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REUSE DETAILS INDEX OF DRAWINGS

REVISED:
DECEMBER 2014



HALL COUNTY PUBLIC WORKS & UTILITIES
ENGINEERING DIVISION

STANDARD

MINIMUM DESIGN STANDARDS

A. REUSE DISTRIBUTION SYSTEM

1. THE ACRONYM "NPRL" SHALL BE USED TO DEFINE A NON-POTABLE REUSE LINE WHERE APPROPRIATE.
2. EACH SECTION OF REUSE PIPE SHALL BE PAINTED WITH PANTONE 522C OR 512C OR OTHER SHADE OF PURPLE ACCEPTED BY HALL COUNTY OVER A MINIMUM OF 60% OF THE CIRCUMFERENCE OF THE PIPELINE EXCEPT FOR ANY DISTINGUISHING MARKS OF MANUFACTURE OR PRODUCT INFORMATION WHICH SHALL REMAIN VISIBLE AND UNPAINTED.
3. REUSE PIPING SHALL BE WRAPPED IN A PANTONE 522C POLYETHYLENE TUBE WRAP WHERE REQUIRED FOR CATHODIC PROTECTION. (ANSI/AWWA C105/A21.5)
4. DURING THE INSTALLATION OF THE REUSE PIPING, A THREE INCH WIDE TAPE TO SAY 'REUSE WATER - NONPOTABLE' (PURPLE WITH WHITE OR BLACK LETTERING) IS TO BE INSTALLED TWO INCHES ABOVE THE LINE DURING INSTALLATION.
5. ALL REUSE PIPE SHALL HAVE LOCATOR WIRE IN ACCORDANCE WITH SECTION 3.12 OF THE HALL COUNTY STANDARD SEWER SPECIFICATIONS.
6. REUSE PIPE MUST MAINTAIN 3- FEET HORIZONTAL SEPARATION AND 18- INCHES VERTICAL SEPARATION FROM BOTH PROPOSED AND EXISTING SANITARY SEWER FORCE MAINS AND WATER MAINS.
7. ALL REUSE WATER VALVES SHALL HAVE SQUARE VALVE BOXES WITH THE WORDS 'RECLAIMED WATER' CAST IN THE LID. ALL BOXES MUST BE PAINTED ON THE INSIDE AND LID WITH PANTONE 522 OR 512 OR OTHER SHADE OF PURPLE ACCEPTED BY HALL COUNTY. VALVE BOXES SHALL BE RUSSCO C2503 6.5" SQUARE. NOTE: STANDARD ROUND VALVE BOXES ARE PROHIBITED IN THE NON-POTABLE REUSE SYSTEM
8. ALL VALVES MUST BE MARKED WITH A PURPLE DRIVABLE MARKER 78 INCHES LONG AND EXTEND TO 6" ABOVE THE VALVE. THE MARKERS ARE NOT TO PROTRUDE THE FINISHED SURFACE GRADE MORE THAN (3') FEET AND NO LESS THAN (18") INCHES ABOVE THE FINISHED GRADE. THERE MUST BE A LABEL ON BOTH SIDES OF THE MARKER WITH THE FOLLOWING INFORMATION; 'REUSE WATER VALVE, DO NOT TAP, NON-POTABLE, BEFORE DIGGING CONTACT HALL COUNTY PUBLIC WORKS & UTILITIES, PHONE # 770-531-6800.
9. THERE SHALL BE NO PHYSICAL CONNECTION BETWEEN THE RECLAIMED WATER SYSTEM AND ANY OTHER WATER SUPPLY. AN ISOLATION VALVE DOES NOT CONSTITUTE A SEPARATION.
10. RECLAIMED WATER, USED FOR IRRIGATION, MAY ONLY BE CONNECTED TO 1N THE GROUND' SPRINKLER SYSTEMS OR TO A NON-STANDARD HOSE BIB LOCATED WITHIN A LOCKABLE METER BOX ONLY WHERE SPECIFICALLY APPROVED BY THE COUNTY IN THE END USER AGREEMENT. NO ABOVE GROUND SYSTEM WILL BE APPROVED ON RESIDENTIAL SITES.
11. ALL PIPING AND PIPELINES SHALL BE COLOR-CODED PANTONE PURPLE 522 USING SUNLIGHT STABLE PIGMENT.
12. ALL VALVES, HOSE BIBS WHERE ALLOWED, AND OUTLETS SHALL BE TAGGED AND COLOR-CODED PURPLE TO DIFFERENTIATE RECLAIMED WATER FROM POTABLE WATER. ALL RECLAIMED WATER VALVES AND OUTLETS SHALL BE APPROPRIATELY TAGGED OR LABELED 'DO NOT DRINK' TOGETHER WITH THE EQUIVALENT STANDARD INTERNATIONAL SYMBOL TO WARN THE PUBLIC AND EMPLOYEES THAT THE WATER IS NOT INTENDED FOR DRINKING.
13. WHERE HOSE BIBS ARE ALLOWED, NON-STANDARD HOSE CONNECTIONS SHALL BE USED TO PRECLUDE THE INTERCHANGE OF HOSES WITH THE POTABLE WATER SYSTEM. HOSE BIBS ARE PROHIBITED FROM RESIDENTIAL CUSTOMER SITES.

continued.....

REUSE DISTRIBUTION GENERAL NOTES

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HALL COUNTY PUBLIC WORKS & UTILITIES
ENGINEERING DIVISION

STANDARD
R-1A

14. HOSE BIBS MUST BE INSTALLED UNDERGROUND WITHIN A LOCKABLE METER BOX. CAM LOCK CONNECTION ASSEMBLIES IN SMALL SIZES (1/2 TO 3/4 - INCH) WITH LOCKABLE METER BOXES WILL BE REQUIRED ON ALL HOSE CONNECTIONS DESIGNATED FOR REUSE WATER.
15. RECLAIMED WATER IRRIGATION SYSTEMS SHALL BE DESIGNED, CONSTRUCTED AND OPERATED SO AS TO MINIMIZE OVER SPRAY ONTO IMPERVIOUS SURFACES.
16. RUNOFF OF RECLAIMED WATER INTO DITCHES OR STREAMS SHOULD BE AVOIDED.
17. LOW TRAJECTORY NOZZLES, OR OTHER MEANS TO MINIMIZE AEROSOL FORMATION SHALL BE USED WITHIN 100 FEET OF OUTDOOR PUBLIC EATING, DRINKING AND BATHING FACILITIES. IRRIGATION SYSTEMS SHOULD BE DESIGNED SO THAT SPRAY DOES NOT GO OUTSIDE OF THE ESTABLISHED BOUNDARIES.
18. THE END USER SHALL NOT ALLOW RECLAIMED WATER TO BE USED TO FILL SWIMMING POOLS, HOT TUBS, SPAS, WADING POOLS OR OTHER RECREATIONAL CONTACT SYSTEMS.
19. THE CUSTOMER SHALL NOT ALLOW RECLAIMED WATER TO BE USED FOR THE CONSUMPTION (HUMAN OR ANIMAL), INTERCONNECTING WITH ANOTHER WATER SOURCE, OR SPRINKLING OF EDIBLE CROPS (GARDENS).
20. THE USE OF RECLAIMED WATER FOR AGRICULTURAL IRRIGATION OF CROPS NOT INTENDED FOR DIRECT HUMAN CONSUMPTION SHALL REQUIRE THE SPECIFIC AUTHORIZATION BY THE DIRECTOR OF HALL COUNTY PUBLIC WORKS AND UTILITIES AND THE GEORGIA EPD.
21. RECLAIMED WATER SHALL NOT BE USED FOR ANY PURPOSE OTHER THAN IRRIGATION UNLESS SPECIFICALLY AUTHORIZED BY HALL COUNTY PUBLIC WORKS AND UTILITIES WITHIN THE END USER AGREEMENT.
22. THE END USER SHALL NOT ALLOW RECLAIMED WATER TO ENTER THE DWELLING UNIT(S).
23. TANK TRUCKS AND OTHER PORTABLE EQUIPMENT THAT IS USED TO DISTRIBUTE RECLAIMED WATER SHALL BE CLEARLY IDENTIFIED WITH RECLAIMED OR NON-POTABLE WATER SIGNS. THE TRUCK USED TO TRANSPORT AND DISTRIBUTE RECLAIMED WATER MAY NOT BE USED TO TRANSPORT POTABLE WATER THAT IS USED FOR DRINKING WATER PURPOSES.
24. MALFUNCTIONING IRRIGATION SYSTEMS AND LINE BREAKS SHALL BE REPAIRED IMMEDIATELY. IMPROPER OPERATION ALLOWING RUNOFF DURING IRRIGATION MAY BE GROUNDS TO SHUT OFF SERVICE TO THE CUSTOMER.
25. SITES UTILIZING REUSE WATER FOR IRRIGATION SUCH AS GOLF COURSES, RESIDENTIAL DEVELOPMENTS, PARKS AND OTHER PUBLIC AREAS ARE REQUIRED TO POST VISIBLE SIGNS AT ALL ENTRANCE LOCATIONS.

