



**GWINNETT COUNTYS
DEPARTMENT OF WATER RESOURCES**

CONTRACT DOCUMENTS

For

**48-INCH PCCP REPLACEMENT
(LOGANVILLE HIGHWAY TO GRAYSON TANK)**

**GCDWR Project No. M-0735-59
Bid No. BL010-19**

**VOLUME III
Standard Drawings**

November 2018

Prepared By:



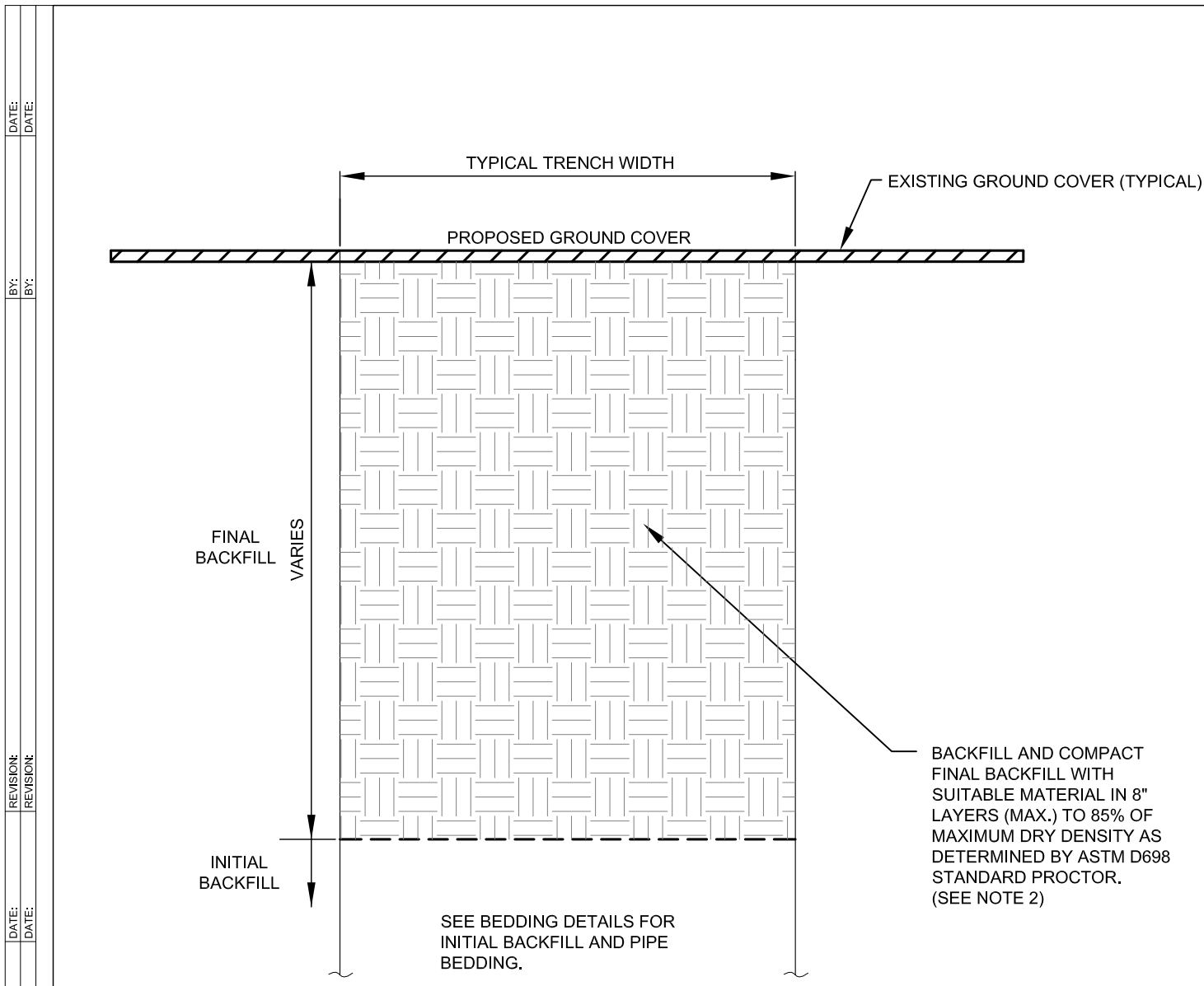
368 West Pike Street, Suite 104
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G1

REVISION:



G2



SECTION

NOTES:

1. ALL MATERIALS AND METHODS OF INSTALLATION SHALL COMPLY WITH THE GA DOT "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" LATEST REVISION.
2. FINAL BACKFILL MATERIAL SHALL BE REUSED OR IMPORTED EARTH FREE OF CLODS, ORGANIC MATTER, RUBBISH, OR OTHER UNSUITABLE MATERIAL. STONES LARGER THAN 4" DIAMETER MUST BE PLACED TO THE SIDES OF THE TRENCH.

GWINNETT COUNTY DEPARTMENT OF WATER RESOURCES

DESIGN BY: STD. COMMITTEE
 DRAWN BY: GCDWR
 CHECKED BY: PSB
 APPROVED BY: ARS
 SCALE: NONE

OUTSIDE OF ROADWAY CUT - FINAL BACKFILL

DRAWING NO.

G5a

REVISION:
 REVISION:
 ORIGINAL ISSUE: 4-05-16

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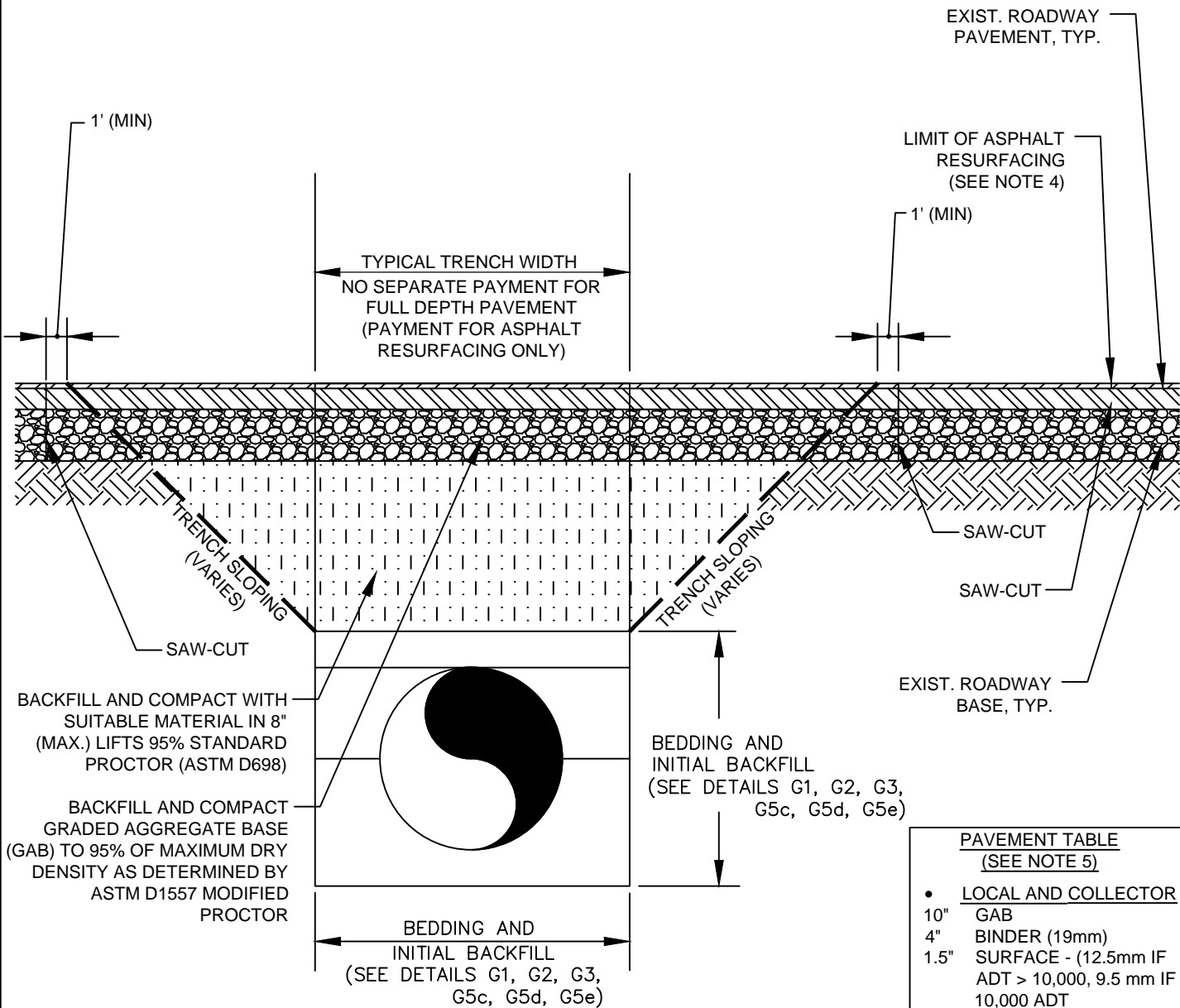
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REVISION: ADDED BEDDING AND INITIAL BACKFILL REFERENCE DETAIL SHEET NUMBERS
REVISION: UPDATED TO MATCH GCDOT AND UDO STANDARDS
ORIGINAL ISSUE: 11-03-15

DATE:	BY:	REVISION:
03-24-17	PSB	03-24-17
02-27-17	PSB	02-27-17



1. ALL MATERIALS AND METHODS OF INSTALLATION SHALL COMPLY WITH THE GA DOT "STANDARD SPECIFICATIONS CONSTRUCTION OF TRANSPORTATION SYSTEMS", LATEST EDITION.
2. NEW ROADWAY PAVEMENT SHALL MATCH CROSS SLOPE AND GRADE OF EXISTING.
3. SEE CONTRACT DRAWINGS AND SPECIFICATIONS FOR PAVEMENT SECTION, INCLUDING LAYER TYPE AND THICKNESS.
4. ASPHALT PAVEMENT RESURFACING LIMITS SHALL BE FROM DRAWINGS, SPECIFICATIONS, OR BY DIRECTION OF THE ENGINEER. NO ADDITIONAL PAYMENT WILL BE MADE FOR ASPHALT PAVEMENT RESURFACING BEYOND THE PAYMENT LIMITS. SEE PAVEMENT TABLE FOR ASPHALT SURFACE REQUIREMENTS FOR RESURFACING.
5. REFER TO THE ROADWAY CLASSIFICATION STIPULATED WITHIN THE CONSTRUCTION DRAWINGS FOR THE APPLICABLE PAVEMENT SECTION.

**PAVEMENT TABLE
(SEE NOTE 5)**

- **LOCAL AND COLLECTOR**
 - 10" GAB
 - 4" BINDER (19mm)
 - 1.5" SURFACE - (12.5mm IF ADT > 10,000, 9.5 mm IF < 10,000 ADT)
- **ARTERIAL**
 - 10" GAB
 - 4" BASE (25mm)
 - 2" BINDER (19mm)
 - 1.5" SURFACE - (12.5mm IF ADT > 10,000, 9.5mm IF ADT<10,000)

GWINNETT COUNTY DEPARTMENT OF WATER RESOURCES

DESIGN BY: PPI
DRAWN BY: PPI
CHECKED BY: KAW
APPROVED BY: PSB
SCALE: NONE

ASPHALT PAVEMENT REPAIR

DRAWING NO.

