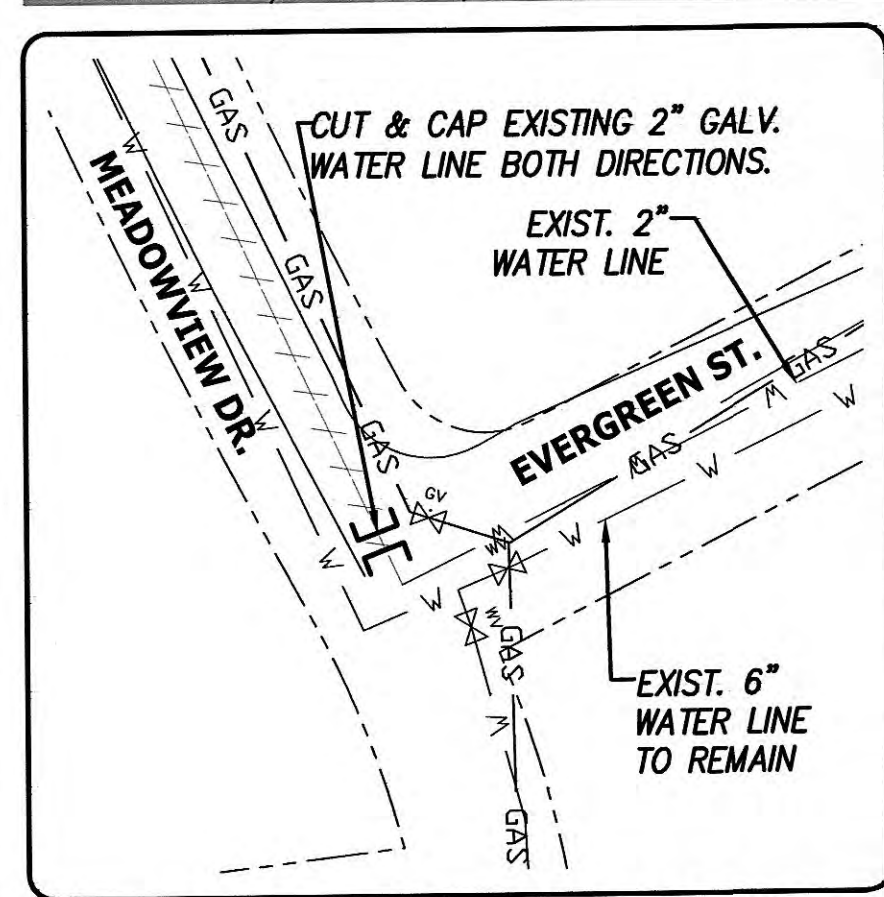
- NOTES:**
1. REFER TO GENERAL NOTES ON DRAWING W0.02 FOR TYPICAL REQUIREMENTS.
 2. PE JOINTS SHALL BE FORMED BY ELECTROFUSE COUPLINGS.
 3. WATER LINES SHALL BE INSTALLED WITH A MINIMUM OF 10' HORIZONTAL SEPARATION FROM EXISTING SANITARY SEWER. WHERE 10' SEPARATION CANNOT BE ACHIEVED, WATER LINE SHALL BE MINIMUM 18" ABOVE SANITARY SEWER.
 4. CONTRACTOR SHALL NOT CLOSE ANY VALVES WITHOUT THE PRESENCE OF HUB STAFF.
 5. HUB WILL ASSIST WITH THROTTLING DOWN WATER PRESSURE FOR TIE-INS AND CUT & CAPS. WATER WILL NOT BE COMPLETELY SHUT OFF. ALL TIE-INS AND CUT AND CAPS SHALL BE MADE WET.
 6. PRESSURE TESTING AND DISINFECTION PROCEDURES SHALL BE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
 7. SALVAGE MATERIALS OF VALUE TO BE REMOVED FROM GROUND DURING PROJECT SHALL BE DELIVERED TO HUB. THIS INCLUDES, BUT IS NOT LIMITED TO COPPER TUBING, HYDRANTS, METERS, BOXES, BLOW-OFFS, ETC.

REVISIONS		DATE
CANNON & CANNON INC. CONSULTING ENGINEERS - FIELD SURVEYORS TEL 865.670.8555 8550 Kingston Pike WWW.CANNON-CANNON.COM Knoxville, TN 37919		
CLIENT: HARRIMAN UTILITY BOARD 300 NORTH ROANE STREET HARRIMAN, TN 37748 (865) 882-3242		
PROJECT: SRF DISTRIBUTION SYSTEM REPAIRS CONTRACT I HARRIMAN, TN		
DEVONIA ST. WATER LINE "B" PLAN STA. 12+10± TO STA. 16+40± (E.O.L.) QUEEN AVE. WATER LINE "E" PLAN STA. 0+00 TO STA. 8+10		
	CD PROJECT NO. 00923-0002 DRAWING DATE MARCH 26, 2015 PM TTF QC SAF DRAWN WBW CR	
W1 03		