B. NEW REUSE SERVICE INSTALLATIONS/METERS AND METER BOXES

1. RECLAIMED METERS MUST BE A NEPTUNE METER FOR RECLAIMED WATER OR EQUAL. TO ENSURE IDENTIFICATION OF RECLAIMED WATER METERS, THE INTERNATIONAL COLOR OF PANTONE 522 IS LOCATED ON THE LID OF REGISTER, THE REGISTER FACE, LID, SHROUD AND METER BOTTOM AND THE WORD "RECLAIMED" IS MARKED ON THE BRASS HOUSING.
 2. ALL RECLAIMED METERS WILL BE INSTALLED IN A CARSON-BROOKS PLASTICS BOX VIOLET IN COLOR 1419, 1220, OR 1324. METER BOX LIDS WILL BE VIOLET IN COLOR AND LABELED "REUSE WATER".
 3. ALL RECLAIMED METER INSTALLATIONS MUST MAINTAIN A MINIMUM OF THREE (3) FEET FROM THE POTABLE WATER METER.
- C. AS-BUILT DRAWINGS SHALL BE PROVIDED TO HALL COUNTY PUBLIC WORKS AND UTILITIES UPON COMPLETION OF EACH PHASE OF INSTALLATION.**

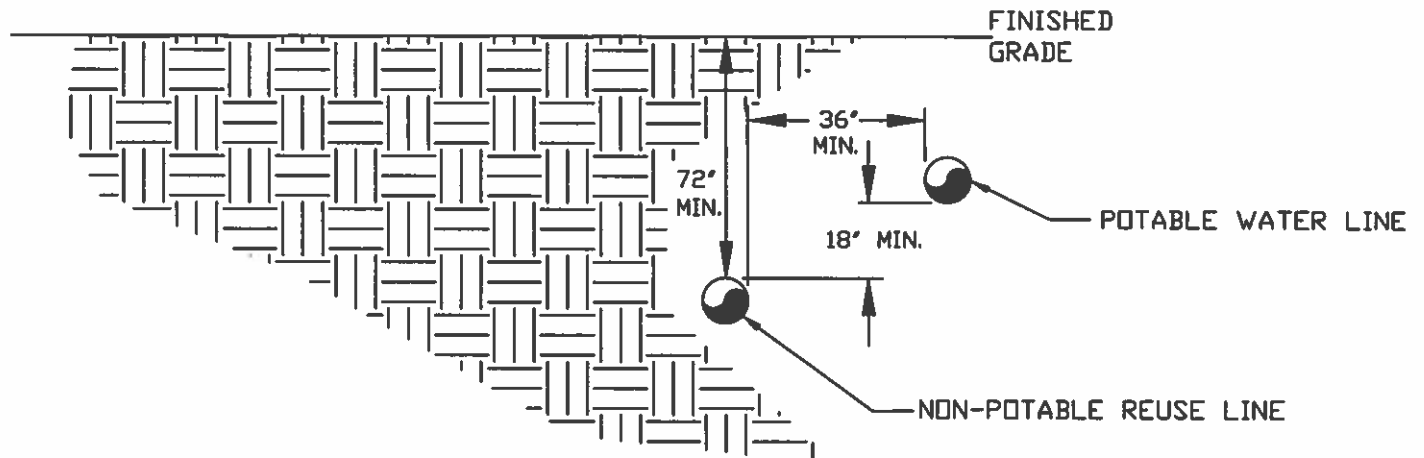
**REUSE DISTRIBUTION
GENERAL NOTES**

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**HALL COUNTY PUBLIC WORKS & UTILITIES
ENGINEERING DIVISION**

**STANDARD
R-1B**



NOTE: UNLESS OTHERWISE INDICATED ON PLANS, NON-POTABLE REUSE LINE TO BE INSTALLED WITH A MINIMUM OF 6 FEET OF SOIL COVER. THERE SHOULD BE AT LEAST 18 INCHES OF VERTICAL CLEARANCE AND 36 INCHES OF HORIZONTAL SEPARATION BETWEEN ANY POTABLE WATER LINE AND NON-POTABLE REUSE LINE.

**REUSE DETAILS
UNDERGROUND NPRL LOCATION**

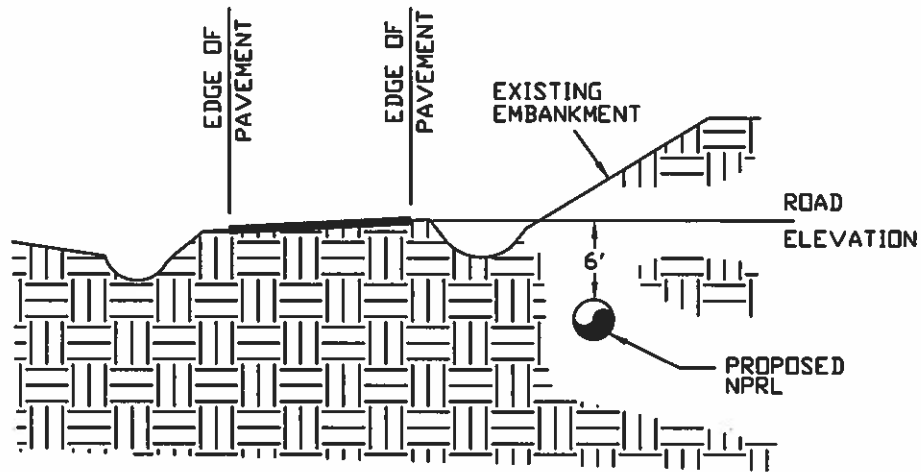
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ENGINEERING DIVISION**

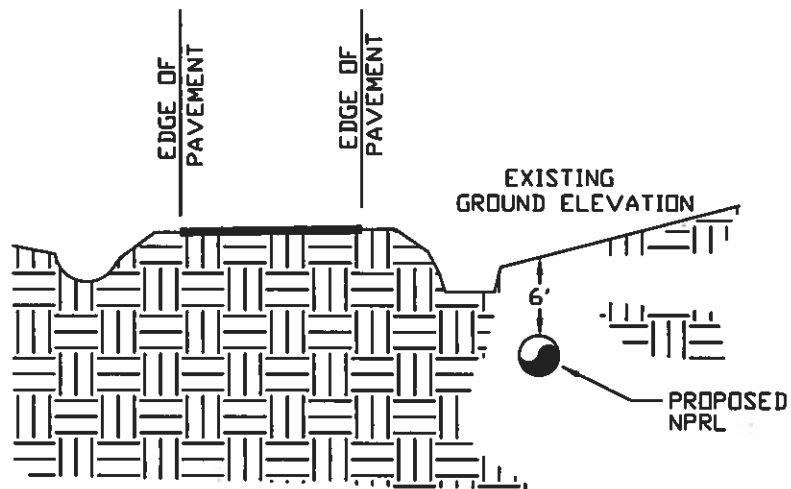
**STANDARD
R-2**

WHERE GROUND ELEVATION
IS ABOVE ROAD ELEVATION



NOTE: UNLESS OTHERWISE INDICATED ON PLANS, PIPE TO BE INSTALLED WITH A MINIMUM OF 6 FEET OF SOIL COVER AND BE 6 FEET BELOW THE ROADWAY . PIPE SHALL BE LAYED IN THE BACK 5' OF THE RIGHT OF WAY.

WHERE GROUND ELEVATION
IS BELOW ROAD ELEVATION



NOTE: UNLESS OTHERWISE INDICATED ON PLANS, PIPE TO BE INSTALLED WITH A MINIMUM OF 6 FEET OF SOIL COVER AND BE 6 FEET BELOW THE ROADWAY . PIPE SHALL BE LAYED IN THE BACK 5' OF THE RIGHT OF WAY.

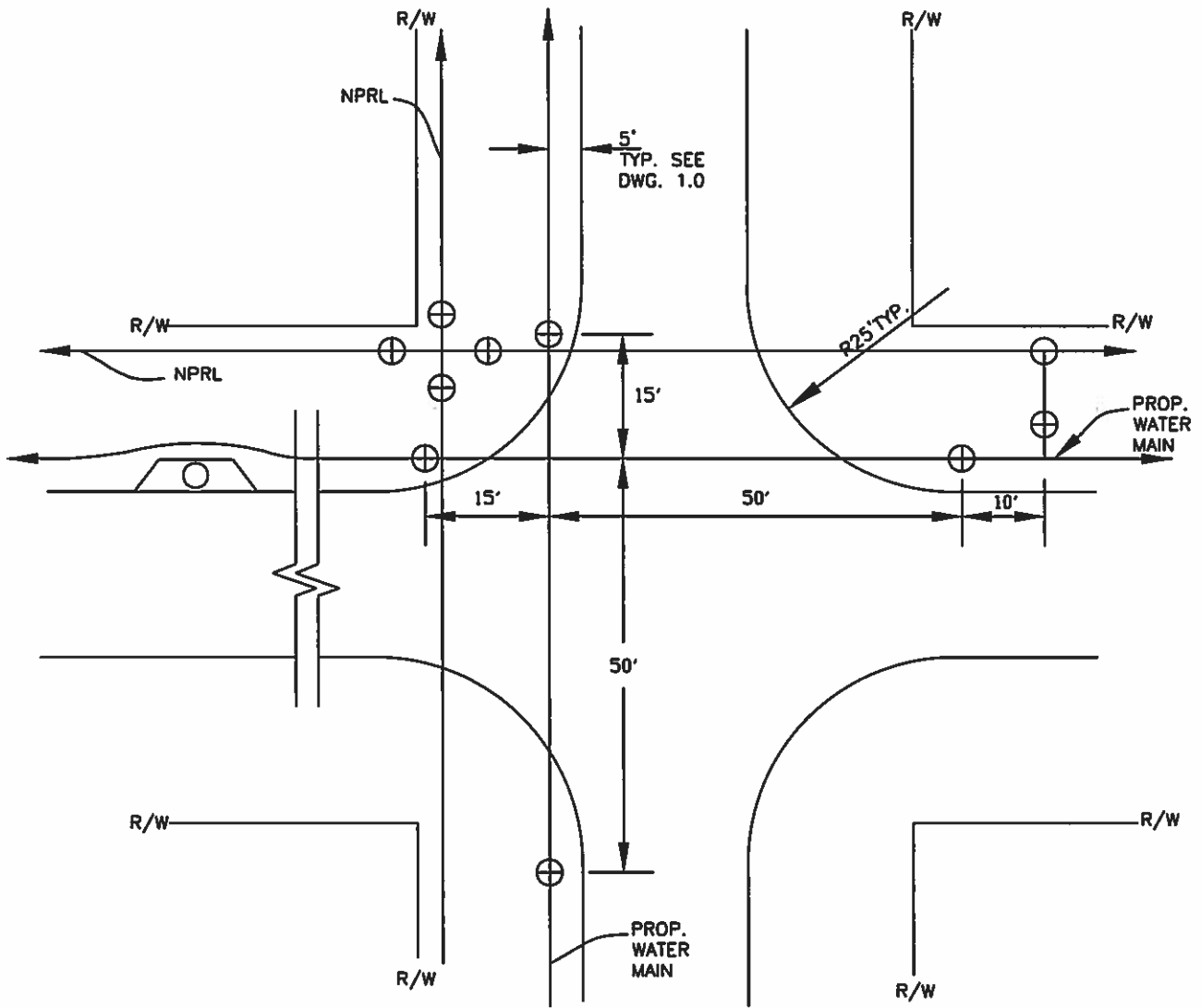
REUSE DETAILS
NPRL DEPTH AT EDGE OF PAVEMENT