G5b

REVISION:

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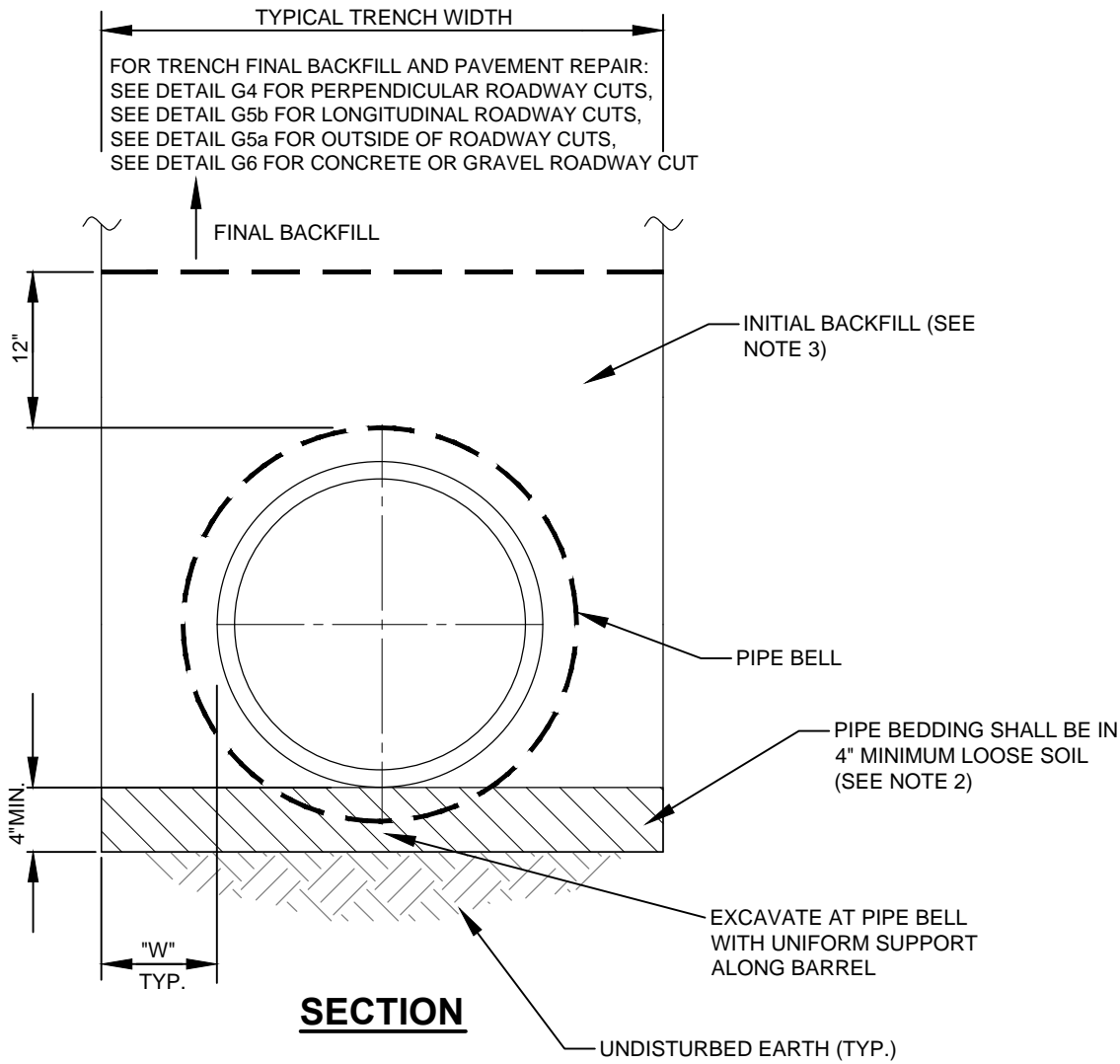
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NOTES

- FOR USE ONLY WITH 36" AND LARGER PIPE.
- LOOSE SOIL MATERIAL SHALL BE REUSED OR IMPORTED EARTH FREE OF STONES LARGER THAN 2" DIAMETER, CLODS, ORGANIC MATTER, RUBBISH, FROZEN EARTH, OR OTHER UNSUITABLE MATERIAL.
- PLACE INITIAL BACKFILL IN LAYERS NOT EXCEEDING SIX (6) INCHES IN THICKNESS AND CONSOLIDATE BY TAMPING ON BOTH SIDES OF THE PIPE. INITIAL BACKFILL MATERIAL SHALL BE REUSED OR IMPORTED EARTH FREE OF STONES LARGER THAN 2" DIAMETER, CLODS, ORGANIC MATTER, RUBBISH, FROZEN EARTH, OR OTHER UNSUITABLE MATERIAL.

MAIN DIAMETER (INCHES)	36	42	48
"W" (INCHES)	20	24	24

GWINNETT COUNTY DEPARTMENT OF WATER RESOURCES

DESIGN BY: PPI
DRAWN BY: PPI
CHECKED BY: KAW
APPROVED BY: PSB
SCALE: NONE

PIPE BEDDING (36" AND LARGER)
TYPE 3

DRAWING NO.
G5c

DATE:

BY:

REVISION:

BY:

DATE:

BY:

REVISION:

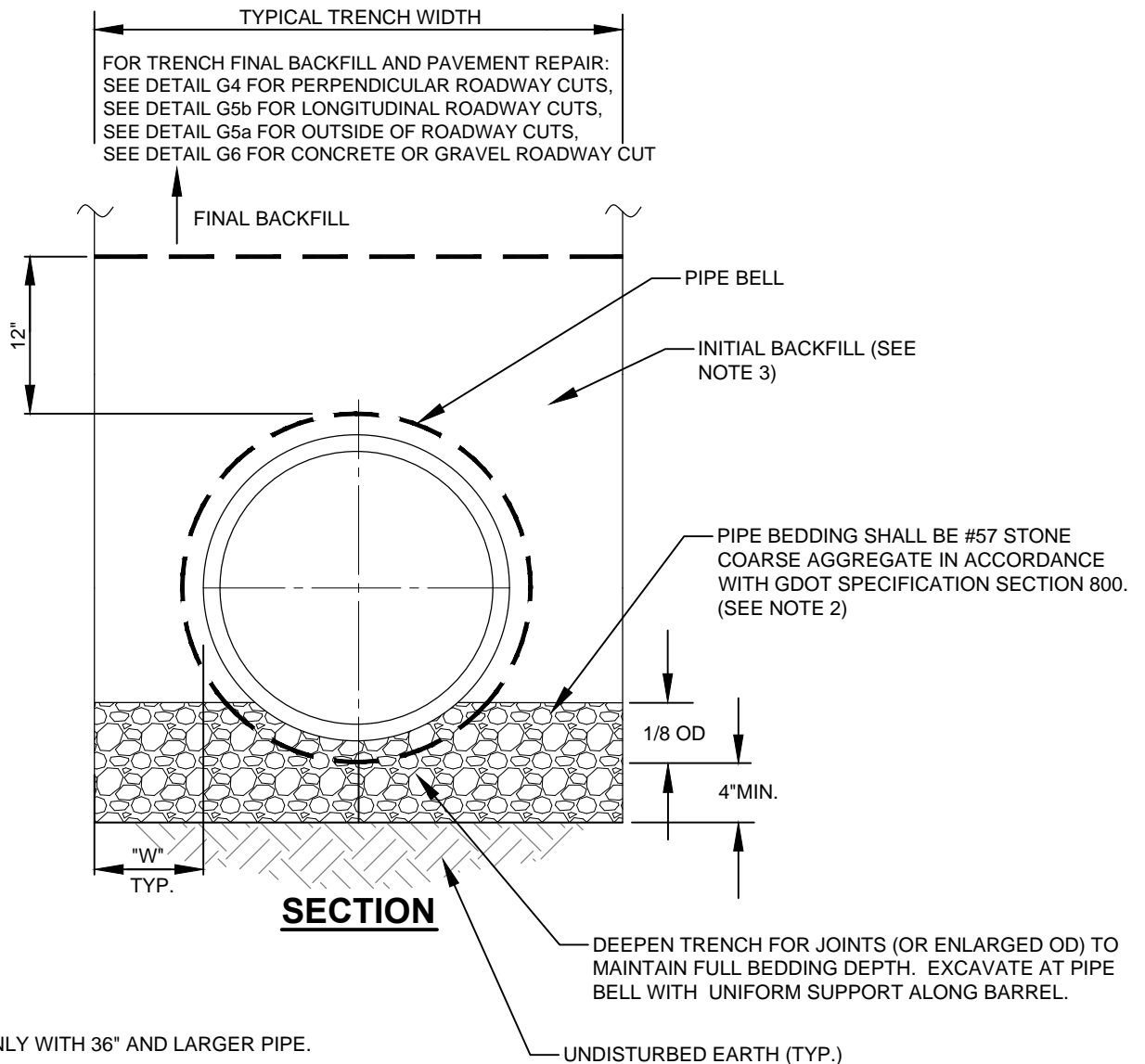
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NOTES

- FOR USE ONLY WITH 36" AND LARGER PIPE.
- PIPE BEDDING SHALL BE PLACED TO 1/8 OF PIPE DIAMETER, 4" MINIMUM.
- PLACE INITIAL BACKFILL IN LAYERS NOT EXCEEDING SIX (6) INCHES IN THICKNESS AND CONSOLIDATE BY TAMPING ON BOTH SIDES OF THE PIPE. INITIAL BACKFILL MATERIAL SHALL BE REUSED OR IMPORTED EARTH FREE OF STONES LARGER THAN 2" DIAMETER, CLODS, ORGANIC MATTER, FROZEN EARTH, RUBBISH, OR OTHER UNSUITABLE MATERIAL.

MAIN DIAMETER (INCHES)	36	42	48
"W" (INCHES)	20	24	24

GWINNETT COUNTY DEPARTMENT OF WATER RESOURCES

DESIGN BY: PPI
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APPROVED BY: PSB
SCALE: NONE

PIPE BEDDING (36" AND LARGER) TYPE 4

DRAWING NO.
G5d

REVISION:

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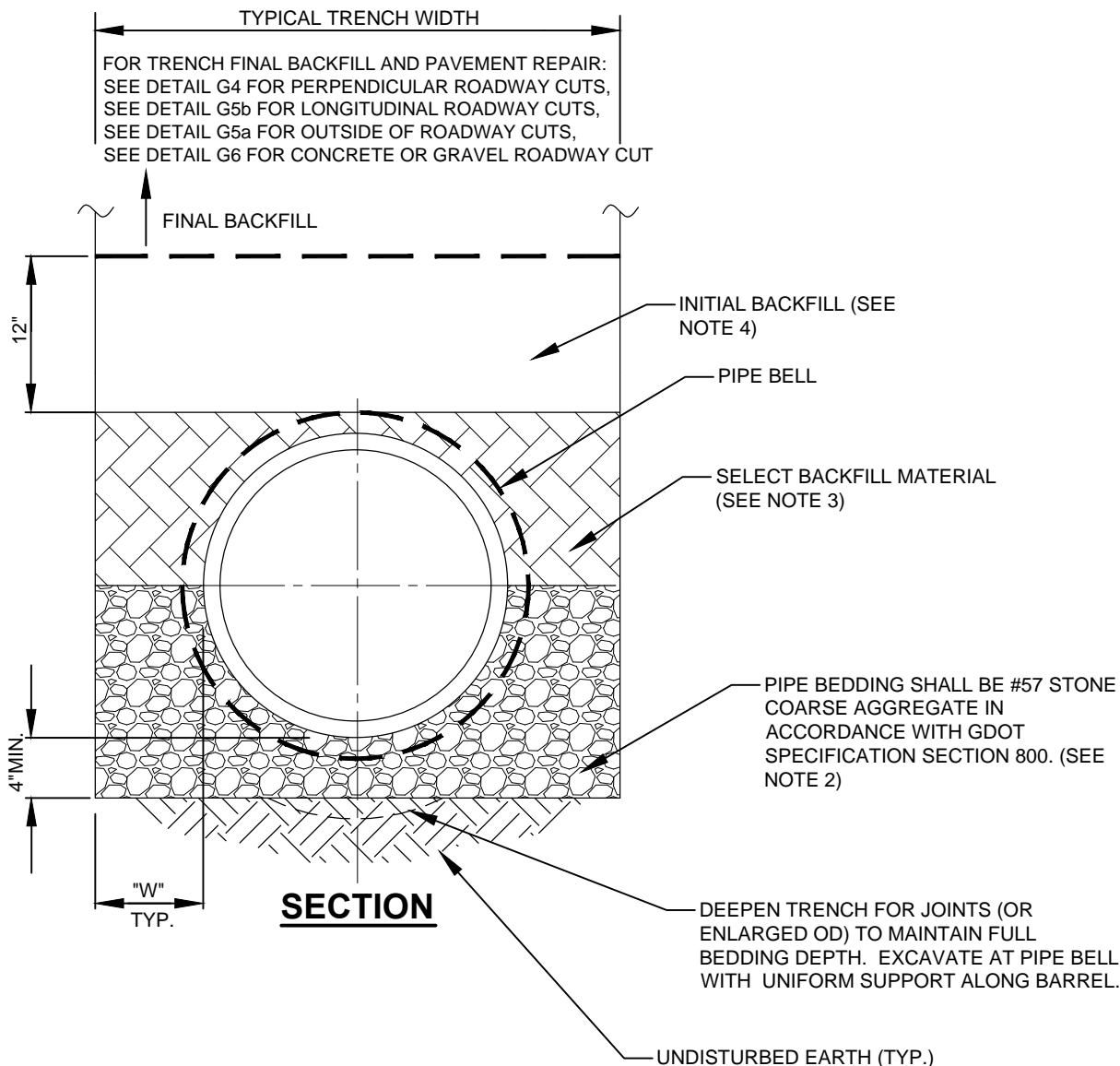
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- NOTES
- FOR USE ONLY WITH 36" AND LARGER PIPE.
 - PIPE BEDDED TO SPRINGLINE. BEDDING SHALL EXTEND A MINIMUM OF 4" BELOW PIPE.
 - SELECT BACKFILL MATERIAL SHALL BE REUSED OR IMPORTED EARTH FREE OF STONES LARGER THAN 2" DIAMETER, CLOUDS, ORGANIC MATTER, FROZEN EARTH, RUBBISH, OR OTHER UNSUITABLE MATERIAL. BACKFILL SHALL BE COMPACTED TO 90% OF STANDARD PROCTOR (ASTM D698)
 - PLACE INITIAL BACKFILL IN LAYERS NOT EXCEEDING SIX (6) INCHES IN THICKNESS AND CONSOLIDATE BY TAMPING ON BOTH SIDES OF THE PIPE. INITIAL BACKFILL MATERIAL SHALL BE REUSED OR IMPORTED EARTH FREE OF STONES LARGER THAN 2" DIAMETER, CLOUDS, ORGANIC MATTER, FROZEN EARTH, RUBBISH OR OTHER UNSUITABLE MATERIAL.

MAIN DIAMETER (INCHES)	36	42	48
"W" (INCHES)	20	24	24

GWINNETT COUNTY DEPARTMENT OF WATER RESOURCES

DESIGN BY: PPI

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CHECKED BY: KAW

APPROVED BY: PSB

SCALE: NONE

DRAWING NO.