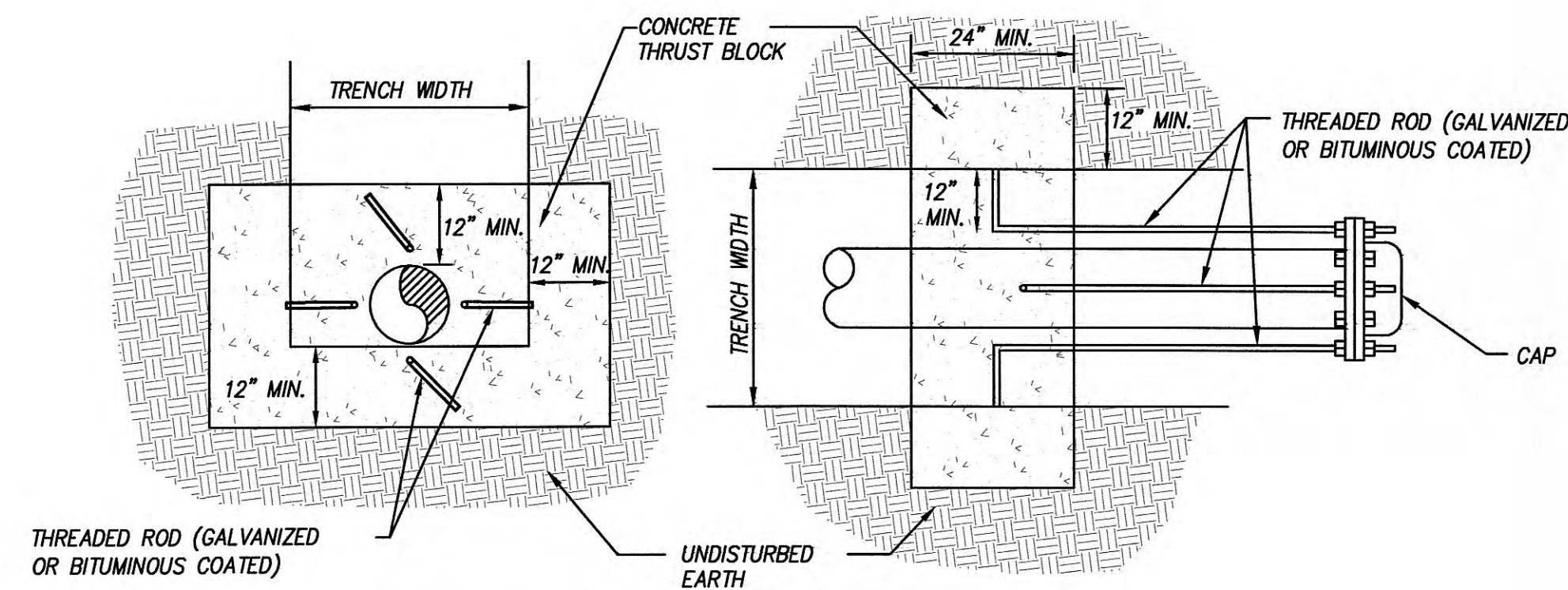


- NOTES:**
1. REFER TO GENERAL NOTES ON DRAWING W0.02 FOR TYPICAL REQUIREMENTS.
 2. PE JOINTS SHALL BE FORMED BY ELECTROFUSE COUPLINGS.
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CLIENT: HARRIMAN UTILITY BOARD 300 NORTH ROANE STREET HARRIMAN, TN 37748 (865) 882-3242		
PROJECT: SRF DISTRIBUTION SYSTEM REPAIRS CONTRACT I HARRIMAN, TN		
ALTERNATE 1 HOWARD AVE. WATER LINE "F" PLAN STA. 0+00 TO STA. 12+61± (EOL) TARPLEY LN. WATER LINE "G" PLAN STA. 0+00 TO STA. 5+09± (EOL)		
	CCI PROJECT NO. 00923-0002 DRAWING DATE MARCH 26, 2015 PM TTF QC SAF DRAWN WBW CR	W1 04



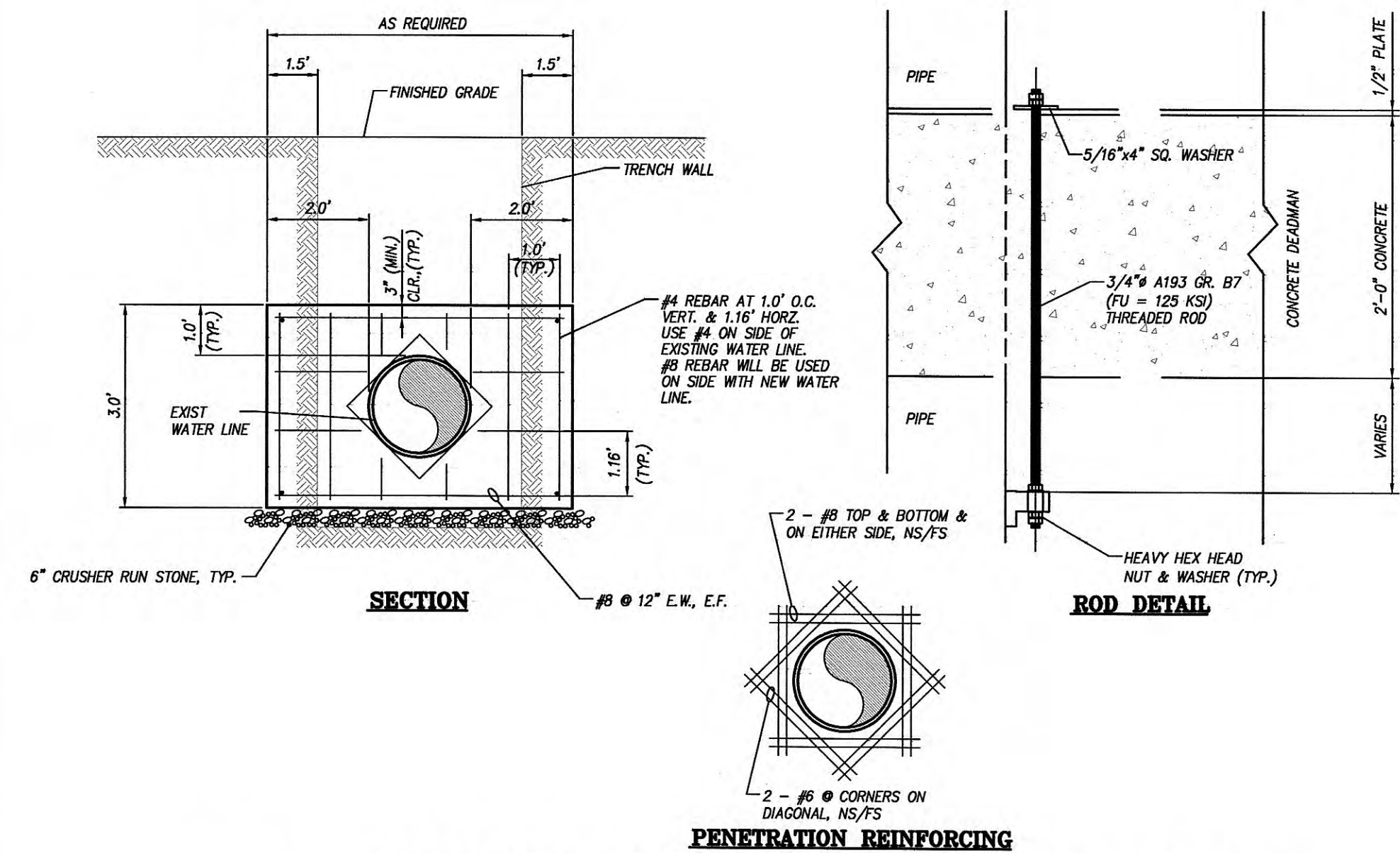
EVERGREEN STREET INSET 1" = 50'