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DECEMBER 2014



HALL COUNTY PUBLIC WORKS & UTILITIES
ENGINEERING DIVISION

STANDARD
R-3



NOTES

1. DEPTH OF COVER OVER NPRL SHALL BE 6'0" AS MEASURED FROM TOP OF CURB.
2. MIN. 6" COMPACTED SOIL BETWEEN BOTTOM OF PIPE AND ROCK. MIN. 9" COMPACTED SOIL BETWEEN SIDES OF PIPE AND ROCK.
3. NO ROCK IN BACKFILL FOR FIRST 2'0" ABOVE TOP OF PIPE.
4. IF RADIUS IS NOT 25', ADJUST PIPE LENGTHS SO THAT VALVES ARE NOT IN STREET.
5. VALVES TO BE A MIN. OF 2'0" FROM BACK OF CURB. TOP SECTION OF BOX TO HAVE 2'0" CONCRETE COLLAR.

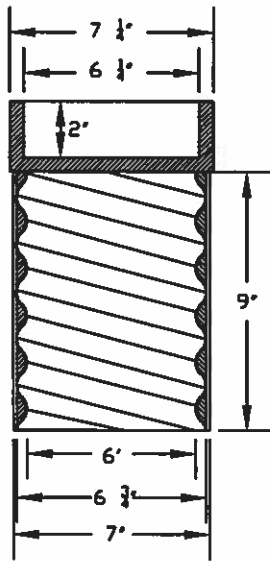
**REUSE DETAILS
NPRL INTERSECTION DETAILS**

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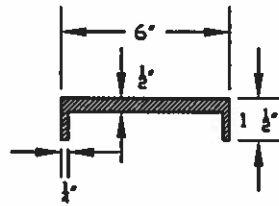


**HALL COUNTY PUBLIC WORKS & UTILITIES
ENGINEERING DIVISION**

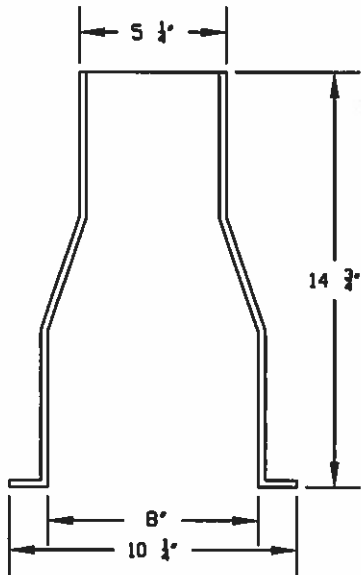
**STANDARD
R-4**



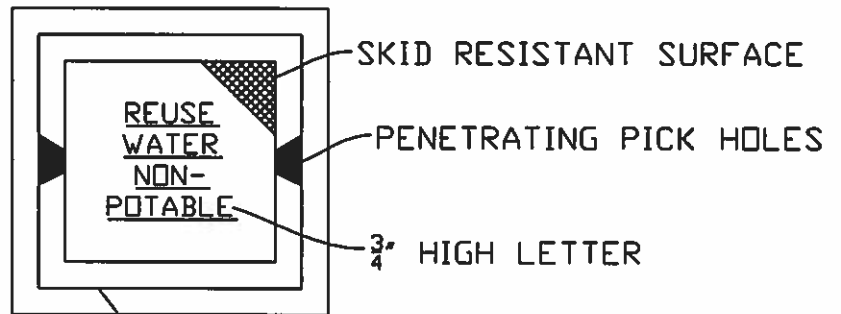
TOP SECTION



COVER



BOTTOM SECTION



VALVE BOX SHALL BE
 RUSSCO C2503 6.5" SQUARE
 AND PAINTED PANTONE
 COLOR No. 522.

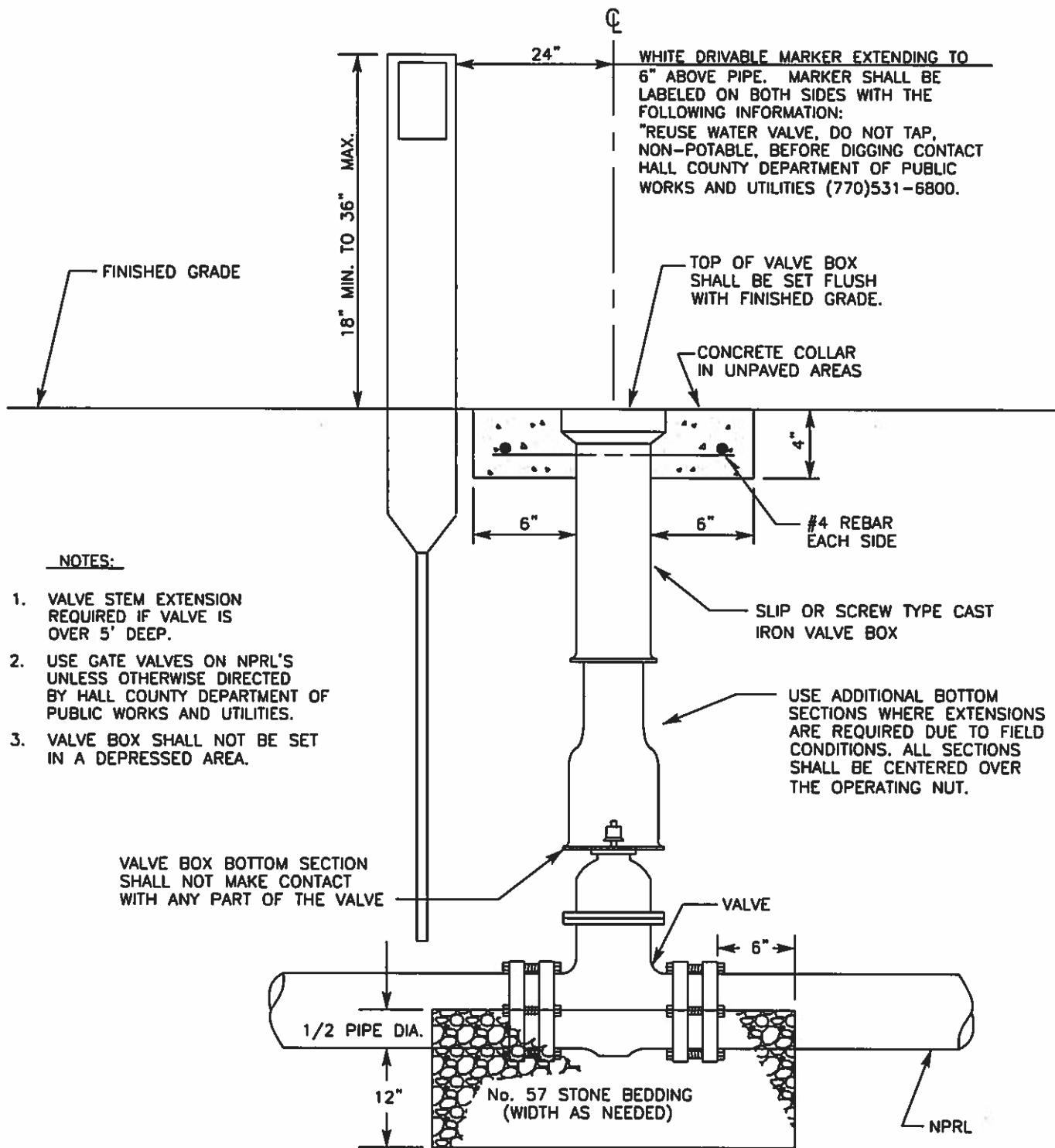
**REUSE DETAILS
 NPRL VALVE BOX**

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**HALL COUNTY PUBLIC WORKS & UTILITIES
 ENGINEERING DIVISION**

**STANDARD
 R-5**



NOTES:

1. VALVE STEM EXTENSION REQUIRED IF VALVE IS OVER 5' DEEP.
2. USE GATE VALVES ON NPRL'S UNLESS OTHERWISE DIRECTED BY HALL COUNTY DEPARTMENT OF PUBLIC WORKS AND UTILITIES.
3. VALVE BOX SHALL NOT BE SET IN A DEPRESSED AREA.