G5e

PIPE BEDDING (36" AND LARGER)

TYPE 5

Diagram illustrating the cross-section detail of a trench construction, showing the relationship between the trench width, concrete structure, and backfill.

Labels and Dimensions:

- TYPICAL TRENCH WIDTH (SEE NOTE 3):** Dimension across the top of the concrete structure.
- PROVIDE STRAIGHT VERTICAL SAW-CUTS ALONG TRENCH WIDTH OF EXIST. ROADWAY SURFACE:** Instruction for the concrete structure.
- 3000 P.S.I. CONCRETE:** Material specification for the trench walls.
- EXIST. CONCRETE, TYP.:** Label for the existing concrete structure.
- EXIST. UNDISTURBED EARTH, TYP.:** Label for the existing ground.
- COMPACTED FINAL BACKFILL IN 8" (MAX.) LIFTS DOWN TO TOP OF INITIAL BACKFILL. COMPACTION SHALL BE TO 95% OF MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D 698-STANDARD PROCTOR:** Instruction for the backfill process.
- SEE BEDDING AND BACKFILL DETAILS FOR TRENCH CONSTRUCTION:** Reference to additional specifications.
- VARIES:** Dimension indicating the variable depth of the backfill layer.
- 2" MIN.:** Minimum depth dimension for the top layer of backfill.

6" MIN.
SEE NOTE 3

TYPICAL TRENCH WIDTH
(SEE NOTE 3)

GRADED AGGREGATE
BASE (GAB) (SEE NOTE 2)

CONSTRUCT FLUSH WITH
EXIST. EDGE

EXIST. GRAVEL OR
CRUSHED STONE,
TYP.

VARIES

EXIST. UNDISTURBED
EARTH, TYP.

COMPACTED FINAL BACKFILL IN 8" (MAX.)
LIFTS DOWN TO TOP OF INITIAL BACKFILL.
COMPACTION SHALL BE TO 95% OF
MAXIMUM DRY DENSITY AS DETERMINED
BY ASTM D 698-STANDARD PROCTOR (SEE
NOTE 4)

SEE BEDDING AND BACKFILL DETAILS
FOR TRENCH CONSTRUCTION

GRAVEL

GEOTEXTILE FABRIC
(GSE NW 10 OR EQUAL)

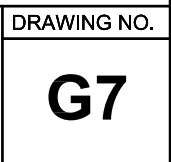
1. ALL MATERIALS AND METHODS OF INSTALLATION SHALL COMPLY WITH THE GA DOT "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" LATEST REVISION.
2. WHERE DEPTH OF EXISTING GRAVEL ROADWAY IS GREATER THEN 6" THEN NEW GAB STONE DEPTH SHALL MATCH EXISTING ROADWAY DEPTH.
3. NEW ROADWAY PAVEMENT SHALL MATCH CROSS SLOPE AND GRADE OF EXISTING ROADWAY.
4. CONCRETE OR GRAVEL FINAL BACKFILL SUB-BASE MATERIAL SHALL BE REUSED OR IMPORTED EARTH FREE OF STONES LARGER THAN 4" DIAMETER, CLODS, ORGANIC MATTER, RUBBISH, OR OTHER UNSUITABLE MATERIAL.

DESIGN BY: STD. COMMITTEE
DRAWN BY: GCDWR
CHECKED BY: PSB
APPROVED BY: ARS
SCALE: NONE

CONCRETE OR GRAVEL PAVEMENT CUT - FINAL BACKFILL

DRAWING NO.

G6



G8



* NOMINAL SIZE

1. MAIN SIZES OF 6 INCH OR GREATER SHALL INSTALL INSULATING SPACERS IN CASING, AS INDICATED.
2. CASING SPACERS MUST BE ATTACHED AT BELL END AT EACH JOINT OF MAIN, AND ENDS OF CASING, AS INDICATED.
3. CASING SPACERS MUST BE SECURED AS PER MANUFACTURER'S SPECIFICATIONS.
4. CASING PIPE UP TO 20" DIAMETER, SHALL HAVE A THICKNESS OF 0.375".
5. CASING PIPE OVER 20" DIAMETER, SHALL HAVE A THICKNESS OF 0.50".
6. CASING, PIPING AND APPURTENANCES UNDER RAILROAD SHALL MEET THE LATEST REQUIREMENTS OF THE RAILROAD OWNER. WHERE THIS DETAIL DIFFERS FROM THE REQUIREMENTS OF THE RAILROAD OWNER, THE MORE STRINGENT REQUIREMENTS SHALL GOVERN.
7. REFER TO TYPICAL HORIZONTAL THRUST RESTRAINT DRAWING G12 AND TYPICAL HORIZONTAL THRUST BLOCK DRAWING G11 FOR ADDITIONAL DETAILS.

G9

REVISION:

BY:

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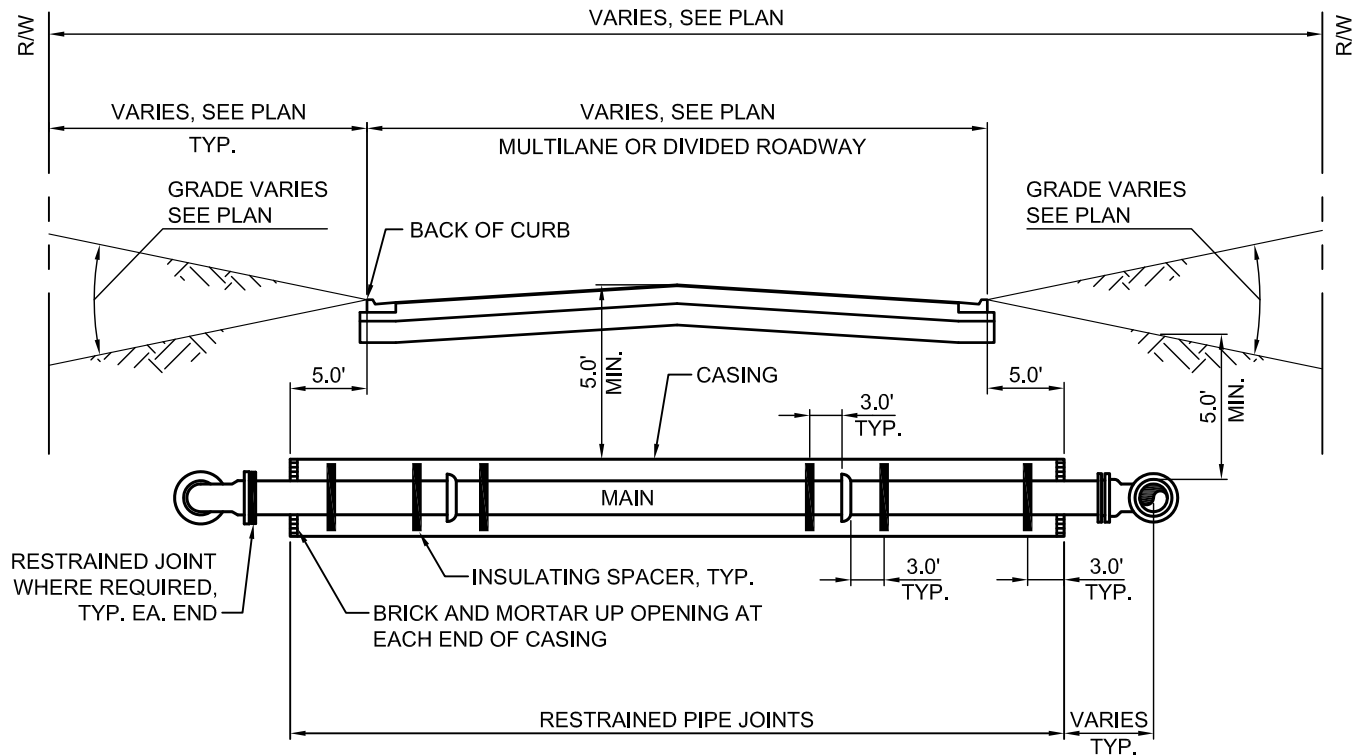
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PROFILE

MAIN DIAMETER (*INCHES)	30	36	48	54	60	72
CASING DIAMETER (*INCHES)	48	60	66	72	84	96

* NOMINAL SIZE

NOTES:

1. INSTALL INSULATING SPACERS IN CASING, AS INDICATED.
2. CASING SPACERS MUST BE ATTACHED AT BELL END AT EACH JOINT OF MAIN, AND ENDS OF CASING, AS INDICATED.
3. CASING SPACERS MUST BE SECURED AS PER MANUFACTURER'S SPECIFICATIONS.
4. CASING SHALL HAVE A MINIMUM THICKNESS OF 0.500". WALL THICKNESS MAY BE GREATER DUE TO SOIL AND LOADING CONDITIONS (E.G. RAILROADS, HIGHWAYS, PETROLEUM LINES, ETC.), AND SHALL BE AS INDICATED ON THE DRAWINGS.

GWINNETT COUNTY DEPARTMENT OF WATER RESOURCES

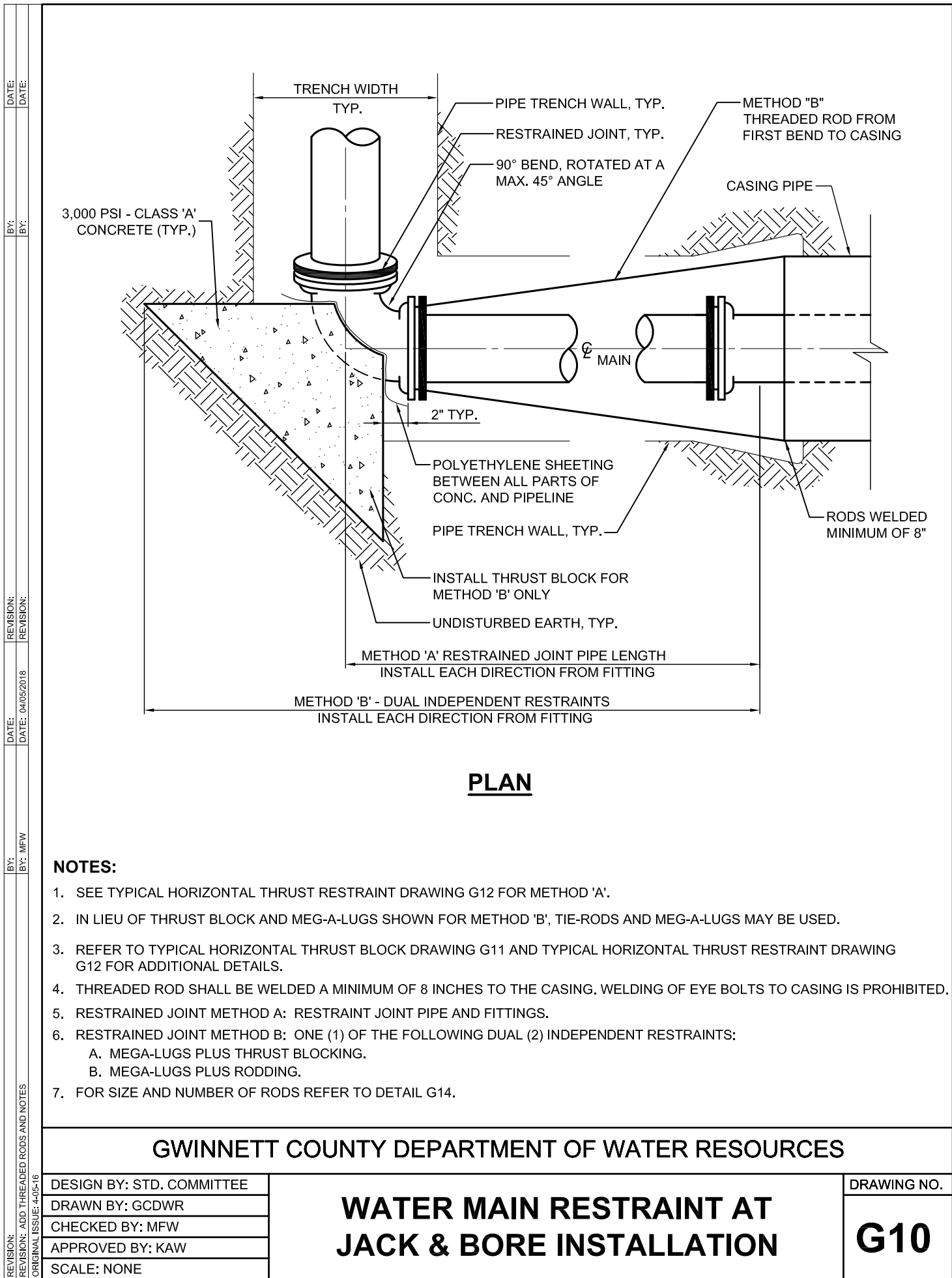
DESIGN BY: PPI
 DRAWN BY: PPI
 CHECKED BY: KAW
 APPROVED BY: PSB
 SCALE: NONE

TYPICAL JACK AND BORE INSTALLATION - LARGE DIAMETER

DRAWING NO.