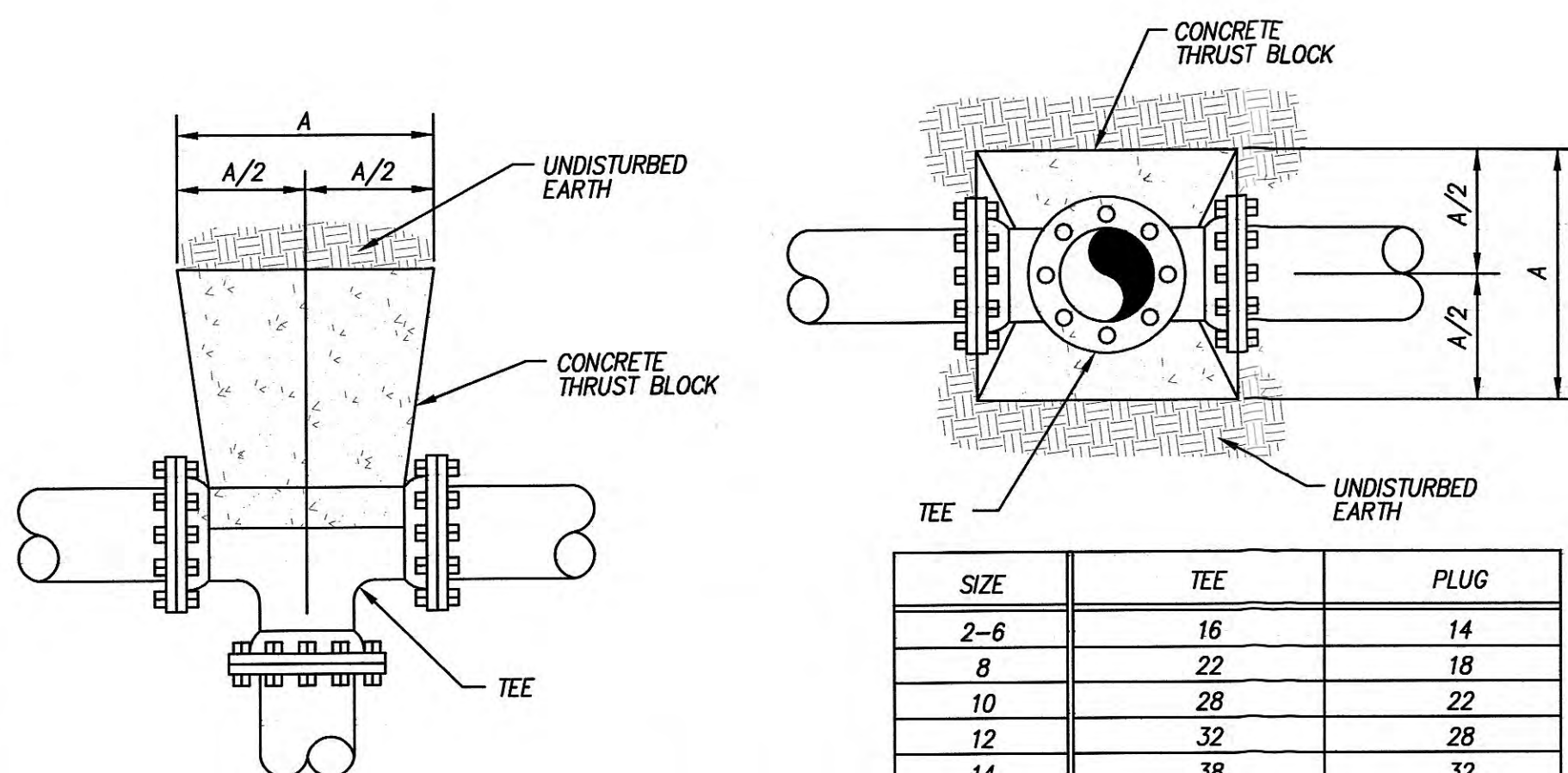
NOTES:

- HUB WILL ASSIST WITH THROTTLING DOWN WATER PRESSURE FOR CUT & CAPS AND BANDING. WATER WILL NOT BE COMPLETELY SHUT OFF. ALL CUT AND CAPS AND BANDING SHALL BE PERFORMED WET.
- CONTRACTOR SHALL PROVIDE CAP WITH 2" OUTLET TO RELIEVE PRESSURE, AND 2" GATE VALVE (PER SPECIFICATIONS) TO CAP LINES UNDER POSITIVE WATER PRESSURE AS APPROVED BY RESIDENT PROJECT REPRESENTATIVE. CAPS SHALL BE PAID BY WEIGHT UNDER DIP FITTINGS. VALVES SHALL BE PAID AS 2" GATE VALVE WITHOUT BOX FOR CUT AND CAP. WATER ABANDONMENT LUMP SUM PRICES SHALL BE COMPENSATION FOR EXCAVATION, THRUST BLOCK, MECHANICAL RESTRAINTS, UNSCREWING EXISTING WATER LINE, BANDING, BACKFILL, SITE RESTORATION AND ANY OTHER LABOR AND MATERIALS REQUIRED TO ABANDON WATER LINES AND INFRASTRUCTURE AT EACH PROJECT SITE.

TYPICAL CUT AND CAP DETAIL/ THRUST BLOCKS FOR CAPS.



TYPICAL THRUST BLOCKS FOR STRAIGHT TIE-IN TO EXISTING PIPE

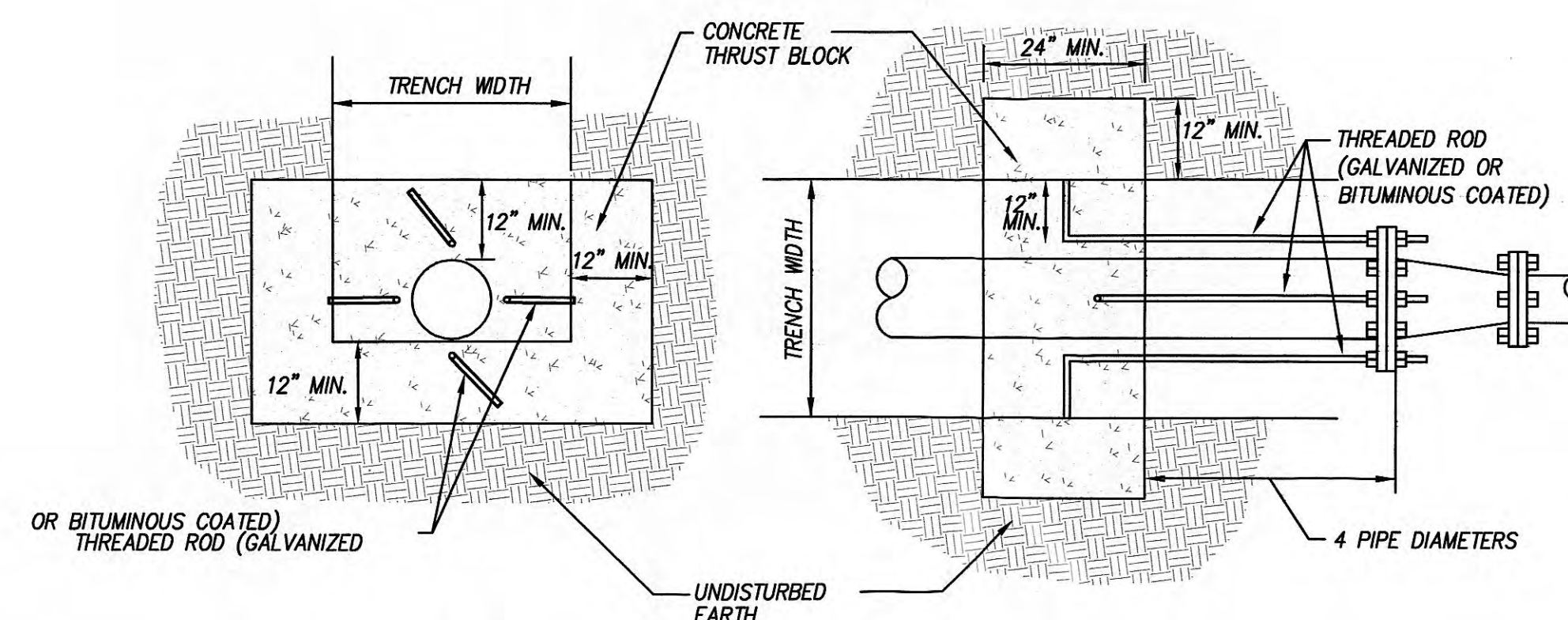


- NOTES:
- FITTING JOINTS SHALL NOT BE POURED IN CONCRETE OR HAVE CONCRETE SPILLED ON THE BOLTS OR NUTS. THE FITTING SHALL BE WRAPPED IN A LAYER OF POLYETHYLENE PLASTIC PRIOR TO POURING THE THRUST BLOCK.
 - ROD AND EYE BOLT DIAMETER SHALL BE A MINIMUM OF 3/4" AND SHALL MATCH THE SIZE OF THE BOLT PROVIDED WITH THE FITTING.
 - CONTRACTOR SHALL REPLACE FITTING BOLTS WITH THREADED ROD FOR 1/2 OF THE BOLTS SUPPLIED WITH EACH FITTING. RODS SHALL BE EQUALLY SPACED.