VALVE BOX BOTTOM SECTION SHALL NOT MAKE CONTACT WITH ANY PART OF THE VALVE

**REUSE DETAILS
 TYPICAL NPRL VALVE INSTALLATION**

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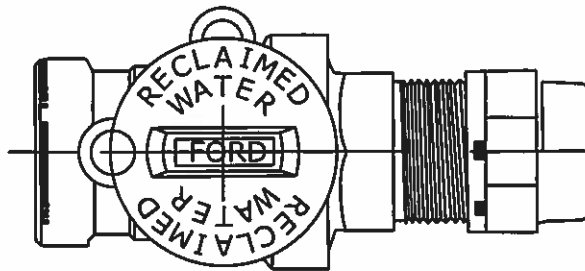
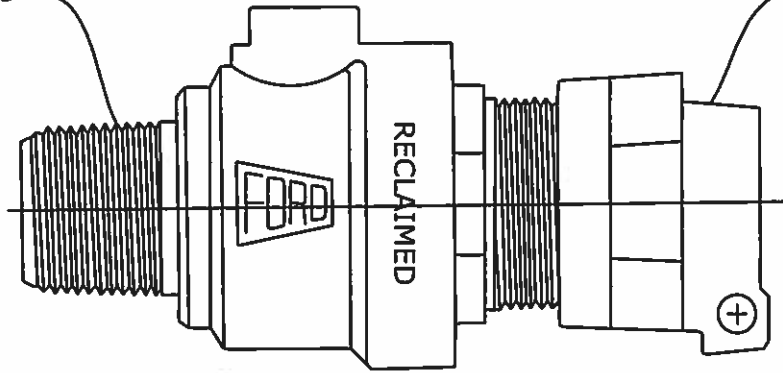


**HALL COUNTY PUBLIC WORKS & UTILITIES
 ENGINEERING DIVISION**

**STANDARD
 R-6**

1" NPT THREAD

PACK JOINT



FEMALE I.P. THREADS

PACK JOINT

BRASS BALL

ALL BRASS
AWWA C800
ASTM B62

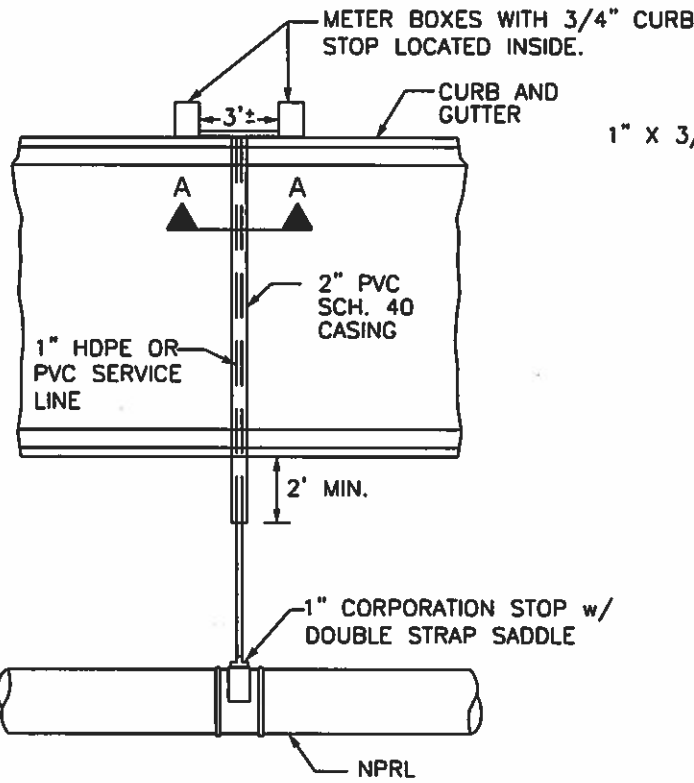
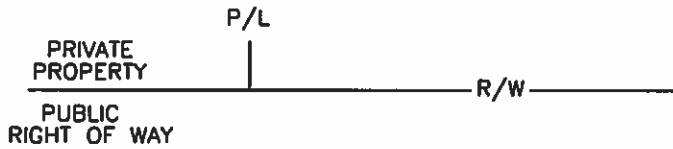
**REUSE DETAILS
BRASS FITTINGS FOR METER INSTALLATION ON NPRL**

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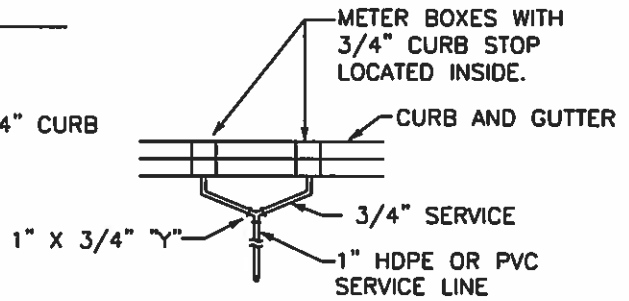


HALL COUNTY PUBLIC WORKS & UTILITIES
ENGINEERING DIVISION

STANDARD
R-7



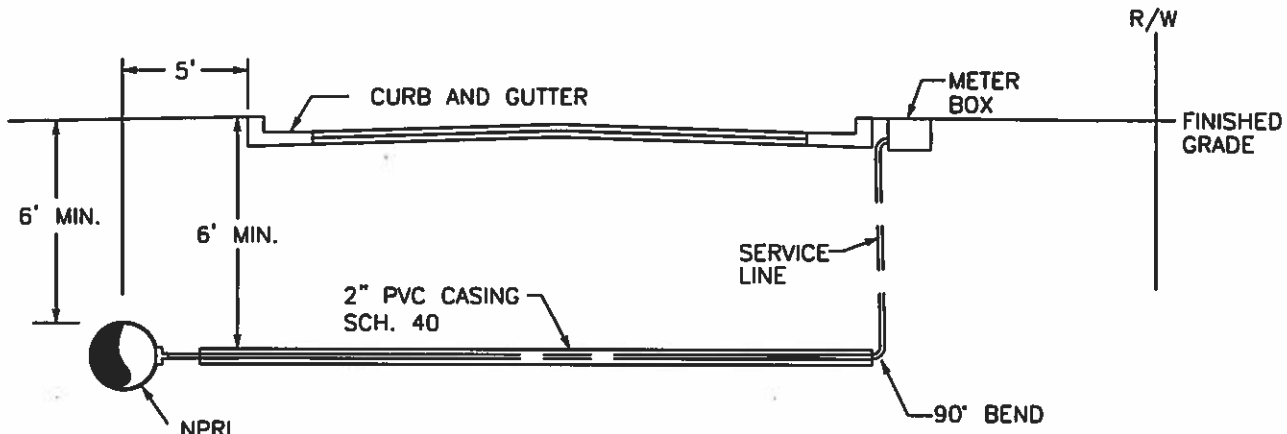
PLAN VIEW



SECTION A-A

NOTES:

1. DOUBLE SERVICE LINES TO BE 1" WITH 3/4" WYES TO METER BOXES. SINGLE SERVICE LINES TO BE 3/4".
2. ALL PIPING AND CASING SHALL BE PANTONE PURPLE.



PROFILE VIEW

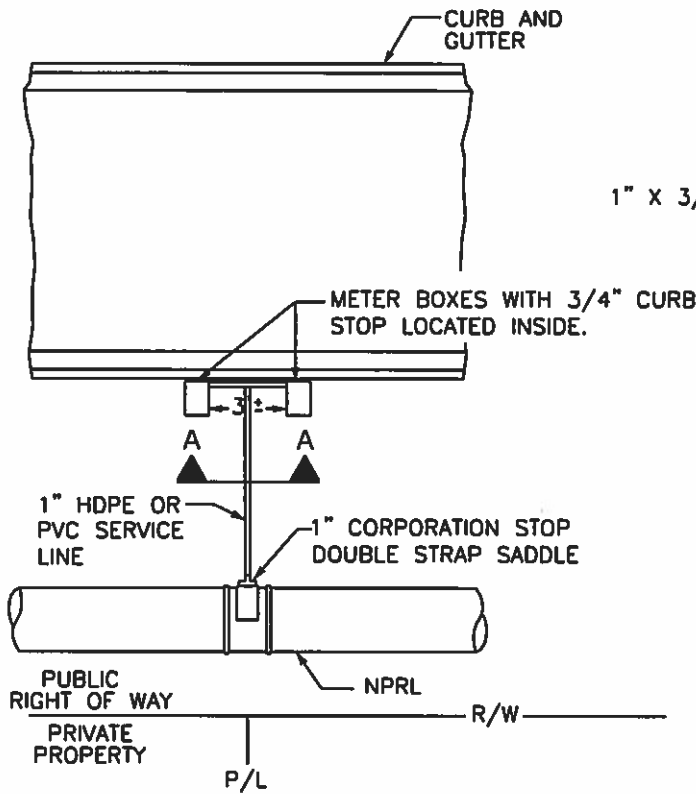
**REUSE DETAILS
LONG SIDE 3/4" SERVICE FOR NPRL**

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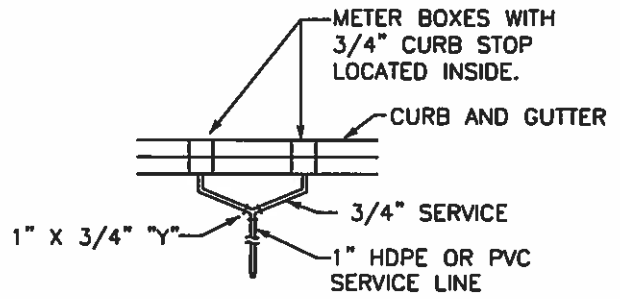


HALL COUNTY PUBLIC WORKS & UTILITIES
ENGINEERING DIVISION

STANDARD
R-8



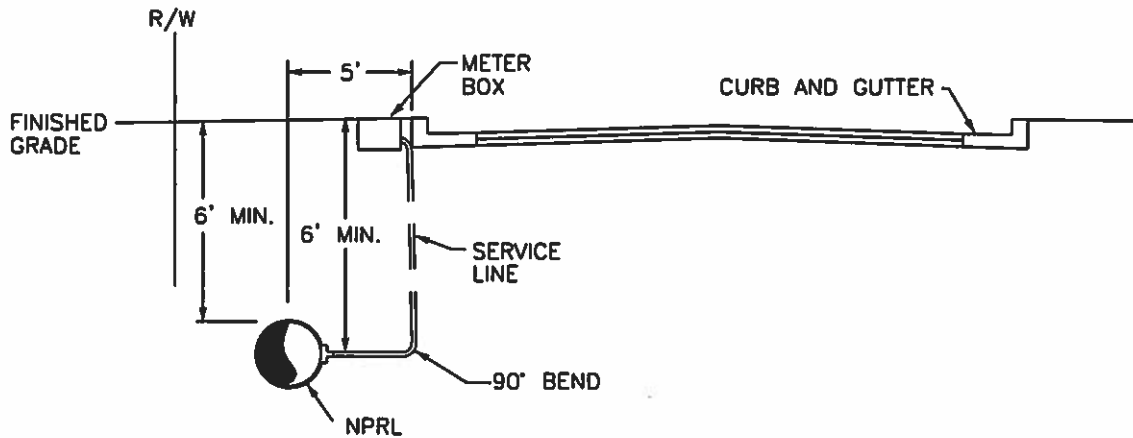
PLAN VIEW



SECTION A-A

NOTES:

1. DOUBLE SERVICE LINES TO BE 1" WITH 3/4" WYES TO METER BOXES. SINGLE SERVICE LINES TO BE 3/4".
2. CURB STOPS SHALL BE 300 P.S.I. BALL-TYPE METER VALVES (FORD BALLCORP) OR APPROVED EQUAL.
3. CORPORATION STOPS SHALL BE 300 P.S.I. BALL-TYPE CORPORATION VALVES, FORD 300 P.S.I. BALL CORPORATION VALVE (FORD BRW41-777W) LOCKABLE, OR APPROVED EQUAL.
4. ADAPTERS, WYES AND ALL FITTINGS SHALL BE BRONZE 300 P.S.I. WORKING PRESSURE
5. ALL PIPING AND CASING SHALL BE PANTONE PURPLE.