G9a

REVISION: 3-10-17

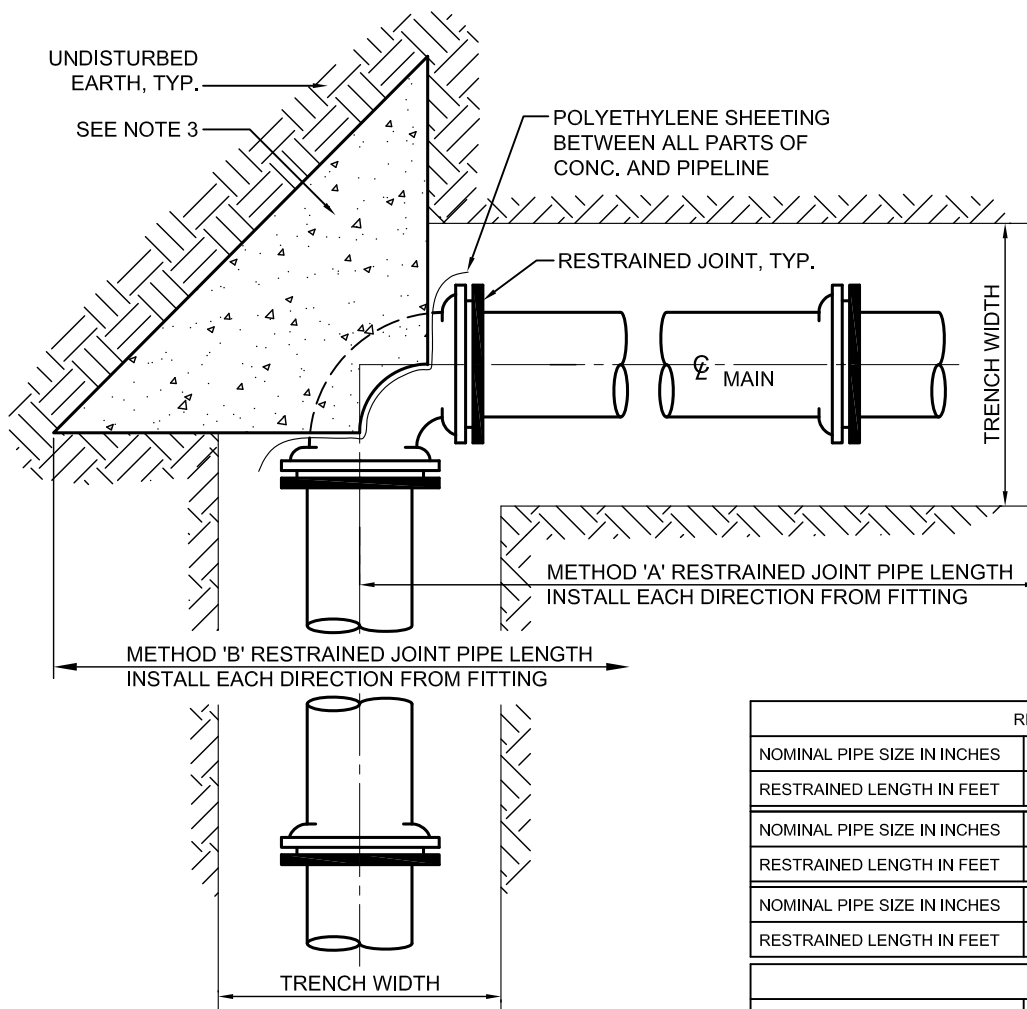




MAIN		DIMENSION (FT.)			CONC. VOLUME (C. Y.)	THRUST (LBS.)
BEND	SIZE	'H'	'L'	'W'		
TEE & PLUG	4	1.33	1.75	1.67	0.12	4,524
	6	2.00	2.50	1.67	0.24	9,348
	8	2.33	3.50	1.67	0.36	16,082
	10	2.67	4.67	1.67	0.54	24,192
	12	3.00	5.75	2.00	0.86	34,212
	16	4.00	7.50	2.00	1.85	59,447

G11

REVISION: _____
 DATE: _____
 BY: _____
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 DATE: _____
 BY: _____
 ORIGINAL ISSUE: 4-05-16



NOTES:

1. SOIL PREPARATION SHALL BE APPROVED BY DWR PRIOR TO POURING CONCRETE.
2. REFER TO TYPICAL HORIZONTAL THRUST BLOCK DRAWING G11 FOR DETAILS.
3. INSTALL THRUST BLOCK ONLY WHEN METHOD 'B' PIPE RESTRAINT IS UTILIZED.
4. FOR PIPE SIZES LARGER THAN 16" THE DESIGN ENGINEER SHALL PROVIDE CALCULATIONS FOR RESTRAINED JOINT LENGTHS TO DWR FOR REVIEW PRIOR TO INSTALLATION.
5. RESTRAINED JOINT METHOD A: RESTRAINT JOINT PIPE AND FITTINGS.
6. RESTRAINED JOINT METHOD B: ONE (1) OF THE FOLLOWING DUAL (2) INDEPENDENT RESTRAINTS:
 - A. MEGA-LUGS PLUS THRUST BLOCKING.
 - B. MEGA-LUGS PLUS RODDING.

DESIGN CRITERIA:

1. THRUST RESTRAINT DIMENSIONS ARE BASED ON PRESSURE CLASS DUCTILE IRON PIPE WITH BITUMASTIC EXTERIOR COATING, (WITHOUT POLYWRAP), MINIMUM SOIL BEARING PRESSURE OF 2,000 PSF, SILTY SAND SOIL, TEST PRESSURE OF 250 PSI, 4 FEET OF UNSATURATED SOIL COVER, CLASS "D" PIPE BEDDING CONDITION, WITH A SAFETY FACTOR OF 1.5.

REDUCER							
NOMINAL PIPE SIZE IN INCHES		6x4	8x6	10x8	12x10	14x12	16x14
RESTRAINED LENGTH IN FEET		42	44	42	44	44	44
NOMINAL PIPE SIZE IN INCHES			8x4	10x6	12x8	14x10	16x12
RESTRAINED LENGTH IN FEET			76	80	78	80	82
NOMINAL PIPE SIZE IN INCHES				10x4	12x6	14x8	16x10
RESTRAINED LENGTH IN FEET				104	110	112	116
TEE							
NOMINAL PIPE SIZE IN INCHES	4	6	8	10	12	14	16
RESTRAINED LENGTH IN FEET	54	76	100	120	140	160	180
DEAD END OR CLOSED VALVE							
NOMINAL PIPE SIZE IN INCHES	4	6	8	10	12	14	16
RESTRAINED LENGTH IN FEET	54	76	100	120	140	160	180
90 DEGREE BEND							
NOMINAL PIPE SIZE IN INCHES	4	6	8	10	12	14	16
RESTRAINED LENGTH IN FEET	54	76	99	120	140	160	180
45 DEGREE BEND							
NOMINAL PIPE SIZE IN INCHES	4	6	8	10	12	14	16
RESTRAINED LENGTH IN FEET	23	32	41	50	58	67	75
22 1/2 DEGREE BEND							
NOMINAL PIPE SIZE IN INCHES	4	6	8	10	12	14	16
RESTRAINED LENGTH IN FEET	11	15	20	24	28	32	36

GWINNETT COUNTY DEPARTMENT OF WATER RESOURCES

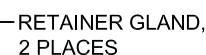
DESIGN BY: STD. COMMITTEE
 DRAWN BY: GCDWR
 CHECKED BY: PSB
 APPROVED BY: ARS
 SCALE: NONE

TYPICAL HORIZONTAL THRUST RESTRAINT

DRAWING NO.
G12



ISOMETRIC



ELEVATION

PIPE SIZE	A	B	C	D	E	VOLUME CU.YDS.	CONC.. WT. (LB)	THRUST (LB)
4"	2'-6"	12"	2'-6"	1'-3"	1'-0"	0.23	919	4,524
6"	2'-9"	12"	2'-9"	1'-4 1/2"	1'-1"	0.27	1,095	9,348
8"	3'-0"	18"	3'-0"	1'-6"	1'-2"	0.47	1,924	16,082
10"	4'-0"	18"	3'-6"	2'-0"	1'-4"	0.74	2,999	24,192
12"	4'-6"	24"	4'-6"	2'-3"	1'-9"	1.43	5,790	34,212
14"	5'-6"	24"	4'-6"	2'-9"	1'-8"	1.74	7,042	45,963
16"	6'-6"	24"	5'-0"	3'-3"	1'-10"	2.29	9,255	59,447

NOTES:

1. CONCRETE SHALL BE POURED AGAINST UNDISTURBED EARTH EXCEPT WHERE FORMWORK IS A MUST. AFTER CONCRETE IS CURED THE FORMWORK SHALL BE REMOVED.
2. MAINS GREATER THEN 16" DIAMETER SHALL BE INDIVIDUALLY CALCULATED.
3. SOIL CONDITIONS SHALL BE VERIFIED BEFORE THRUST RESTRAINT DESIGN IS IMPLEMENTED.
4. PIPE MUST BE DUCTILE IRON.

DESIGN CRITERIA:

1. COLLAR DIMENSIONS ARE BASED ON A SOIL BEARING CAPACITY OF 2000 PSF, A RATED TEST PRESSURE OF 250 PSI, AND 3000 PSI CLASS 'A' CONCRETE.
2. UNDER ADVERSE CONSTRUCTION CONDITIONS, CONCRETE SHALL BE 'HIGH EARLY' TYPE.

GWINNETT COUNTY DEPARTMENT OF WATER RESOURCES

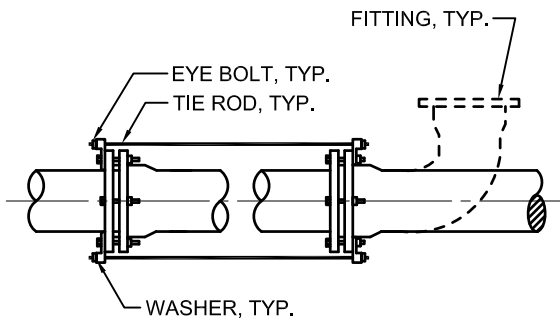
DESIGN BY: STD. COMMITTEE
DRAWN BY: GCDWR
CHECKED BY: PSB
APPROVED BY: ARS
SCALE: NONE

THRUST RESTRAINT COLLAR

DRAWING NO.

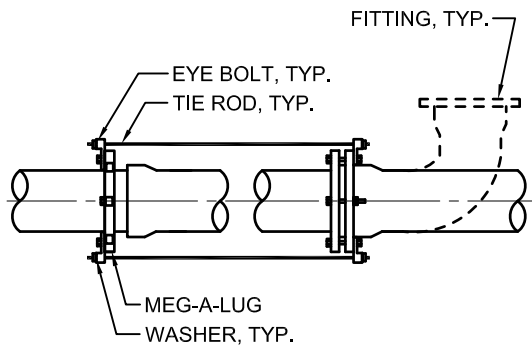
G13

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 ORIGINAL ISSUE: 4-05-16



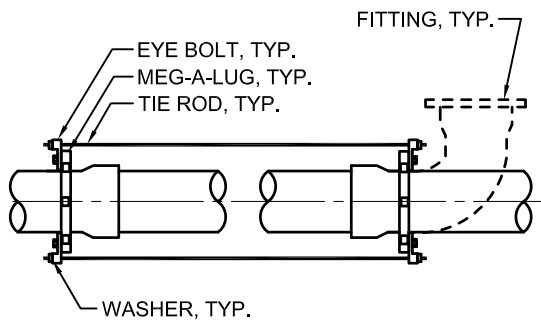
EYE BOLT TO EYE BOLT

TYPE 1
FITTING RESTRAINT



EYE BOLT TO MEG-A-LUG

TYPE 2
FITTING RESTRAINT



MEG-A-LUG TO MEG-A-LUG

TYPE 3
FITTING RESTRAINT

PIPE SIZE (IN.)	ROD SIZE (IN.)	NO. OF RODS (TEES, PLUGS, AND VALVES)	NO. OF RODS (11-1/4° - 22-1/2° BENDS)	NO. OF RODS (45° - 90° BENDS)
6	3/4	3	2	3
8	3/4	3	3	3
10	3/4	4	4	4
12	3/4	4	4	6
14	3/4	6	4	6
16	3/4	6	6	6
20	3/4	6	6	6
24	3/4	8	8	8
30	1	6	6	6
36	1	6	6	6

THRUST RESTRAINT

TIE ROD CHART

NOTES:

1. RODS SHALL BE A MINIMUM 304 S.S. ALL THREAD RODS WITH A MINIMUM YIELD STRENGTH OF 50,000 PSI.
2. USE LISTED NUMBER OF RODS AS SHOWN ON TIE ROD CHART (MINIMUM NUMBER SHOWN).
3. RODS MUST HAVE A MINIMUM 6" OF THREAD ON EACH END.
4. ALL STEEL MUST BE CLEANED AND COATED WITH ROYSTON ROSKOTE, KOPPERS SUPER SERVICE BLACK OR APPROVED EQUAL.
5. ALL NUTS USED ON TIE RODS MUST HAVE A WASHER.

DESIGN CRITERIA:

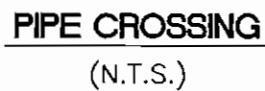
1. FITTING SHOWN IS REPRESENTATIVE FOR ALL FITTINGS, VALVES, DEAD ENDS AND PLUGS.
2. FOR WATER MAINS AT A RATED TEST PRESSURE OF 250 PSI.