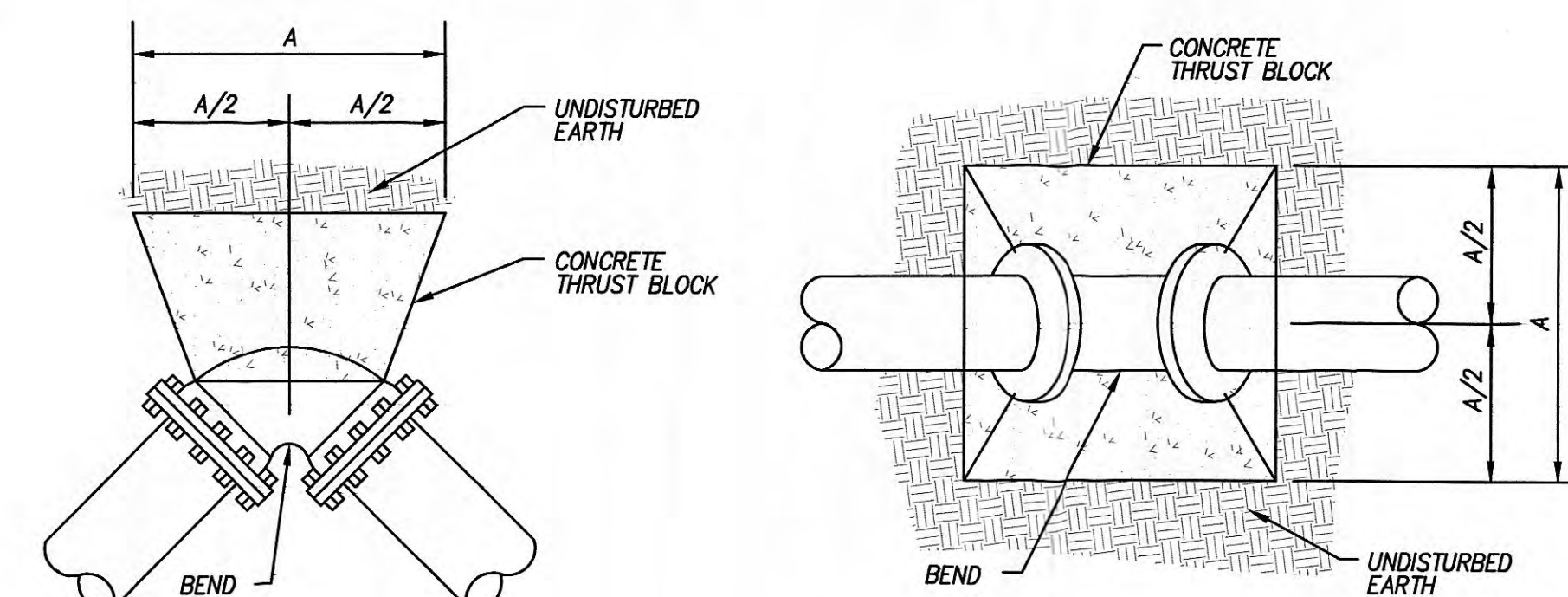
SIZE	TEE	PLUG
2-6	16	14
8	22	18
10	28	22
12	32	28
14	38	32
16	42	36
18	48	40
20	52	44
24	64	54
30	78	66
36	94	80
42	108	92
48	124	104

THRUST BLOCK DIMENSION "A"
NOT TO SCALE

TYPICAL THRUST BLOCKS FOR TEES



TYPICAL THRUST BLOCK FOR REDUCERS



SIZE	11-1/4" BEND	22-1/2" BEND	45" BEND	90" BEND
2-6	12	12	12	16
8	12	12	16	22
10	12	14	20	

THRUST BLOCK DIMENSION "A"
NOT TO SCALE

NOTES:

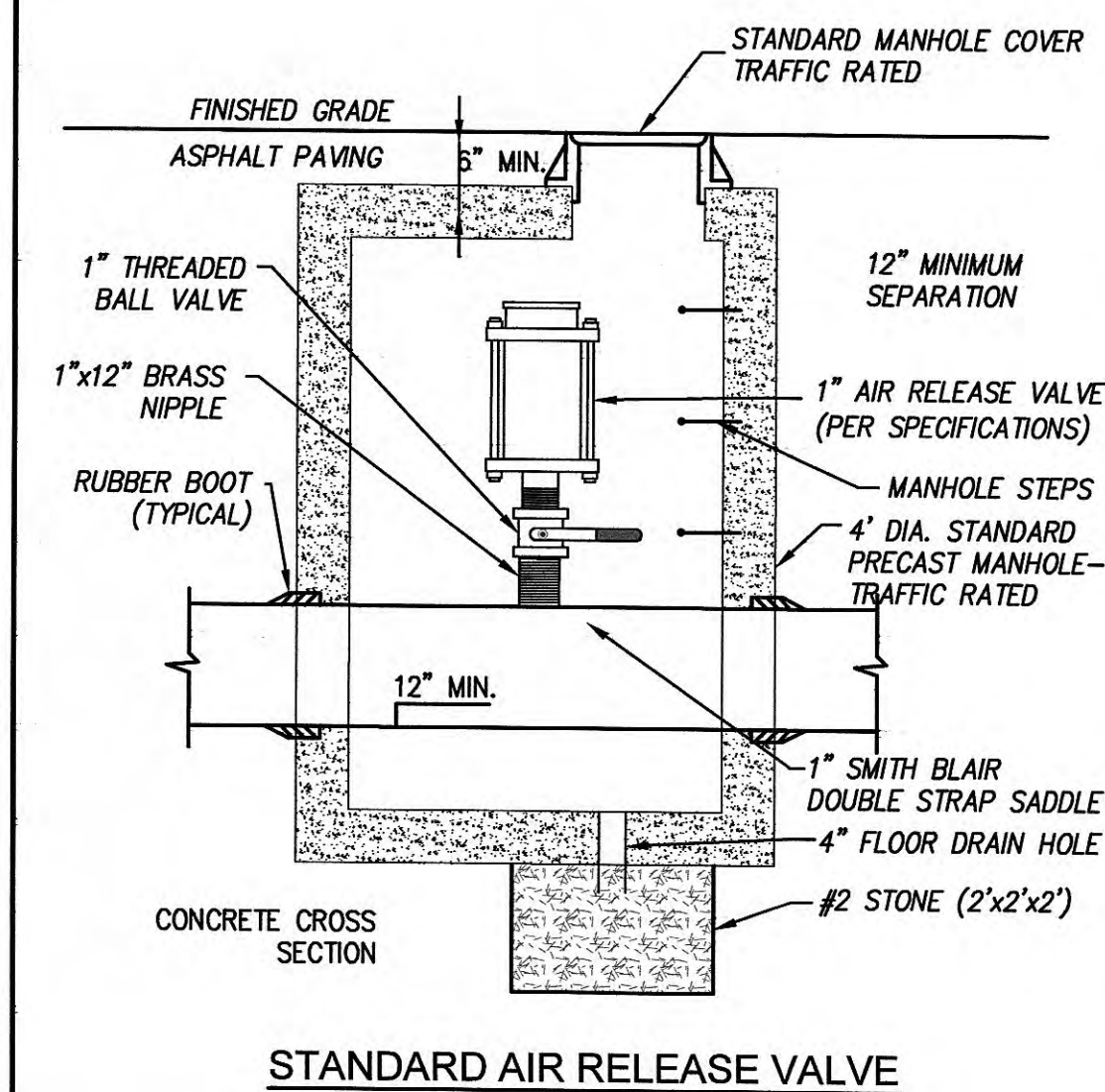
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Fitting/Valve Type	Pipe Size (Inches)			
	2	4	6	8
Minimum Restrained Length (feet)				
Plug	40	40	60	80
Inline Valve	40	40	60	80
Tee	40	40	60	80
90° Bend	20	40	40	40
45° Bend	20	20	20	20
22.5° Bend	20	20	20	20
11.25° Bend	20	20	20	20
5° Bend	20	20	20	20