PROFILE VIEW

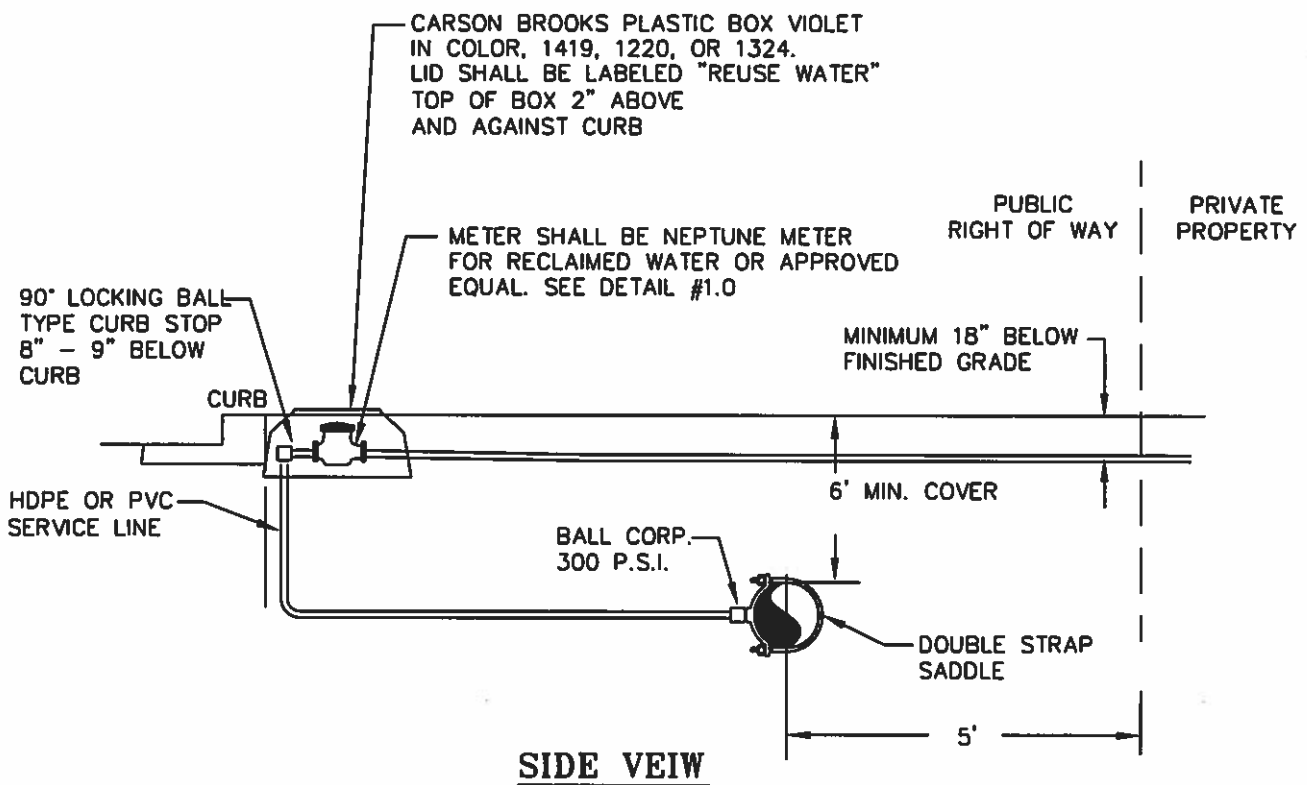
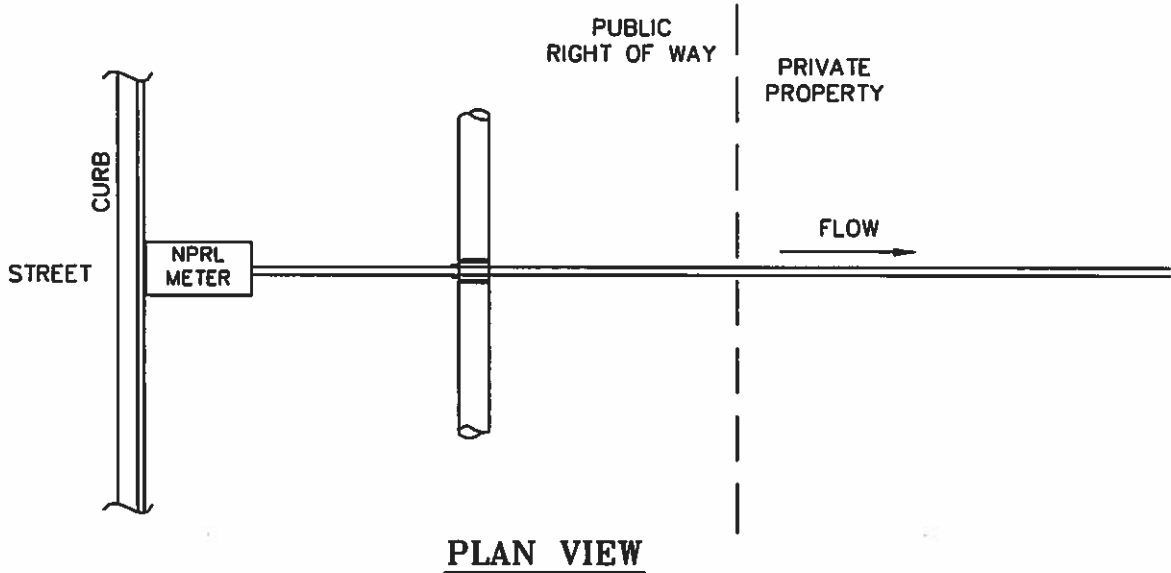
**REUSE DETAILS
SHORT SIDE SERVICE FOR NPRL**

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**HALL COUNTY PUBLIC WORKS & UTILITIES
ENGINEERING DIVISION**

**STANDARD
R-9**



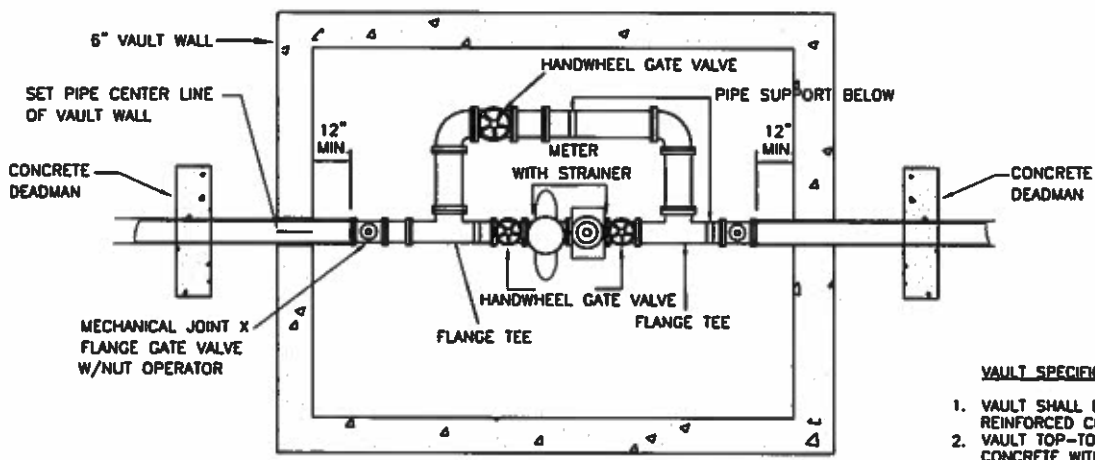
**REUSE DETAILS
NPRL METER BOX 2" AND SMALLER**