GWINNETT COUNTY DEPARTMENT OF WATER RESOURCES

DESIGN BY: STD. COMMITTEE
 DRAWN BY: GCDWR
 CHECKED BY: PSB
 APPROVED BY: ARS
 SCALE: NONE

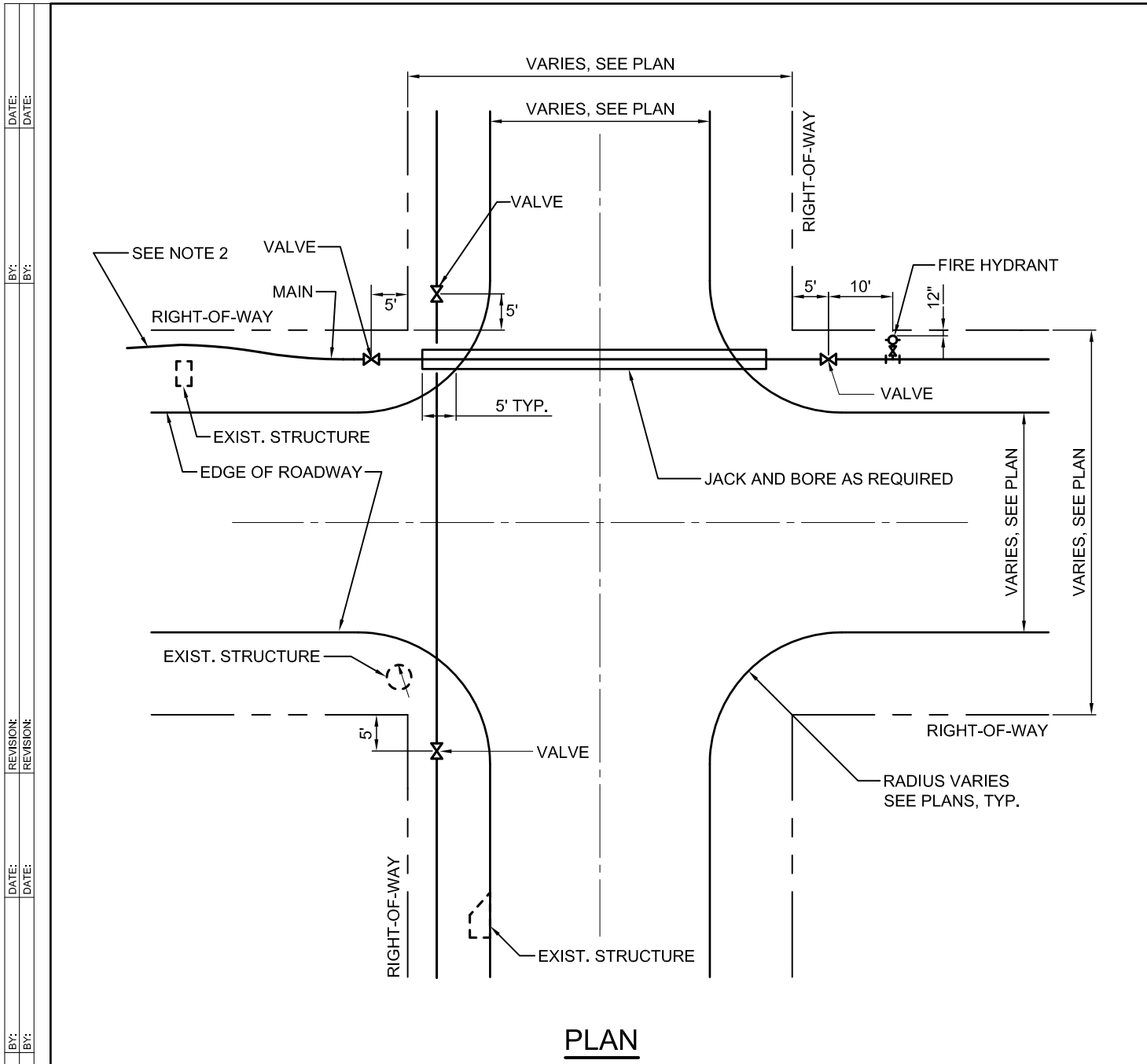
**TYPICAL TIE ROD RESTRAINT
INSTALLATION**

DRAWING NO.
G14



G15

REVISION:
REVISION:



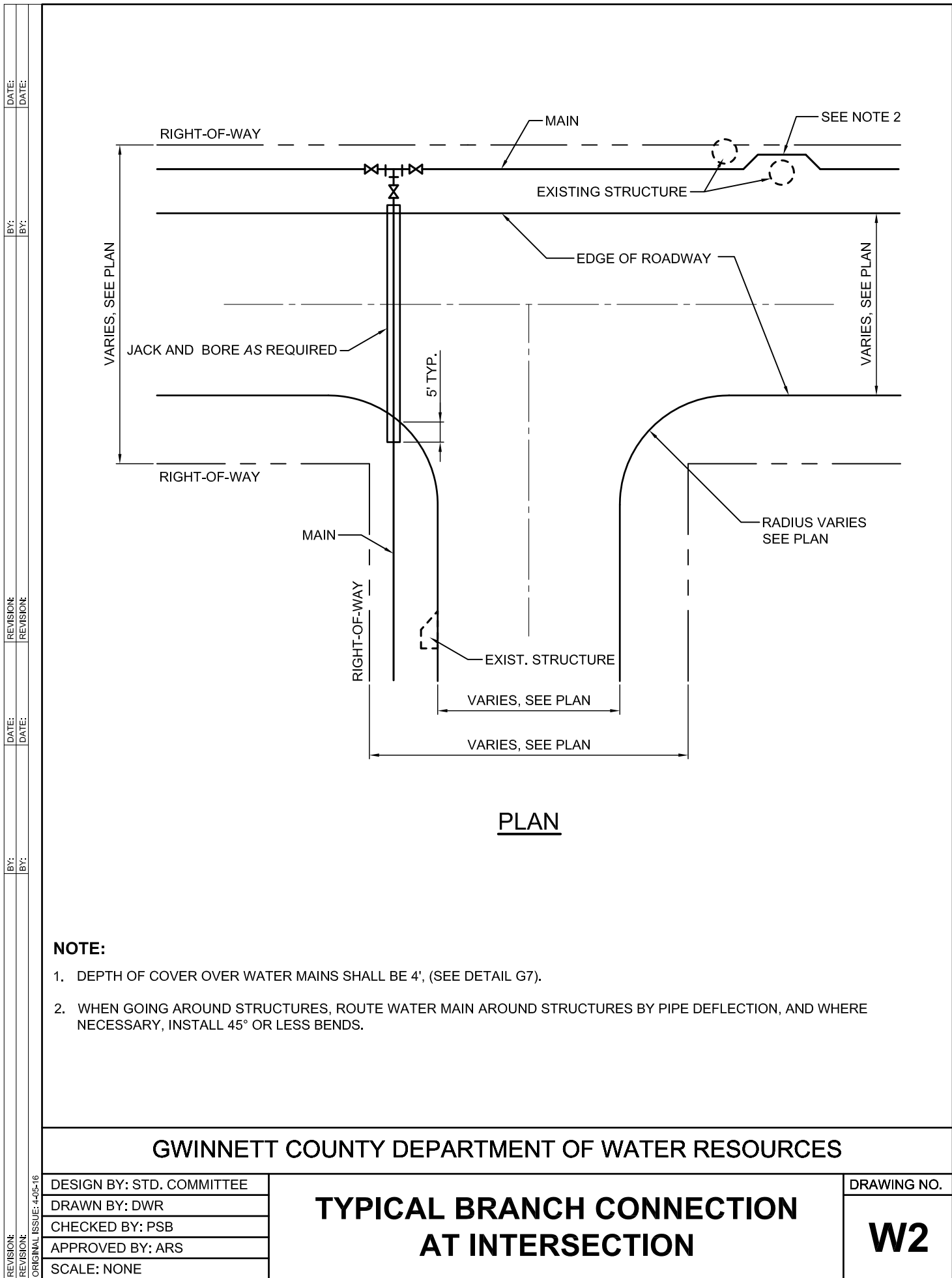
- NOTE:**
1. DEPTH OF COVER OVER WATER MAINS SHALL BE 4', (SEE DETAIL G7).
 2. WHEN GOING AROUND STRUCTURES, ROUTE WATER MAIN AROUND STRUCTURES BY PIPE JOINT DEFLECTION, AND WHERE NECESSARY, INSTALL 45° BENDS OR LESS.
 3. VALVES SHALL BE MARKED IN THE CURB WITH A SAW CUT "V" AND PAINT.

GWINNETT COUNTY DEPARTMENT OF WATER RESOURCES

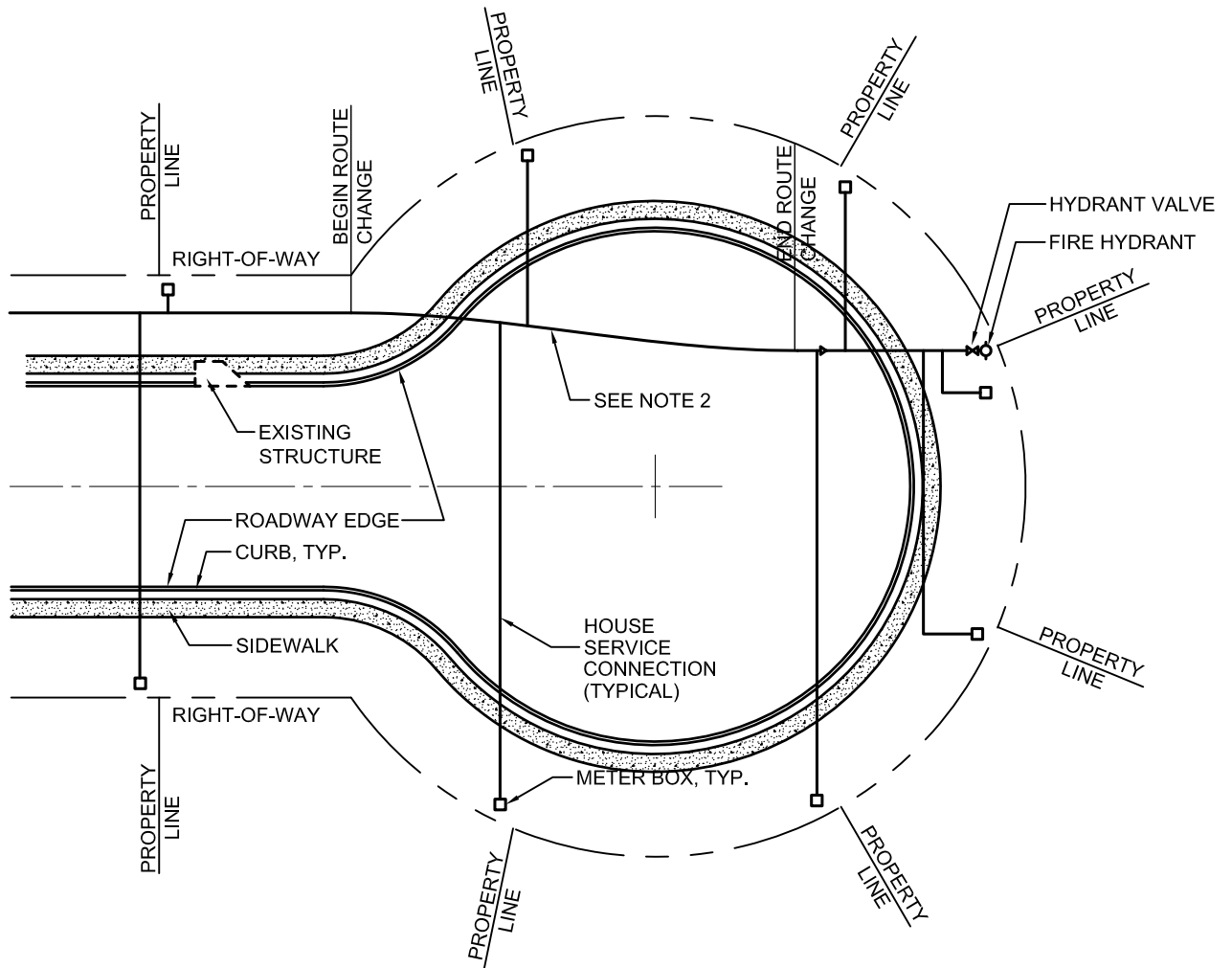
DESIGN BY: STD. COMMITTEE
DRAWN BY: DWR
CHECKED BY: PSB
APPROVED BY: ARS
SCALE: NONE

TYPICAL WATER MAIN AT INTERSECTION

DRAWING NO.
W1



REVISION:	BY:	DATE:	REVISION:	BY:	DATE:
ORIGINAL ISSUE: 4-05-16					
DESIGN BY: STD. COMMITTEE					
DRAWN BY: DWR					
CHECKED BY: PSB					
APPROVED BY: ARS					
SCALE: NONE					



PLAN

NOTES:

1. REFER TO TYPICAL DEAD END STREET TERMINATION DETAIL W4 FOR ADDITIONAL DETAILS.
2. ROUTE MAIN WITHIN LIMITS INDICATED TO ALIGN CENTERLINE OF FIRE HYDRANT TO PROPERTY LINE EXTENDED, SEE TYPICAL DEAD END STREET TERMINATION SECTION FOR ADDITIONAL DETAILS
3. SERVICE CONNECTION SHALL COME DIRECTLY OFF MAIN, IN LINE WITH EACH METER CONNECTION