NOTES:

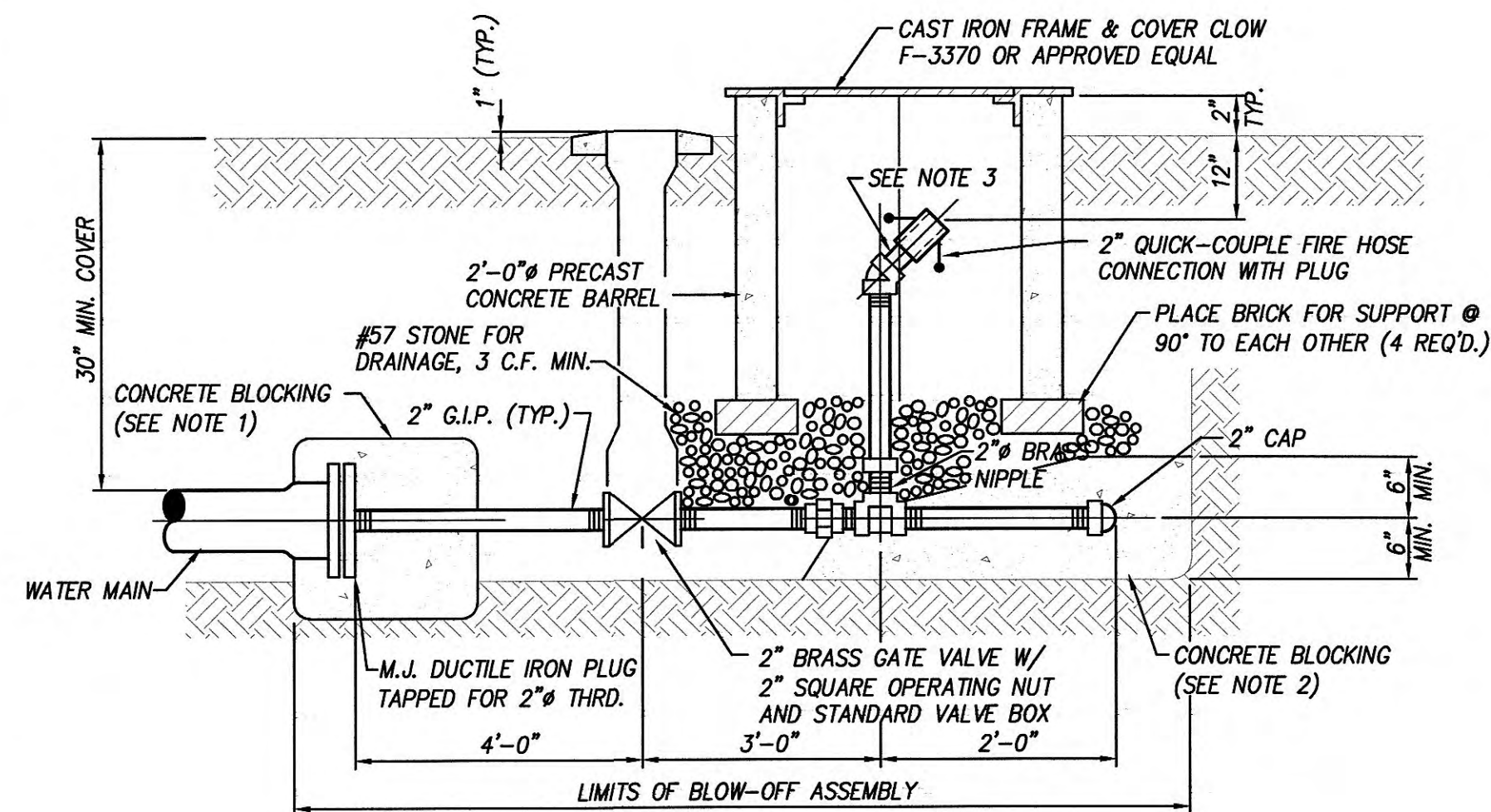
- CONTRACTOR SHALL USE RESTRAINED JOINT FITTINGS FOR EVERY FITTING INSTALLED ON THE PROJECT. REACTION BLOCKING SHALL ONLY BE USED AT TIE-IN CONNECTIONS TO SECURE NEW PIPE TO EXISTING PIPE.
- WHERE RESTRAINED JOINT FITTINGS ARE REQUIRED BY THE PLANS OR SPECIFICATIONS, RESTRAINED JOINT FITTINGS MUST BE INSTALLED AS REQUIRED BY THE TABLES AND NOTES FOUND WITHIN THE PLANS AND SPECIFICATIONS.
- MECHANICAL RESTRAINED JOINT FITTINGS SHALL BE "MEGALUG" AS MANUFACTURED BY EBAA IRON, INC. OR APPROVED EQUAL AND SHALL BE INSTALLED ON EVERY FITTING.
- CONTRACTOR SHALL INSTALL RESTRAINING GASKETS FOR PUSH-ON JOINT PIPE A MINIMUM DISTANCE FROM EACH VALVE OR FITTING AS REQUIRED IN THE ABOVE TABLE.
- RESTRAINING GASKETS FOR PUSH-ON JOINT PIPE SHALL MEET UTILITY OWNER SPECIFICATIONS.