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**HALL COUNTY PUBLIC WORKS & UTILITIES
ENGINEERING DIVISION**

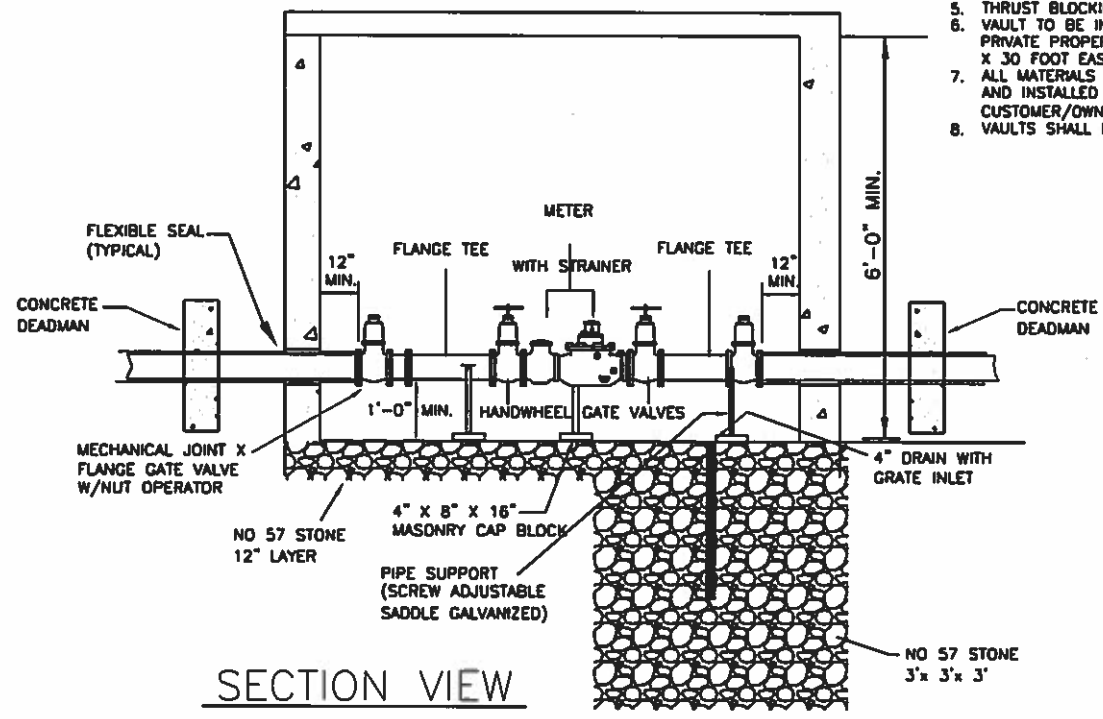
**STANDARD
R-10**



PLAN VIEW

VAULT SPECIFICATIONS

1. VAULT SHALL BE PRECAST REINFORCED CONCRETE
2. VAULT TOP-TO BE REINFORCED CONCRETE WITH HATCH OPENING OFFSET TO ONE SIDE
3. ACCESS LADDER-DOWELED TO WALL AND CENTERED AT HATCH OPENING
4. PIPE PENETRATIONS (ANNULUS BETWEEN CONCRETE AND OUTSIDE OF PIPE) SHALL BE SEALED WITH EXPANDING FOAM OR BRICKED AND GROUTED.
5. THRUST BLOCKING (AS REQUIRED)
6. VAULT TO BE INSTALLED ON OWNERS PRIVATE PROPERTY, PROVIDING A 15 X 30 FOOT EASEMENT.
7. ALL MATERIALS TO BE FURNISHED AND INSTALLED BY THE CUSTOMER/OWNER.
8. VAULTS SHALL BE 2 PIECE.



SECTION VIEW

VAULT SIZING REQUIREMENTS

VAULTS SHALL BE ADEQUATELY SIZED TO CONTAIN ALL PIPING, VALVES, BYPASS, FITTINGS, METER AND STRAINER ASSOCIATED W/ THE METER INSTALLATION.

A MINIMUM DISTANCE OF 12" SHALL BE MAINTAINED BETWEEN ANY PIPING AND 1) THE VAULT FLOOR AND 2) THE WALL RUNNING PARALLEL TO THE PIPING.

VAULT HATCH REQUIREMENTS

1. RATED TO WITHSTAND A MINIMUM H-10 LIVE LOAD.
2. A MANUAL LOCKING ARM TO PREVENT HATCH LIDS FROM CLOSING.
3. CAPABLE OF BEING SECURED USING A KEYED LOCK, OR BY A T-HANDLE LATCH.
4. 3" - 6" REUSE SERVICE: 36" X 36" HATCH
GREATER THAN 6" WATER SERVICE: PER HCOBPW

**REUSE DETAILS
NPRL METER BOX 3" AND LARGER**

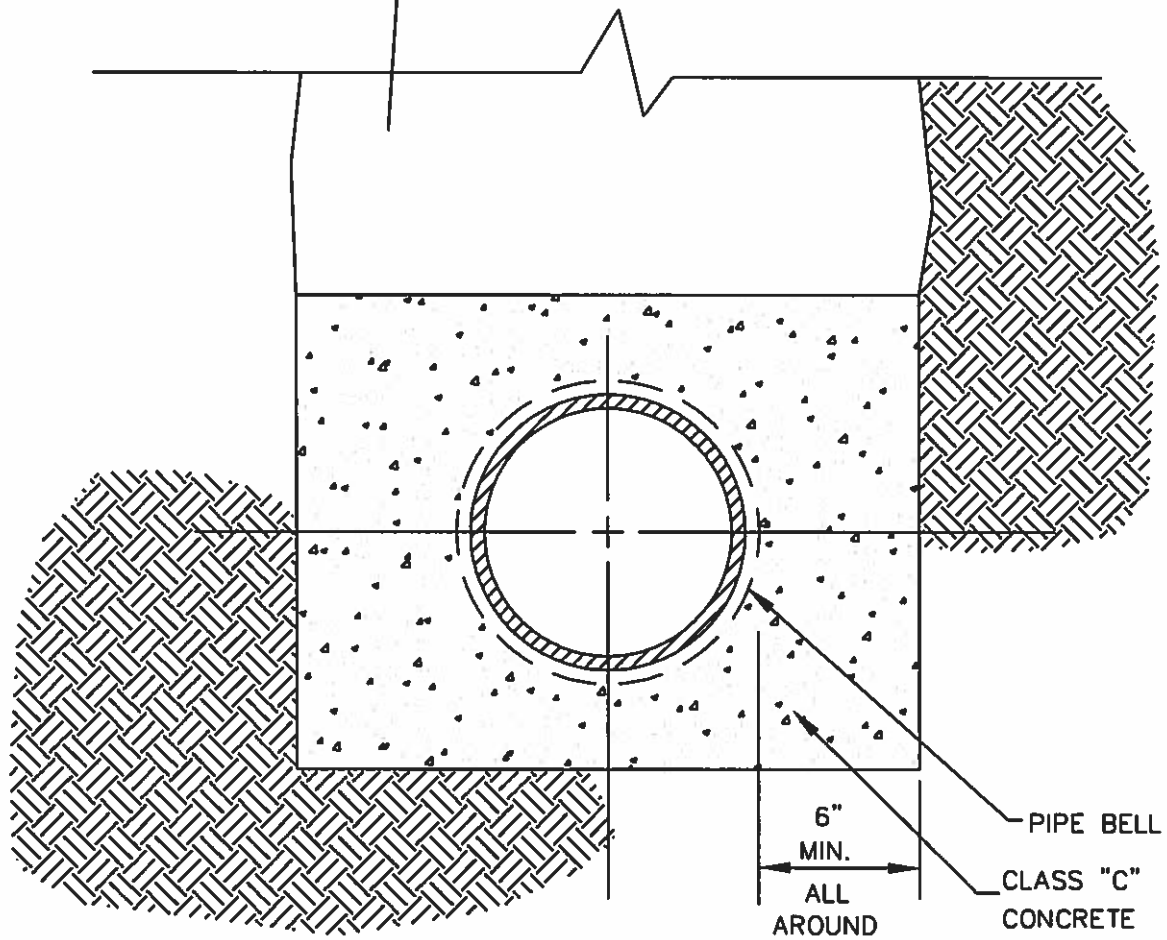
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HALL COUNTY PUBLIC WORKS & UTILITIES
ENGINEERING DIVISION

STANDARD
R-11

BACKFILL REQUIREMENTS:
GENERAL - 85% OPTIMAL MOISTURE CONTENT
BELOW PAVED SURFACES - 98% OPTIMAL MOISTURE CONTENT



NOTES:

1. CONCRETE ENCASUREMENT SHALL BE USED ON NPRL WHERE INSTALLATION CANNOT MAINTAIN MINIMUM THREE (3) FEET HORIZONTAL OR EIGHTEEN (18) INCHES VERTICAL SEPARATION FROM SANITARY SEWER, SANITARY SEWER FORCE MAIN, POTABLE WATER MAINS, AND STORM SEWER DRAIN LINES.

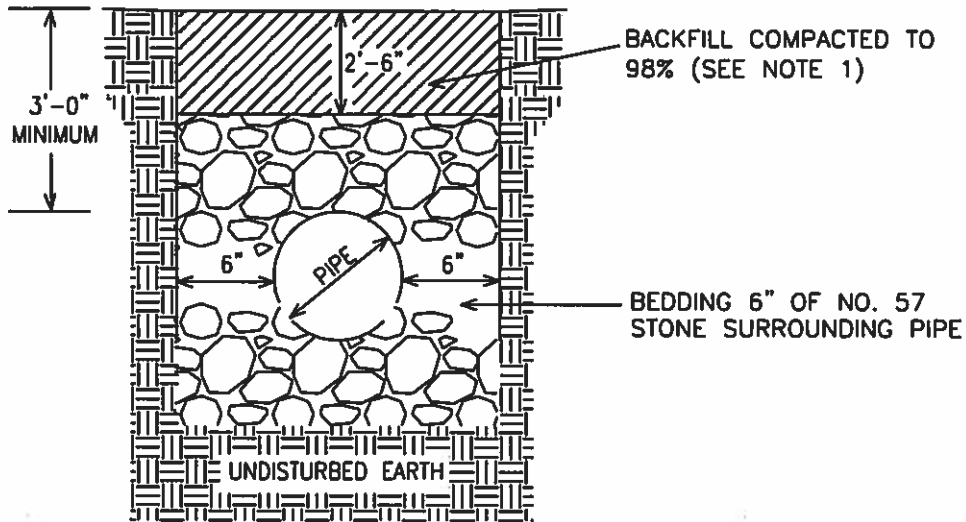
**REUSE DETAILS
NPRL CONCRETE ENCASUREMENT**