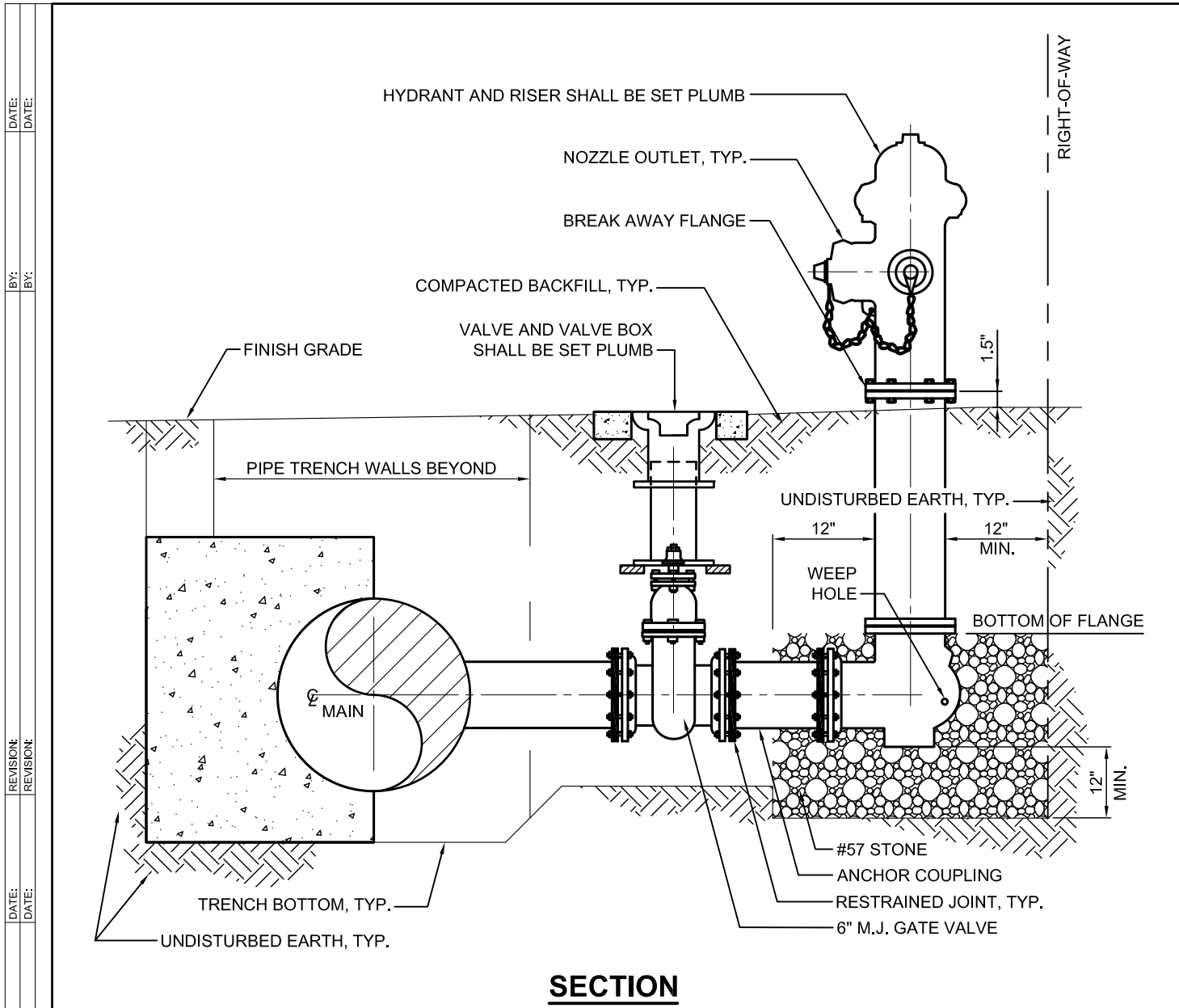
GWINNETT COUNTY DEPARTMENT OF WATER RESOURCES

DESIGN BY: STD. COMMITTEE
 DRAWN BY: DWR
 CHECKED BY: PSB
 APPROVED BY: ARS
 SCALE: NONE

TYPICAL CUL-DE-SAC STREET

DRAWING NO.

W3



NOTES:

1. REFER TO TYPICAL TIE-ROD RESTRAINT DRAWING G14 FOR ADDITIONAL DETAILS.
2. REFER TO TYPICAL HORIZONTAL THRUST BLOCK DRAWING G11 FOR ADDITIONAL DETAILS.
3. REFER TO TYPICAL VALVE BOX DRAWING W9 FOR ADDITIONAL DETAILS.

GWINNETT COUNTY DEPARTMENT OF WATER RESOURCES

DESIGN BY: STD. COMMITTEE
 DRAWN BY: DWR
 CHECKED BY: PSB
 APPROVED BY: ARS
 SCALE: NONE

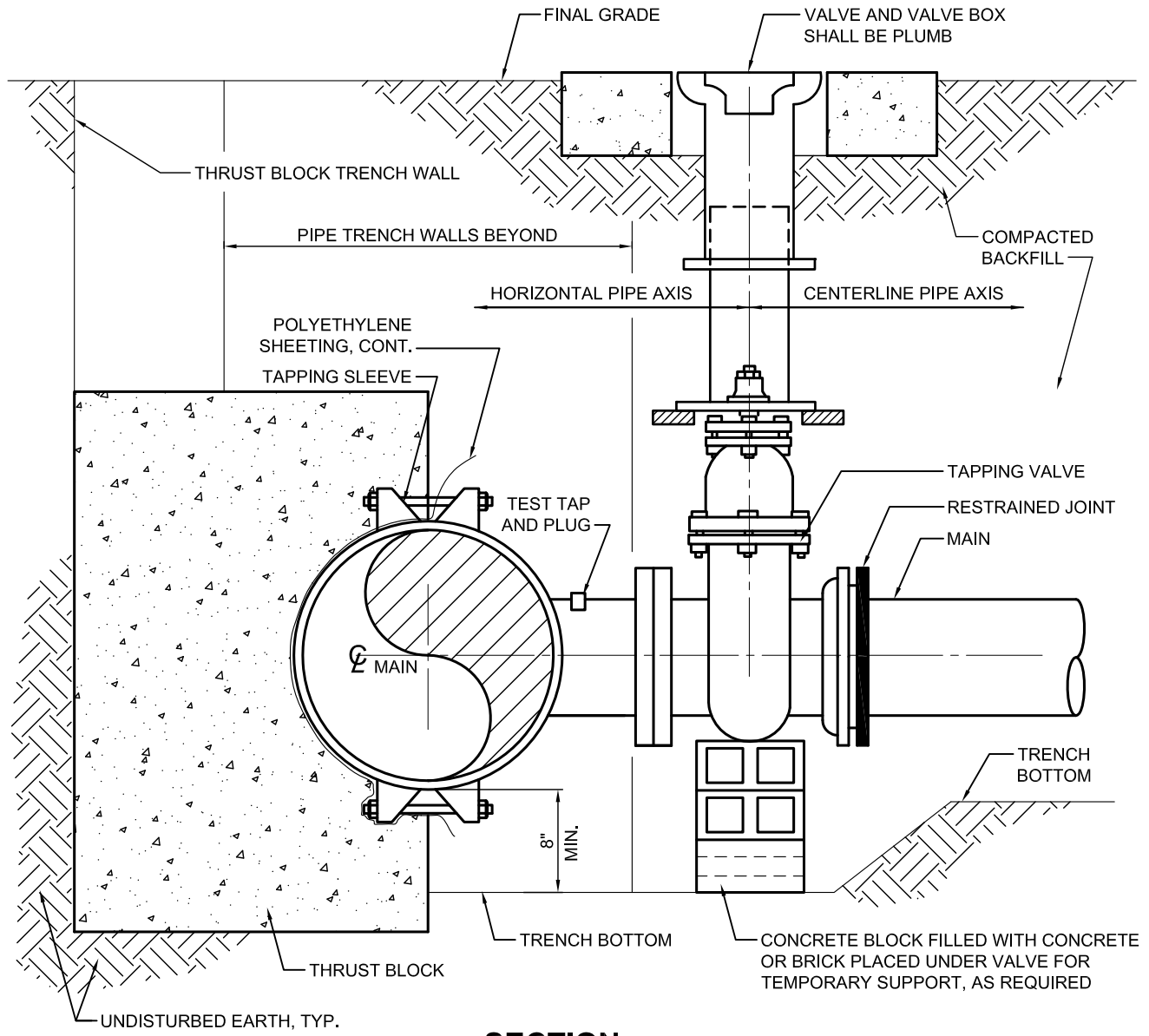
**TYPICAL TYPE 'A' FIRE HYDRANT
 INSTALLATION**

DRAWING NO.
W5

REVISION:
 DATE:
 BY:
 REVISION:
 DATE:
 BY:
 REVISION:
 DATE:
 BY:
 ORIGINAL ISSUE: 4-05-16

$\begin{array}{|c|} \hline \text{N} \\ \hline \end{array}$ 

REVISION:	BY:	DATE:	REVISION:	BY:	DATE:
ORIGINAL ISSUE: 4-05-16					



SECTION

NOTES:

1. TEMPORARILY SUPPORT TAPPING SLEEVE AND VALVE PRIOR TO HYDROSTATIC TESTING AND UPON ACCEPTANCE OF TEST THEN CONCRETE MAY BE INSTALLED AS SHOWN.
2. REFER TO TYPICAL HORIZONTAL THRUST BLOCK DRAWING G11 FOR ADDITIONAL DETAILS.
3. REFER TO TYPICAL VALVE BOX INSTALLATION DRAWING W9 FOR ADDITIONAL DETAILS.

GWINNETT COUNTY DEPARTMENT OF WATER RESOURCES

DESIGN BY: STD. COMMITTEE
DRAWN BY: DWR
CHECKED BY: PSB
APPROVED BY: ARS
SCALE: NONE

TYPICAL TAPPING SLEEVE AND VALVE INSTALLATION

DRAWING NO.
W7



1. STUB-OUT SHALL BE TESTED WITH THE WATER MAIN.
2. REFER TO TYPICAL THRUST RESTRAINT COLLAR DRAWING G13 FOR ADDITIONAL DETAILS.
3. REFER TO TYPICAL VALVE BOX INSTALLATION DRAWING W9 FOR ADDITIONAL DETAILS.