THRUST RESTRAINT JOINT TABLE



STANDARD AIR RELEASE VALVE

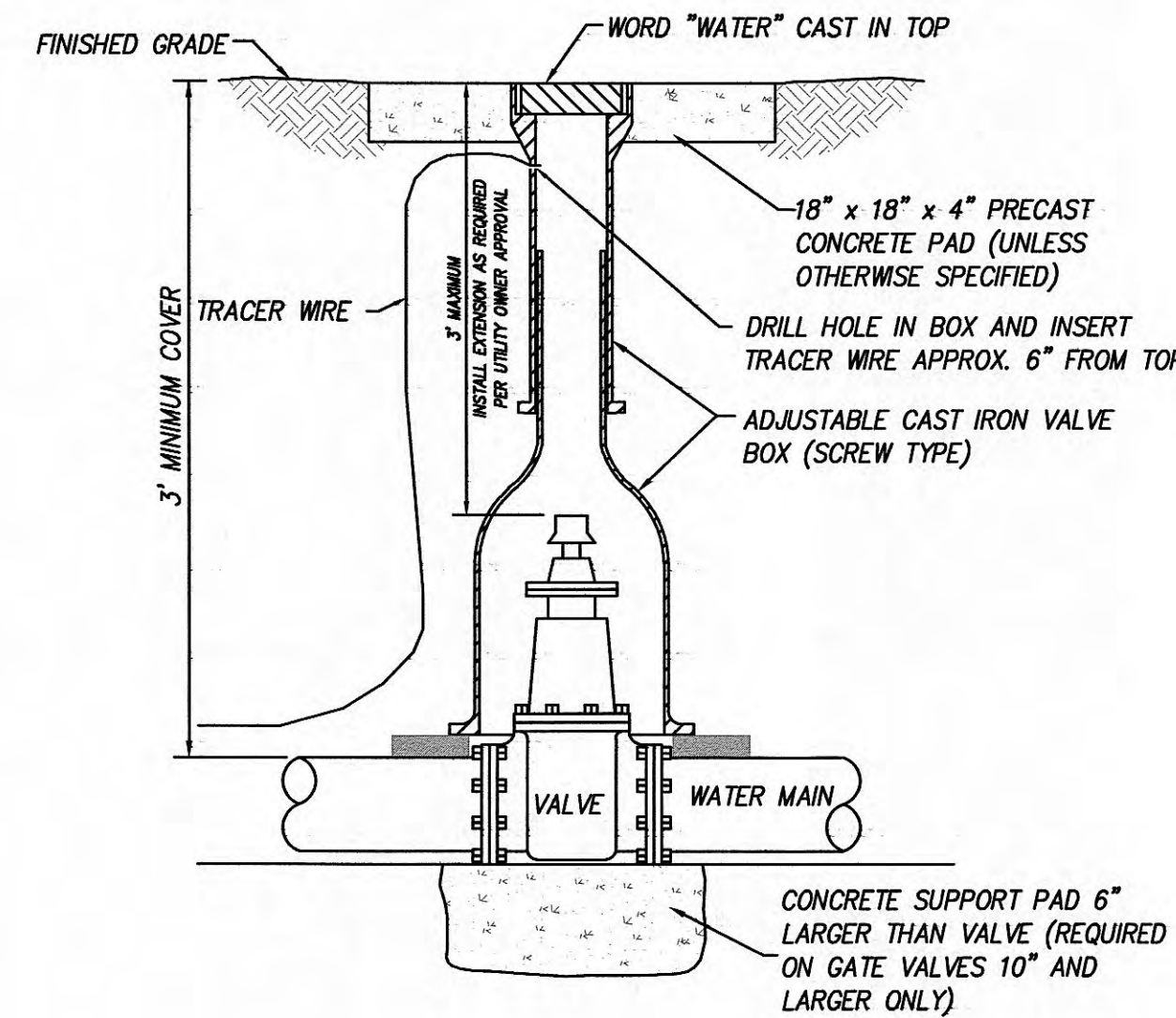
REVISIONS		DATE
CANNON & CANNON INC. CONSULTING ENGINEERS - FIELD SURVEYORS TEL 865.670.8555 8560 Kingston Pike WWW.CANNON-CANNON.COM Knoxville, TN 37919		
CLIENT:	HARRIMAN UTILITY BOARD 300 NORTH ROANE STREET HARRIMAN, TN 37748 (865) 882-3242	
PROJECT:	SRF DISTRIBUTION SYSTEM REPAIRS CONTRACT I HARRIMAN, TN	
TYPICAL DETAILS (PART 1 OF 3)		
CCI PROJECT NO.	00923-0002	
DRAWING DATE	MARCH 27, 2015	
PM	RGL	PC SEB/TJ
DRAWN	WBW	FR SEB
D1 01		



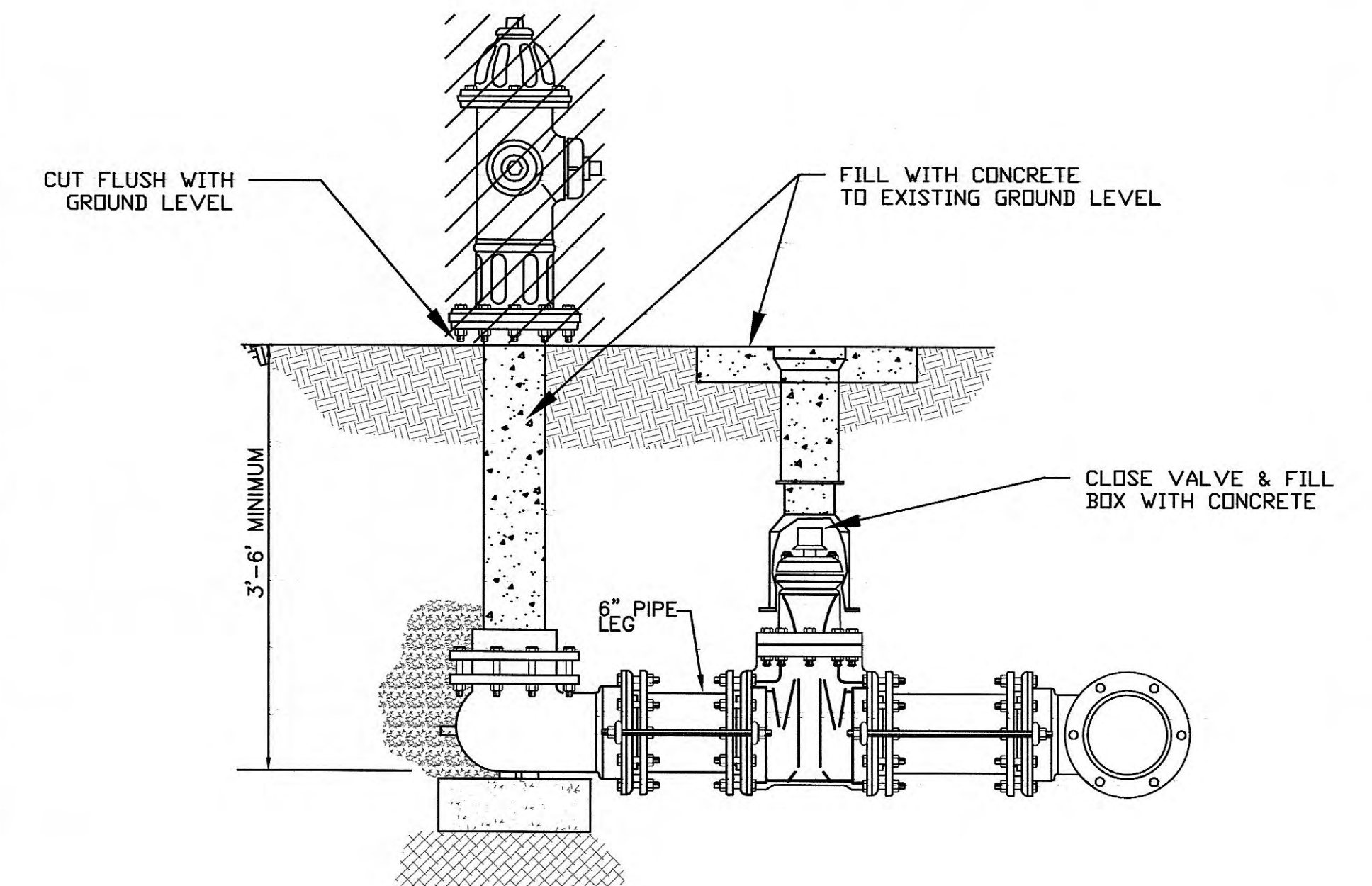
NOTES :