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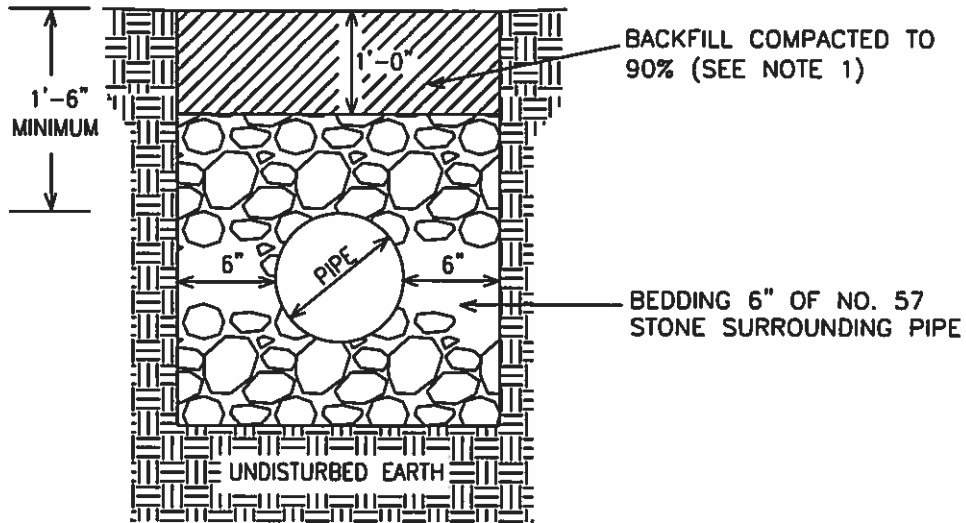


**HALL COUNTY PUBLIC WORKS & UTILITIES
ENGINEERING DIVISION**

**STANDARD
R-12**



BEDDING FOR SERVICE BELOW PAVED SURFACES
(ROADS, SIDEWALKS, PARKING LOTS, ETC.)



BEDDING FOR SERVICE OUTSIDE OF PAVED AREAS

- NOTES:
1. COMPACTION % BASED UPON THE MAXIMUM DRY DENSITY AS DETERMINED BY A STANDARD PROCTOR ANALYSIS +/- 3% OF THE OPTIMUM MOISTURE CONTENT
 2. UNSUITABLE SOILS ENCOUNTERED IN BOTTOM OF EXCAVATED TRENCH SHALL BE EXCAVATED & REPLACED WITH NO. 57 STONE.
 3. ONLY SUITABLE SOIL SHALL BE USED AS BACKFILL.

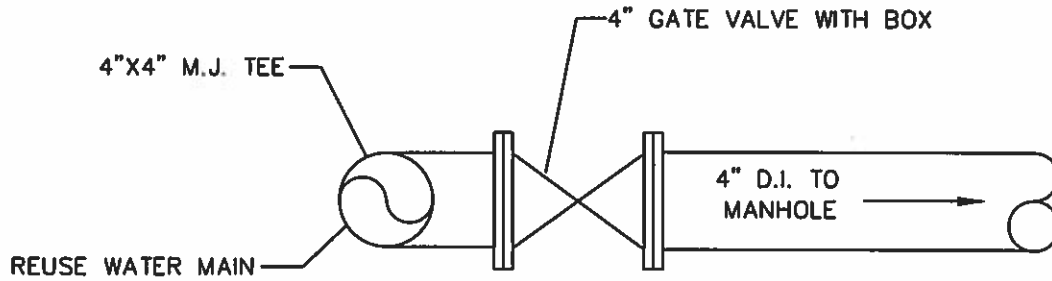
REUSE DETAILS
NPRL SERVICE LINE BEDDING

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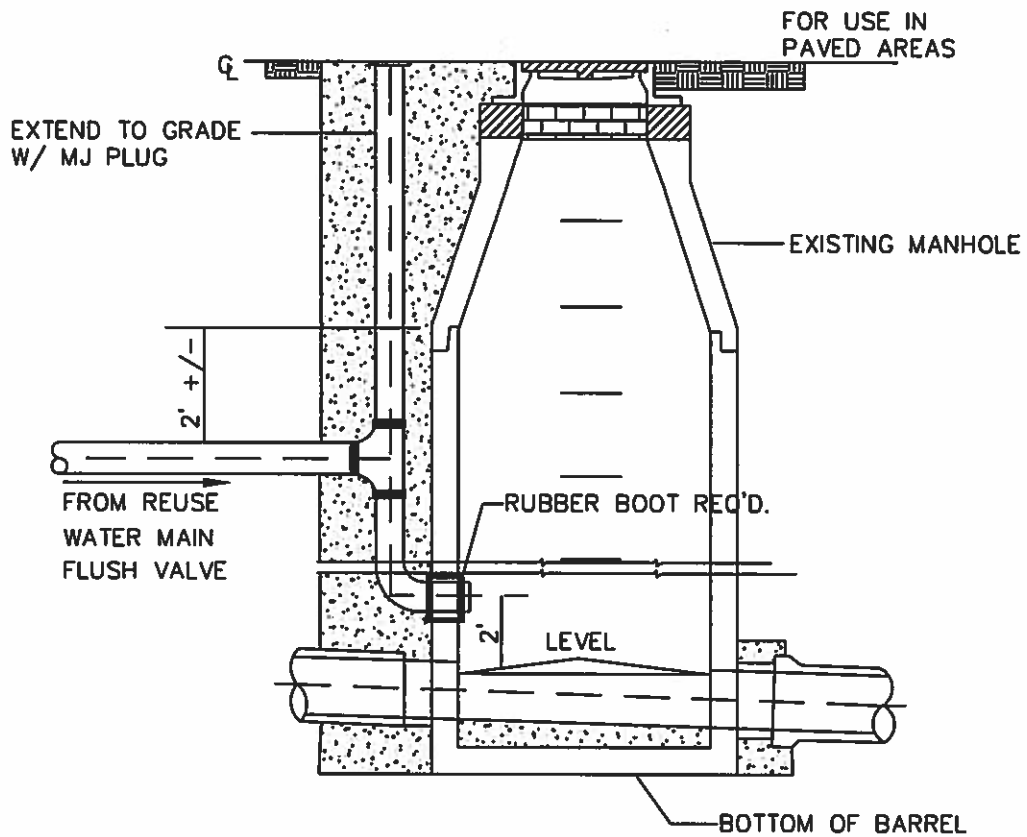


HALL COUNTY PUBLIC WORKS & UTILITIES
ENGINEERING DIVISION

STANDARD
R-13



CUL-DE-SAC
REUSE FLUSH POINT DETAIL



MANHOLE CONNECTION DETAIL

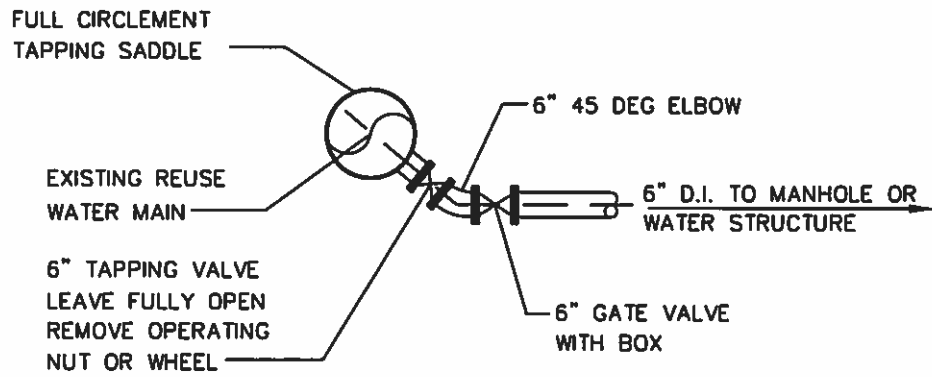
**REUSE DETAILS
CUL-DE-SAC FLUSH POINT**

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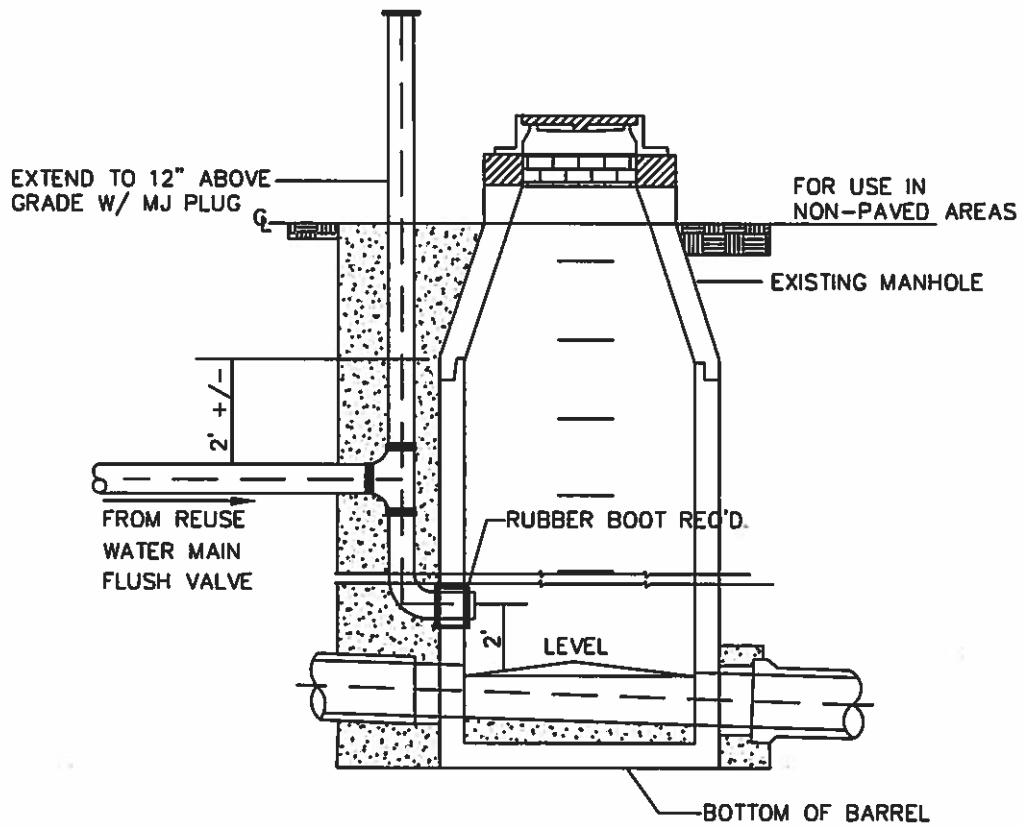