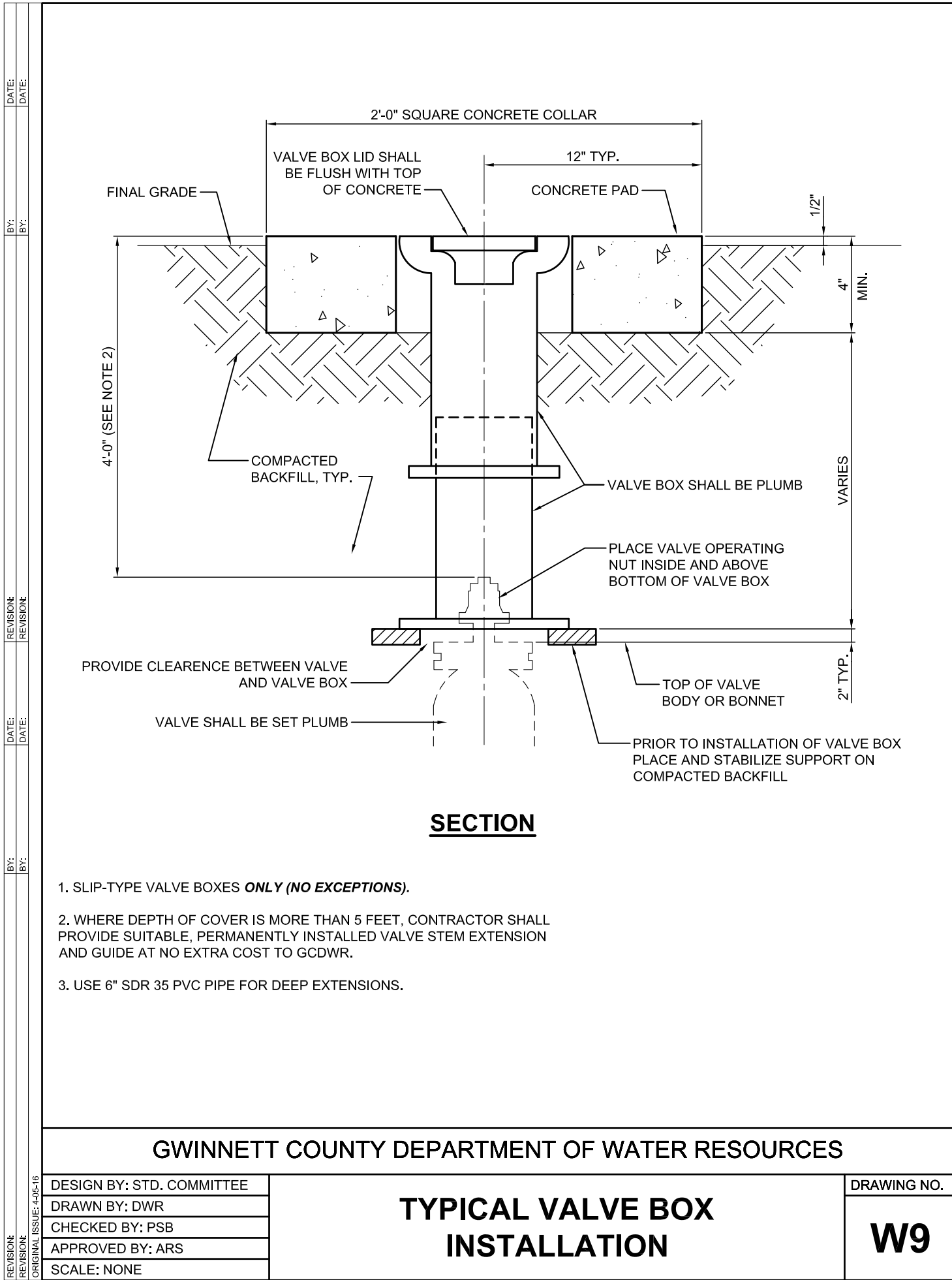
GWINNETT COUNTY DEPARTMENT OF WATER RESOURCES

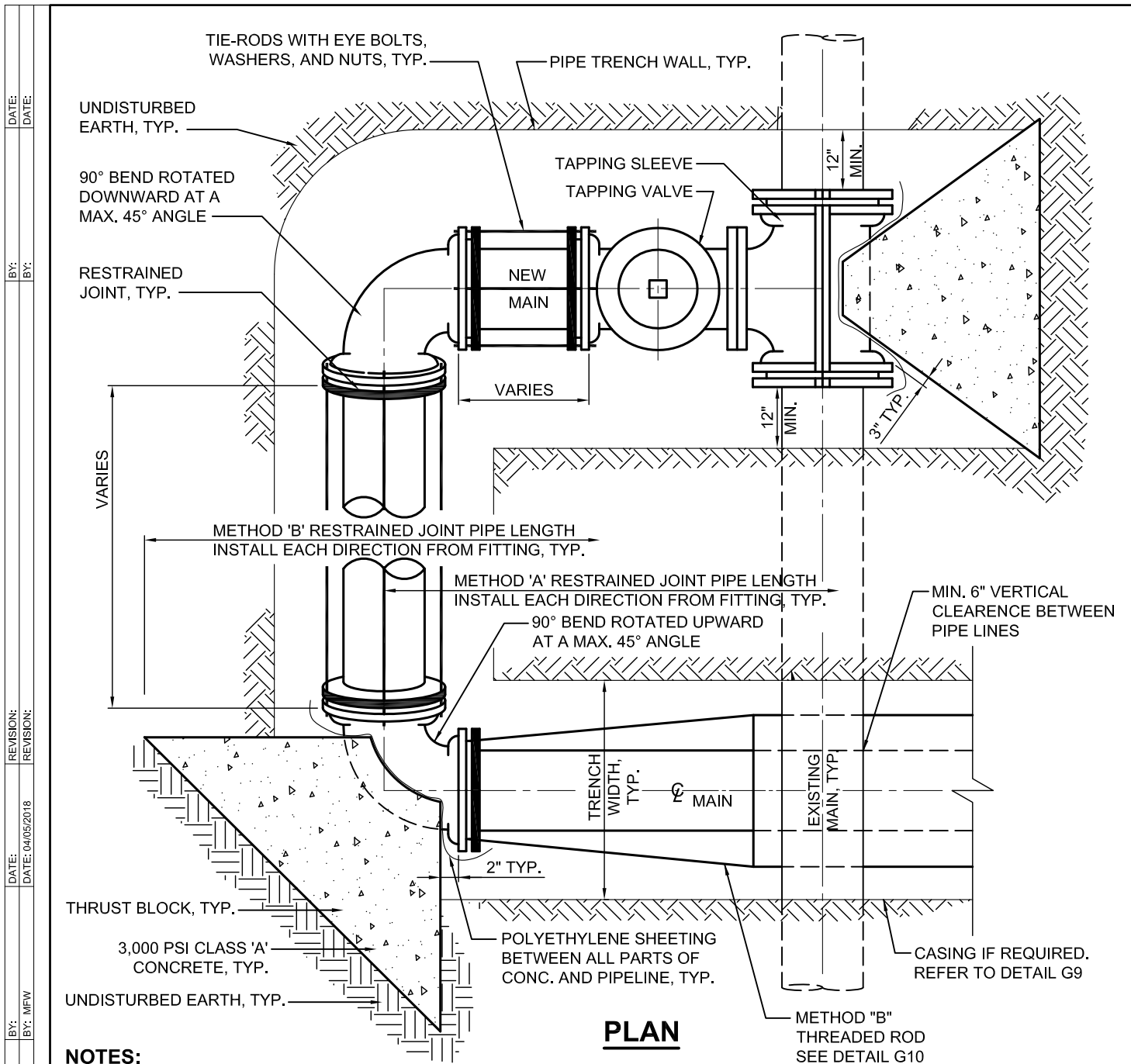
DESIGN BY: STD. COMMITTEE
DRAWN BY: DWR
CHECKED BY: PSB
APPROVED BY: ARS
SCALE: NONE

TYPICAL STUB-OUT INSTALLATION

DRAWING NO.

W8





NOTES:

1. REFER TO TYPICAL HORIZONTAL THRUST BLOCK DRAWINGS G11 AND G12 FOR ADDITIONAL DETAILS.
2. REFER TO TYPICAL TAPPING SLEEVE AND VALVE INSTALLATION DRAWING W7 FOR ADDITIONAL DETAILS.
3. RESTRAINED JOINT PIPE MAY BE USED IN LIEU OF THRUST BLOCKING AND TIE-RODS INDICATED, AS APPLICABLE.
4. RESTRAINED JOINT METHOD A: RESTRAINT JOINT PIPE AND FITTINGS.
5. RESTRAINED JOINT METHOD B: ONE (1) OF THE FOLLOWING DUAL (2) INDEPENDENT RESTRAINTS:
 - A. MEGA-LUGS PLUS THRUST BLOCKING.
 - B. MEGA-LUGS PLUS RODDING.
6. FOR SIZE AND NUMBER OF RODS REFER TO DETAIL G14.

GWINNETT COUNTY DEPARTMENT OF WATER RESOURCES

DESIGN BY: STD. COMMITTEE
 DRAWN BY: GCDWR
 CHECKED BY: MFW
 APPROVED BY: KAW
 SCALE: NONE

TYPICAL BACK TAP INSTALLATION

DRAWING NO.

W10

DATE:
DATE:

BY:
BY:

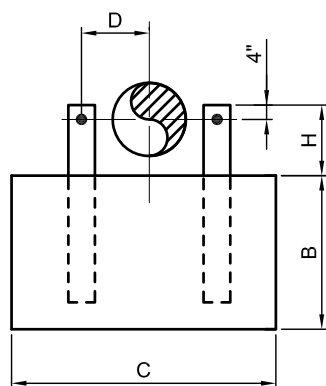
REVISION:
REVISION:

DATE: 04/05/2018
DATE:

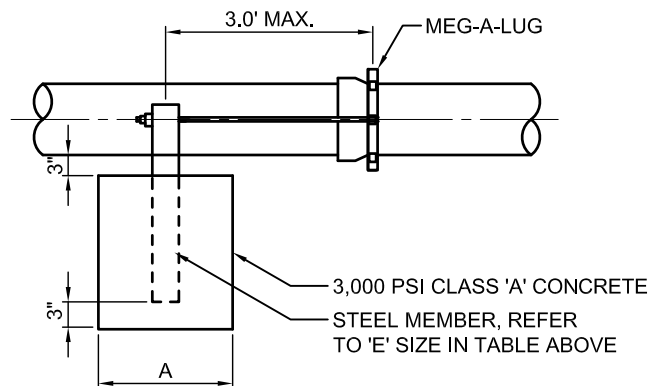
BY: MFW
BY:

REVISION:
REVISION: ADDED THREADED ROD AND NOTES
ORIGINAL ISSUE: 4-05-16

BEND	SIZE	A	B	C	D	VOL. YDS	H	T	ROD DIA	E (IN)
TEES PLUGS AND VALVES	6"	2'	3'	3'	1'	0.67	10"	5700	3/4"	6X6X3/8
	8"	3'	3'	5'	1'1"	1.67	11"	10,000	3/4"	6X6X3/8
	10"	4'	3'	5'	1'2"	2.67	1'	16,000	3/4"	6X6X3/8
	12"	5'	4'	6'	1'5"	4.44	1'1"	22,650	3/4"	10X10X1/2
	14"	6'	4'	7'	1'6"	6.22	1'2"	31,000	3/4"	10X10X1/2
	16"	7'	4'	8'	1'8"	8.3	1'3"	40,250	3/4"	10X10X1/2
	20"	9'	4'8"	9'	1'11"	13.5	1'5"	62,850	3/4"	W12X190
11 1/4"	6"	2'	3'	3'	1'	0.67	10"	1,110	3/4"	6X6X3/8
	8"	2'	3'	3'	1'1"	0.67	11"	2,000	3/4"	6X6X3/8
	10"	2'	3'	3'	1'2"	0.67	1'	3,100	3/4"	6X6X3/8
	12"	2'	3'	3'6"	1'5"	0.78	1'1"	4,450	3/4"	10X10X1/2
	14"	2'	3'	3'6"	1'6"	0.78	1'2"	6,050	3/4"	10X10X1/2
	16"	3'6"	3'	4'	1'8"	1.56	1'3"	7,900	3/4"	10X10X1/2
	20"	4'	3'	5'6"	1'11"	2.44	1'5"	12,350	3/4"	W12X190
22 1/2"	6"	2'	3'	3'	1'	0.67	10"	2,250	3/4"	6X6X3/8
	8"	2'	3'	3'	1'1"	0.67	11"	4,000	3/4"	6X6X3/8
	10"	2'	3'	3'6"	1'2"	0.78	1'	6,150	3/4"	6X6X3/8
	12"	3'6"	3'	4'	1'5"	1.56	1'1"	8,850	3/4"	10X10X1/2
	14"	4'	3'	5'	1'6"	2.22	1'2"	12,050	3/4"	10X10X1/2
	16"	4'	3-6'	6'	1'8"	3.11	1'3"	15,700	3/4"	10X10X1/2
	20"	5'	4'	7'	1'11"	5.19	1'5"	24,550	3/4"	W12X190
45°	6"	2'	3'	3'	1'	0.67	10"	4,350	3/4"	6X6X3/8
	8"	2'	3'	4'	1'1"	0.89	11"	7,700	3/4"	6X6X3/8
	10"	4'	3'	5'	1'2"	2.22	1'	12,050	3/4"	6X6X3/8
	12"	4'	4'	5'6"	1'5"	3.26	1'1"	17,350	3/4"	10X10X1/2
	14"	5'6"	4'	6'	1'6"	4.89	1'2"	23,600	3/4"	10X10X1/2
	16"	6'	4'	7'6"	1'8"	6.67	1'3"	30,000	3/4"	10X10X1/2
	20"	7'	4-6'	9'	1'11"	10.50	1'5"	48,100	3/4"	W12X190
90°	6"	2'6"	3'	4'	1'	1.11	10"	8,000	3/4"	6X6X3/8
	8"	4'	3'	5'6"	1'1"	2.44	11"	14,250	3/4"	6X6X3/8
	10"	5'	3'	7'6"	1'2"	4.17	1'	22,250	3/4"	6X6X3/8
	12"	6'	3'	8'	1'5"	5.33	1'1"	32,000	3/4"	10X10X1/2
	14"	7'6"	3'	9'	1'6"	7.5	1'2"	43,550	3/4"	10X10X1/2
	16"	9'	3-6'	9'	1'8"	10.50	1'3"	56,900	3/4"	10X10X1/2
	20"	12'	3-6'	9'	1'11"	14.00	1'5"	88,900	3/4"	W12X190



SECTION



ELEVATION

NOTES:

1. REFER TO TYPICAL TIE ROD RESTRAINT FOR FURTHER DETAILS AND COAT ALL STEEL WITH APPROVED COATING.
2. FOR PIPE SIZES OF 20 INCH OR LESS, OTHER SIZES SHALL REQUIRE GCDWR RESTRAINT DESIGN.
3. CONCRETE MUST BE POURED AGAINST UNDISTURBED EARTH, NO FORM WORK SHALL BE ALLOWED.
4. FOR EXISTING A.C. OR PVC PIPE INSTALL ONE JOINT OF DIP.

DESIGN CRITERIA:

1. FOR WATER MAINS AT A RATED TEST PRESSURE OF 250 PSI.

GWINNETT COUNTY DEPARTMENT OF WATER RESOURCES

DESIGN BY: STD. COMMITTEE
 DRAWN BY: DWR
 CHECKED BY: PSB
 APPROVED BY: ARS
 SCALE: NONE

**TYPICAL DEAD MAN THRUST
 RESTRAINT INSTALLATION
 FOR A.C. PIPE**

DRAWING NO.

W11

REVISION:
REVISION:* NOMINAL SIZE

1. CASING SHALL BE INSTALLED AT CENTER OF EACH LONG SIDE LOT, UNLESS OTHERWISE DIRECTED BY GCDWR.

DRAWING NO.

W12

[illegible]

ROUTE COPPER SERVICE LATERAL TO METER LOCATION, TYP.