1. CONCRETE BLOCKING AT WATER MAIN PLUG FOR BLOW-OFF PIPE CONNECTION SHALL BE A MINIMUM OF 1'-6" THICK AND BE CUT A MINIMUM OF 1'-0" INTO UNDISTURBED SOIL ON EACH SIDE AND BELOW THE PIPE TRENCH.
2. CONCRETE BLOCKING BELOW "TEE" AND BEHIND PIPE CAP SHALL BE THE WIDTH OF THE TRENCH OR 1'-0" WHICH EVER IS GREATER, AND SHALL BEAR AGAINST UNDISTURBED SOIL.
3. ALL THREADED PIPE SHALL BE JOINTED USING HEAVY DUTY TEFLON JOINT TAPE. ALL EXPOSED THREADS AND ALL GALVANIZED IRON PIPE SHALL BE CLEANED OF ALL GREASE, OIL, DEBRIS & OTHER SOILING AND SHALL RECEIVE A HEAVY COAT OF COAL-TAR EPOXY COATING PRIOR TO BACKFILLING.

TYPICAL BLOW-OFF ASSEMBLY
N.T.S.

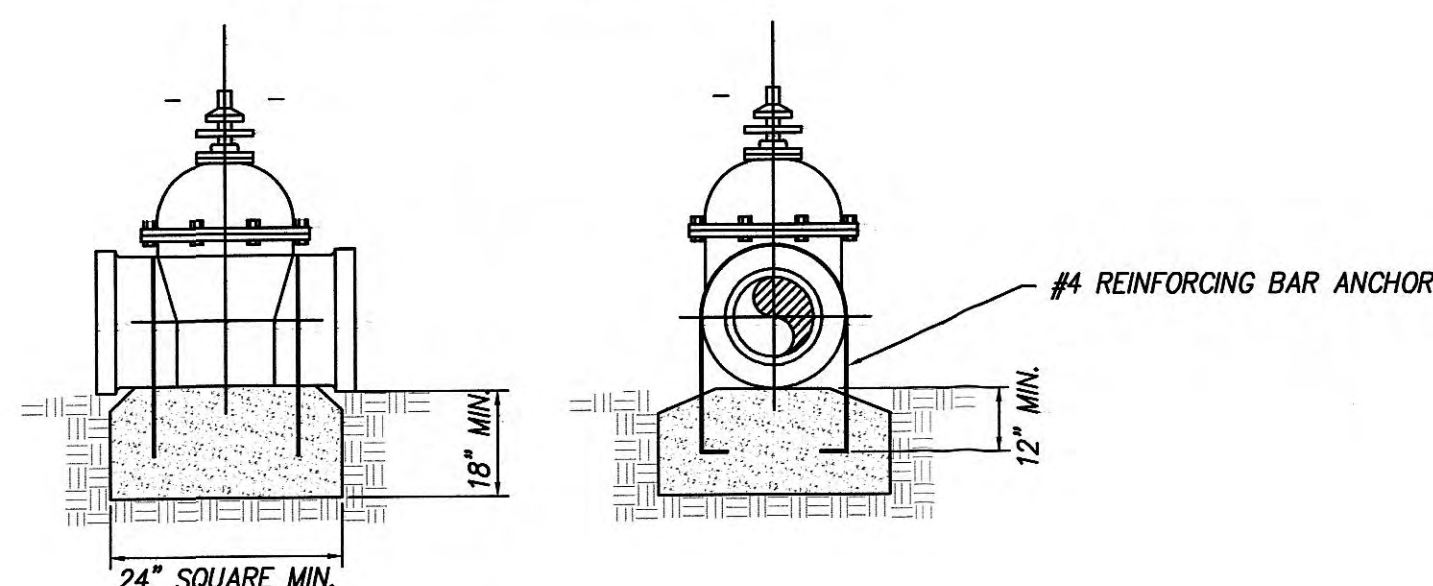


TYPICAL VERTICAL GATE VALVE ASSEMBLY
N.T.S.