MALE x FEMALE CORPORATION STOP

45°

HORIZONTAL PLAN

MAIN

POSITION TAPPING SADDLE AT ANGLE INDICATED TO METER

PROFILE

COUPLING

3" LONG P.E. PIPE

COUPLING, THREADED x SOLVENT WELD

2" LONG BRASS NIPPLE

CORPORATION STOP, MALE x FEMALE

HORIZONTAL PIPE AXIS

2-90° BENDS, TYP.

SECTION

MAIN

DOUBLE STRAP TAPPING SADDLE

PLAN

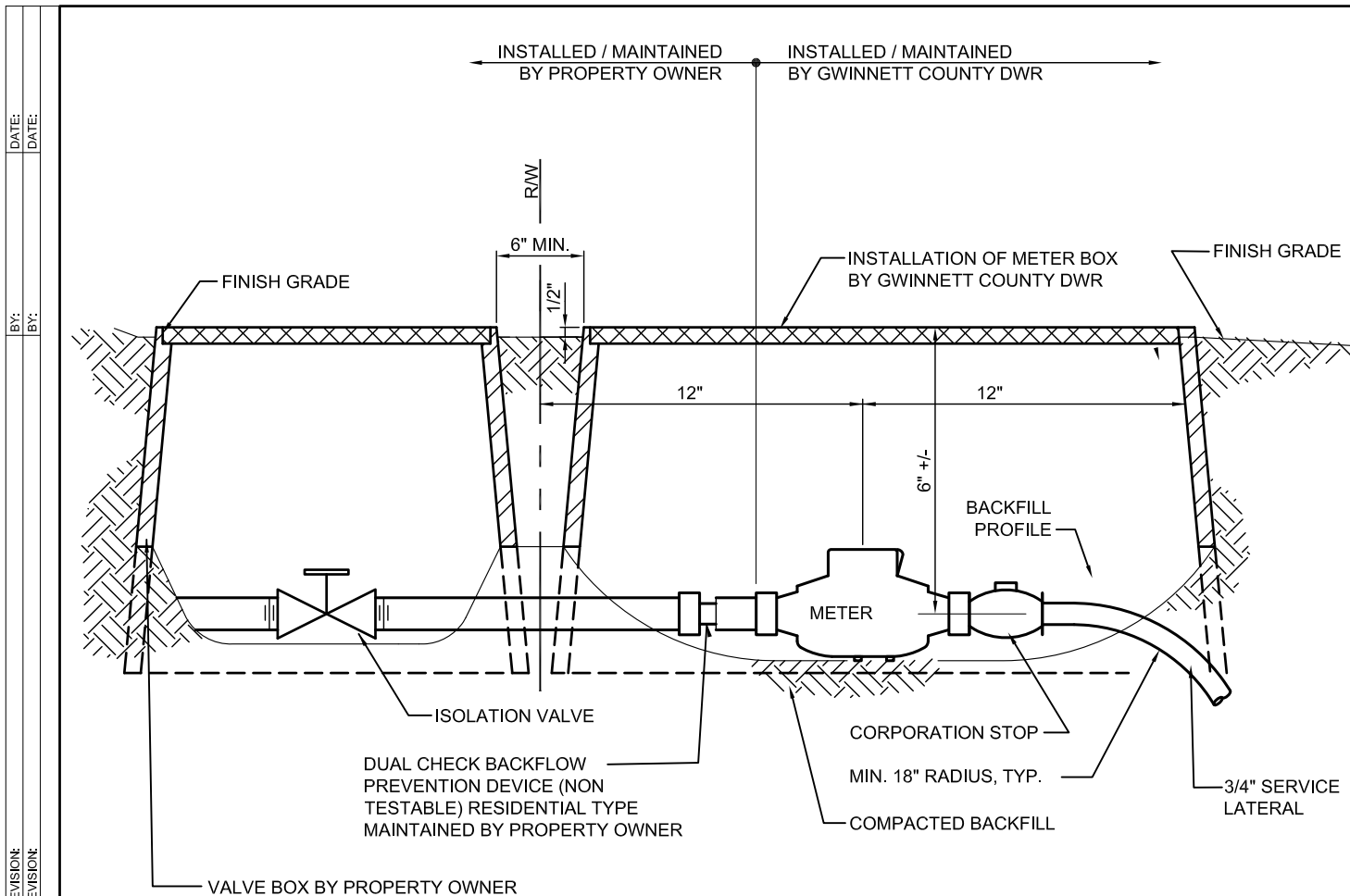
GALVANIZED STEEL
ASTM A53

FERROUS METAL

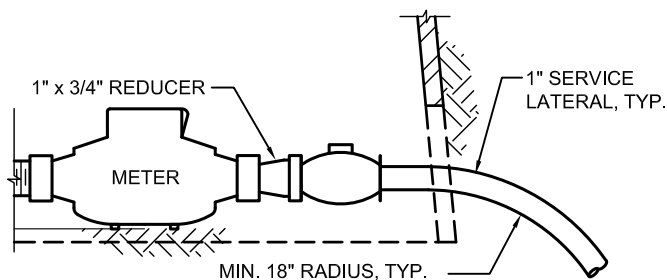
ER

DRAWING NO.

W13



SECTION



ALTERNATE SECTION

NOTES:

1. WHEN CONDITIONS ARE SUCH THAT METER INSTALLATION WITHIN THE RIGHT-OF-WAY IS DIFFICULT OR IMPOSSIBLE, WITH PROPERTY OWNERS PERMISSION, THE METER MAY BE LOCATED ON PRIVATE PROPERTY.
2. WHERE A 1" SERVICE LATERAL EXISTS, INSTALL A 1" TO 3/4" REDUCER BETWEEN CORPORATION STOP AND METER.
3. CENTER WATER METER IN METER BOX.

GWINNETT COUNTY DEPARTMENT OF WATER RESOURCES

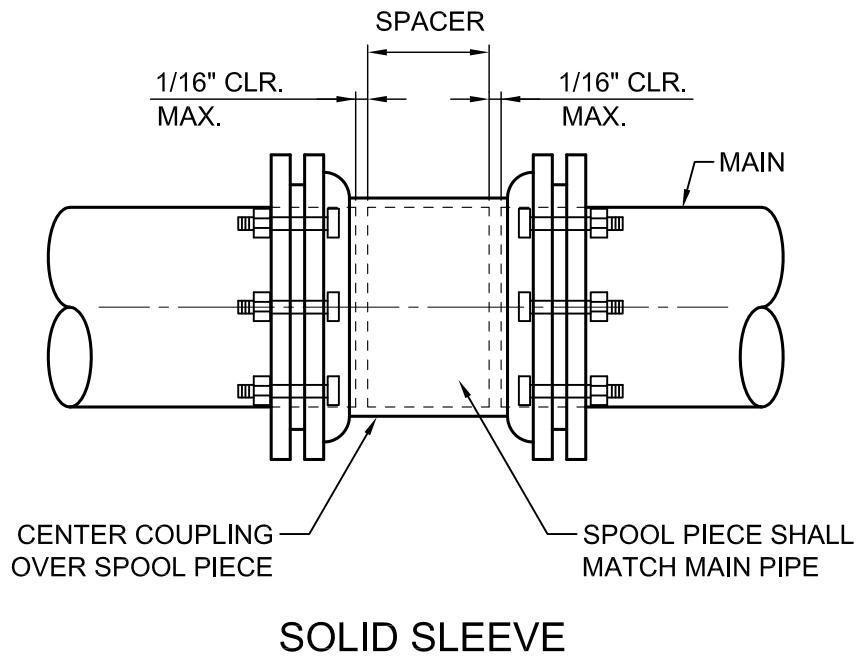
DESIGN BY: STD. COMMITTEE
 DRAWN BY: DWR
 CHECKED BY: PSB
 APPROVED BY: ARS
 SCALE: NONE

TYPICAL RESIDENTIAL METER BOX INSTALLATION

DRAWING NO.
W14

REVISION: 4-05-16
 DATE: 4-05-16
 BY: [blank]
 DATE: [blank]
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 BY: [blank]
 DATE: [blank]
 BY: [blank]

REVISION:	BY:	DATE:	REVISION:	BY:	DATE:
ORIGINAL ISSUE: 4-05-16					



1. SOLID SLEEVE SHALL BE STEEL AND PROPERLY COATED BEFORE BACKFILL.

GWINNETT COUNTY DEPARTMENT OF WATER RESOURCES

DESIGN BY: STD. COMMITTEE
DRAWN BY: DWR
CHECKED BY: PSB
APPROVED BY: ARS
SCALE: NONE

TYPICAL COUPLING

DRAWING NO.

W15

REVISION:

BY:

DATE:

REVISION:

BY:

DATE:

REVISION:

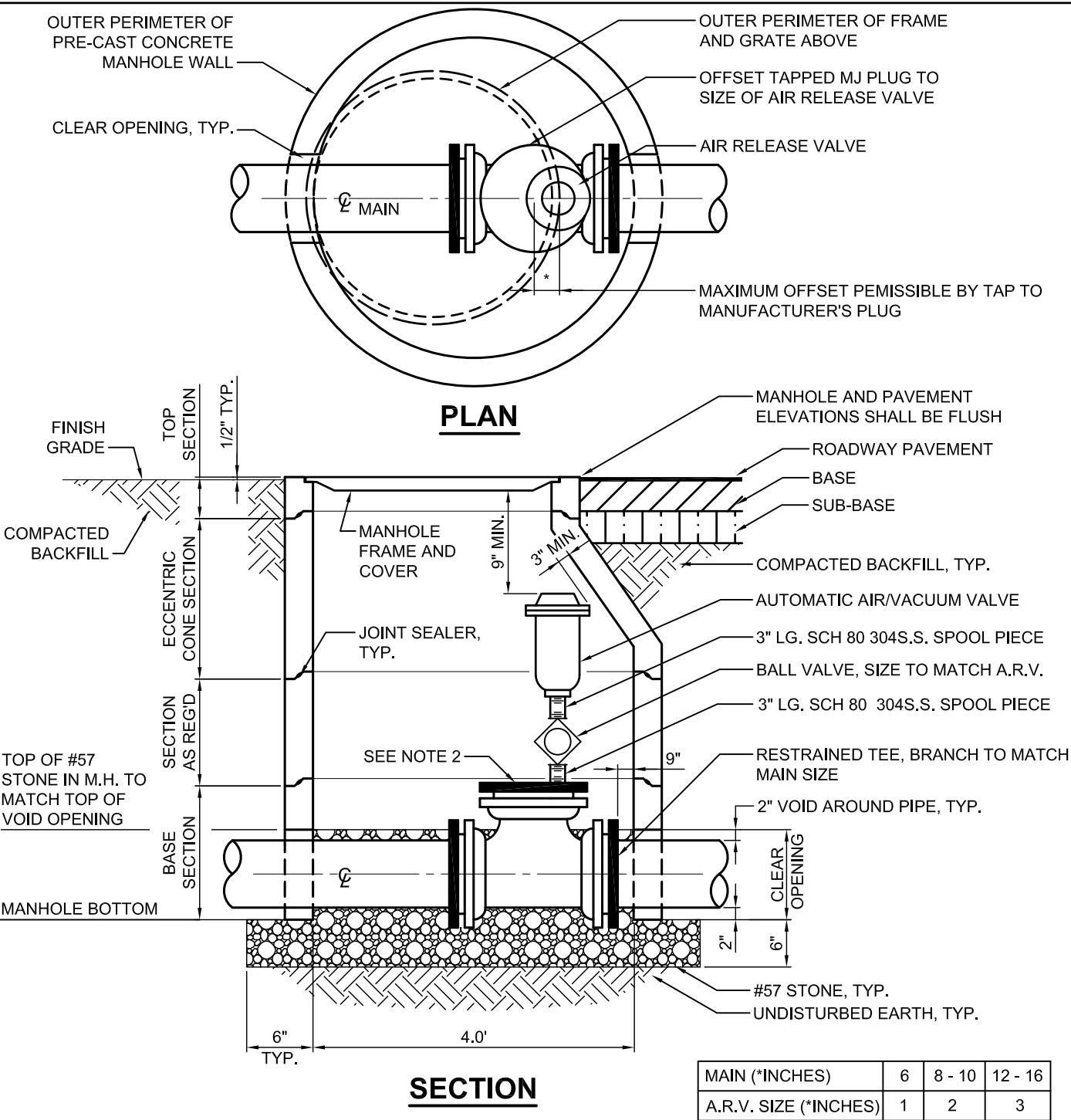
BY:

DATE:

REVISION:

BY:

DATE:



- NOTES:**
- PRIOR TO DIGGING THE UTILITIES PROTECTION CENTER INC. SHALL BE NOTIFIED BY CALLING 811
 - TAP AND ROTATE PLUG OR COMPANION FLANGE AS REQUIRED FOR RESTRAINED FITTING TO PROVIDE CLEARANCE BETWEEN MANHOLE WALL AND EQUIPMENT AS REQUIRED

- DESIGN CRITERIA:**
- FOR WATER MAINS AT A RATED TEST PRESSURE OF 250 PSI

GWINNETT COUNTY DEPARTMENT OF WATER RESOURCES

DESIGN BY: STD. COMMITTEE
DRAWN BY: DWR
CHECKED BY: PSB
APPROVED BY: ARS
SCALE: NONE

TYPICAL AIR RELEASE VALVE
INSTALLATION

DRAWING NO.
W16