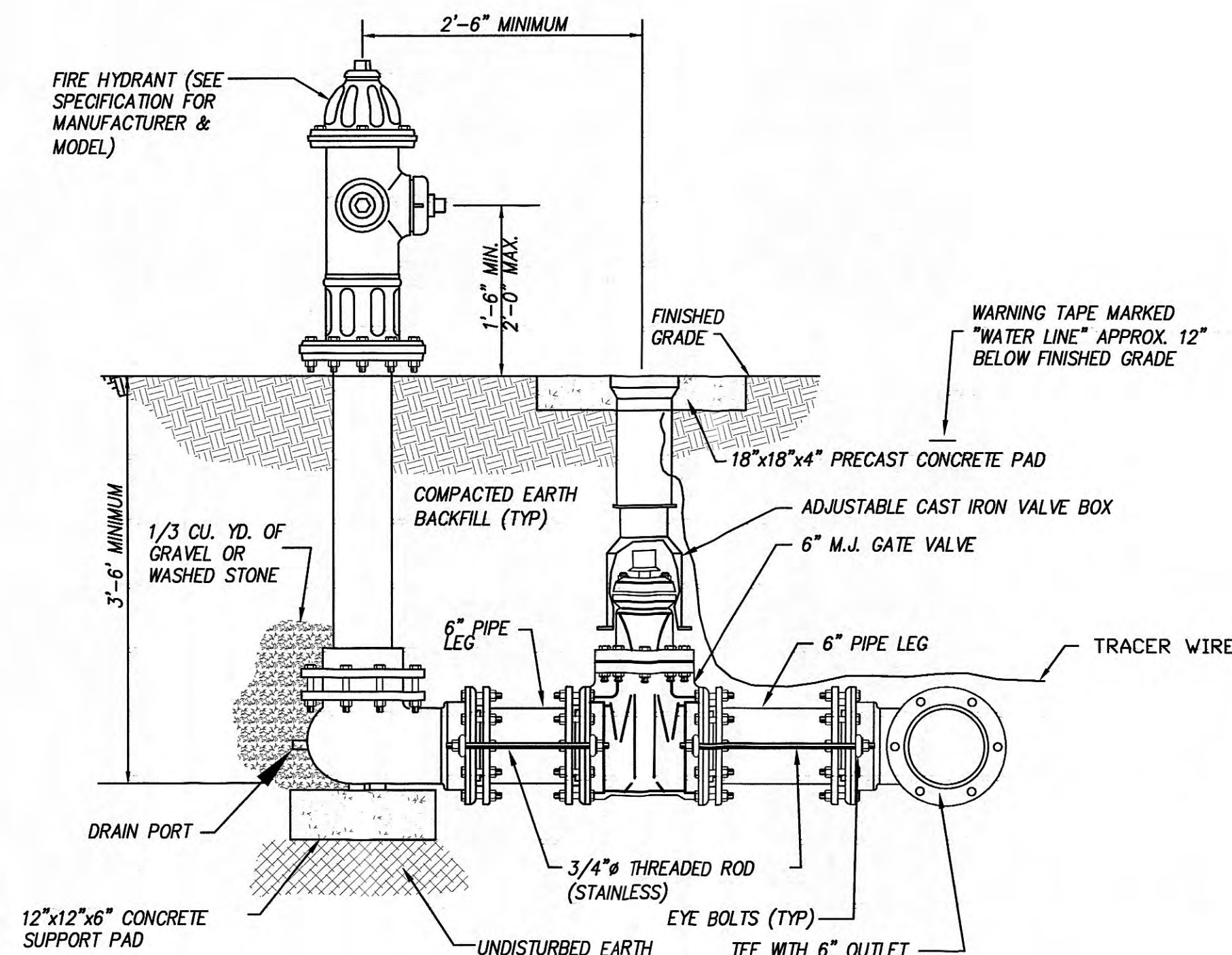


PINE STREET HYDRANT RETIRE DETAIL
N.T.S.

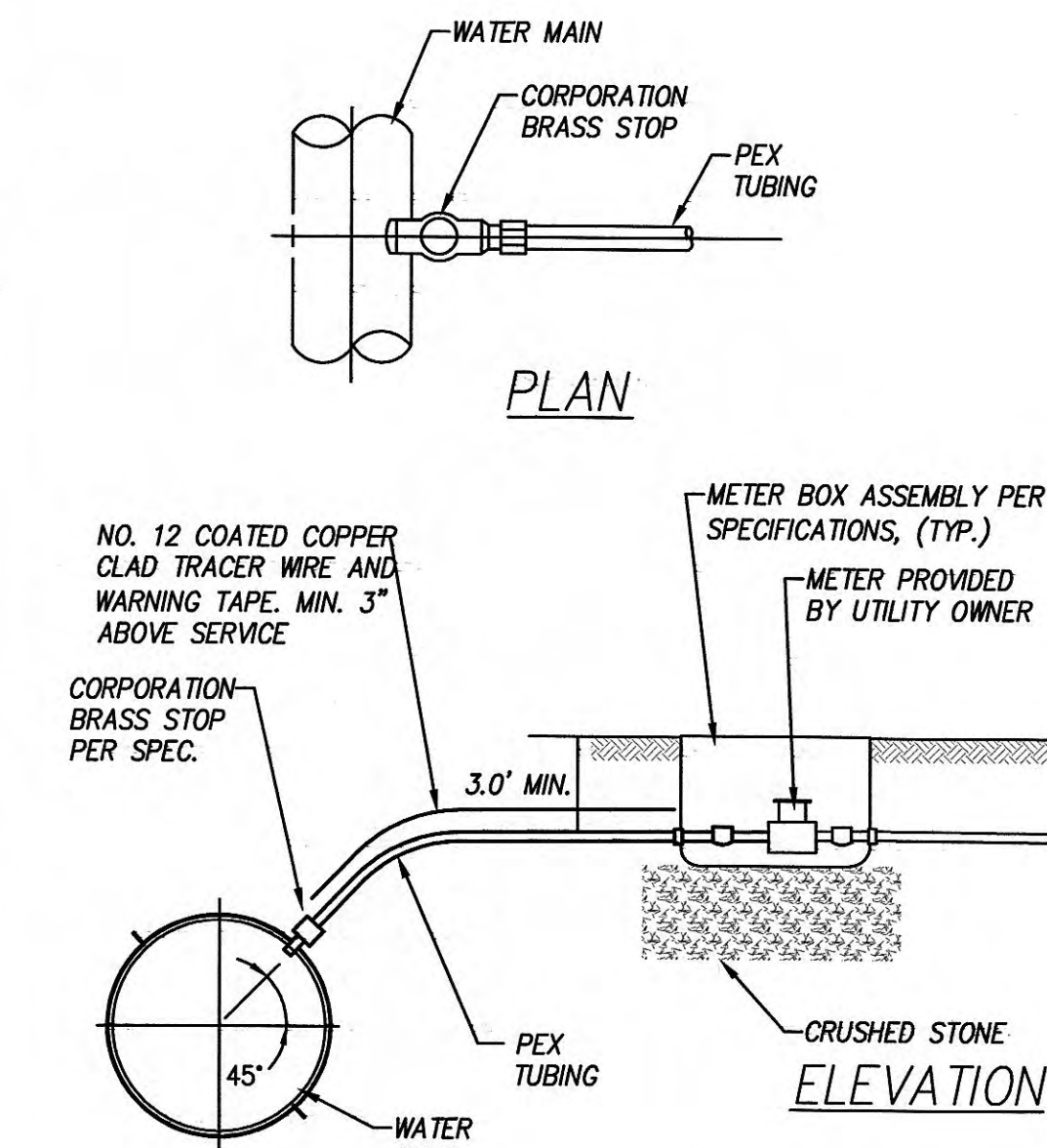
SIZE OF VALVE	CONCRETE CU. FT.
2" & 2 1/4"	1.0
3" & 4"	1.0
6"	1.3
8"	1.5
10"	1.8



TYPICAL THRUST BLOCKS FOR VALVES
N.T.S.



TEMPORARY FIRE HYDRANT ASSEMBLY DETAIL
N.T.S.



WATER SERVICE DETAIL
N.T.S.

REVISIONS		DATE
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CLIENT: HARRIMAN UTILITY BOARD 300 NORTH ROANE STREET HARRIMAN, TN 37748 (865) 882-3242		
PROJECT: SRF DISTRIBUTION SYSTEM REPAIRS CONTRACT I HARRIMAN, TN		
TYPICAL DETAILS (PART 2 OF 3)		
CCI PROJECT NO. 00923-0002 DRAWING DATE MARCH 27, 2015 PM RGL PC SEB/TJ DRAWN WSW FR SEB	D1 02	