**HALL COUNTY PUBLIC WORKS & UTILITIES
ENGINEERING DIVISION**

**STANDARD
R-14**



REUSE TAP AND VALVE DETAIL



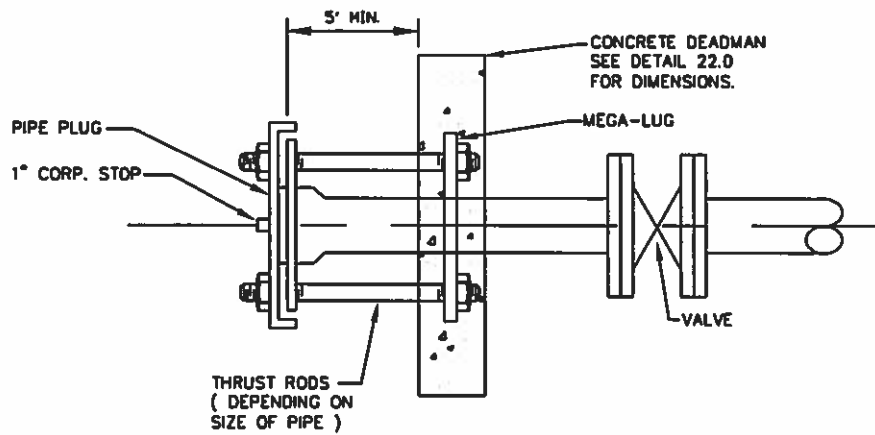
**REUSE DETAILS
IN LINE FLUSH POINT**

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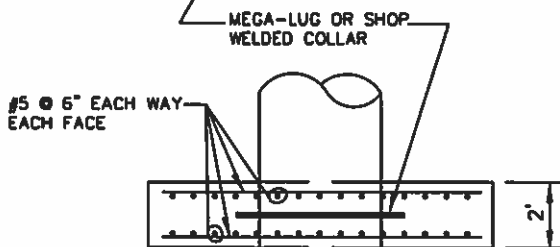
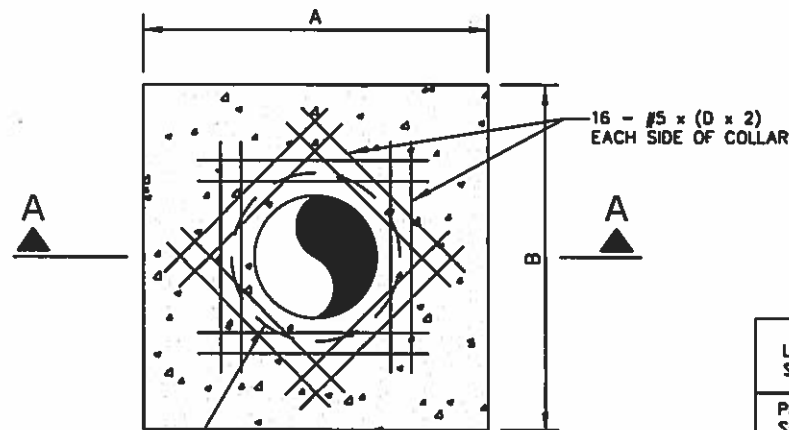


**HALL COUNTY PUBLIC WORKS & UTILITIES
ENGINEERING DIVISION**

**STANDARD
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PIPE SIZE	ROD SIZE	NUMBER OF RODS
6"	3/4"	2
8"	3/4"	3
10"	3/4"	4
12"	3/4"	4
14"	3/4"	4
16"	3/4"	6



Line Pressure = 150 PSI
Soil Pressure = 2000 PSF

Pipe Size X	A	B
6"	2'-0"	2'-0"
8"	2'-6"	2'-6"
10"	3'-6"	3'-6"
12"	4'-0"	4'-0"
14"	4'-6"	4'-6"
16"	5'-0"	5'-0"

NOTES :

1. DEADMAN SHALL BE CLASS "C" CONCRETE ; "SACKCRETE" WILL NOT BE ALLOWED.
2. THE UTILITY LINE MUST BE LOWERED IN ORDER TO HAVE FIVE FEET (5') OF COVER AT THE BEND, TEE, REDUCER OR PLUG AT ALL LOCATIONS WHERE THESE FITTINGS MAY BE UTILIZED.
3. FOR SOIL CONDITIONS LESS THAN 2000 P.S.F. BEARING PRESSURE OR PIPE PRESSURE OVER 150 P.S.I. SPECIAL THRUST BLOCKS / RESTRAINT MUST BE COMPUTED AND APPROVED.
4. CONCRETE SHALL BE POURED AGAINST UNDISTURBED SOIL. DISTURBED SOIL TO BE COMPACTED TO 95% OPTIMUM MOISTURE CONTENT.
5. MAINTAIN 2" CLEARANCE BETWEEN PIPE WALL AND REBAR.

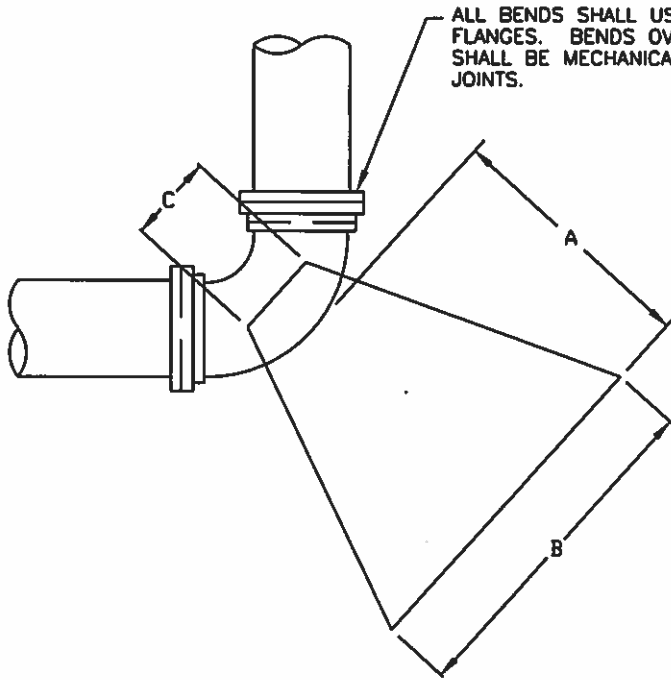
REUSE DETAILS
DEADMAN FOR PLUG CONCRETE DEADMAN

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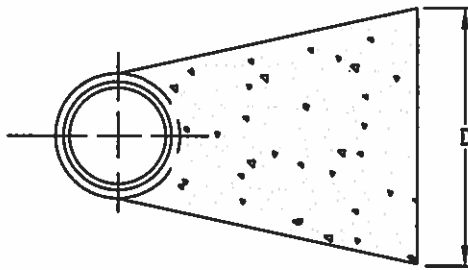


HALL COUNTY PUBLIC WORKS & UTILITIES
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STANDARD
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MINIMUM DIMENSIONS FOR CONCRETE BLOCKING					
BEND	PIPE SIZE	A	B	C	D
11 1/4°	6"	1.0'	1.0'	7"	1.0'
	8"	1.0'	1.25'	7"	1.0'
	12"	1.0'	2.0'	11"	2.0'
	16"	2.0'	3.0'	15"	2.0'
	20"	2.0'	3.0'	19"	3.0'
	24"	3.0'	4.0'	22"	3.0'
22 1/2°	6"	1.0'	1.5'	7"	1.0'
	8"	1.0'	2.0'	7"	2.0'
	12"	2.0'	3.0'	11"	2.0'
	16"	2.0'	4.0'	15"	3.0'
	20"	3.0'	5.0'	19"	3.0'
	24"	4.0'	6.0'	22"	4.0'
45°	6"	1.5'	2.0'	7"	1.5'
	8"	2.0'	3.0'	7"	2.0'
	12"	2.0'	4.0'	11"	3.0'
	16"	3.0'	5.0'	15"	4.0'
	20"	4.0'	6.0'	19"	5.0'
	24"	5.0'	8.0'	22"	6.0'
90°	6"	1.5'	2.5'	7"	2.0'
	8"	2.0'	3.0'	7"	3.0'
	12"	4.0'	6.0'	11"	4.0'
	16"	4.0'	7.0'	15"	5.0'
	20"	8.0'	8.0'	19"	7.0'
	24"	6.0'	10.0'	22"	8.0'
TEES AND PLUGS	6"	1.5'	2.0'	7"	2.0'
	8"	2.0'	3.0'	7"	2.0'
	12"	2.0'	4.0'	11"	4.0'
	16"	3.0'	5.0'	15"	5.0'
	20"	4.0'	7.0'	19"	6.0'
	24"	5.0'	8.0'	22"	7.0'
	36"	7.0'	10.0'	33"	11.0'



SECTION

NOTES:

1. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI AT 28 DAYS.
2. THRUST BLOCK SHALL BE POURED AGAINST UNDISTURBED SOIL.
3. BOLTS/NUTS SHALL BE PROTECTED FROM CONCRETE COVERAGE.
4. DIMENSIONS ARE BASED ON 150 P.S.I. LINE PRESSURE, 3000 P.S.I. CONCRETE AND 2000 P.S.F. SOIL BEARING PRESSURE.

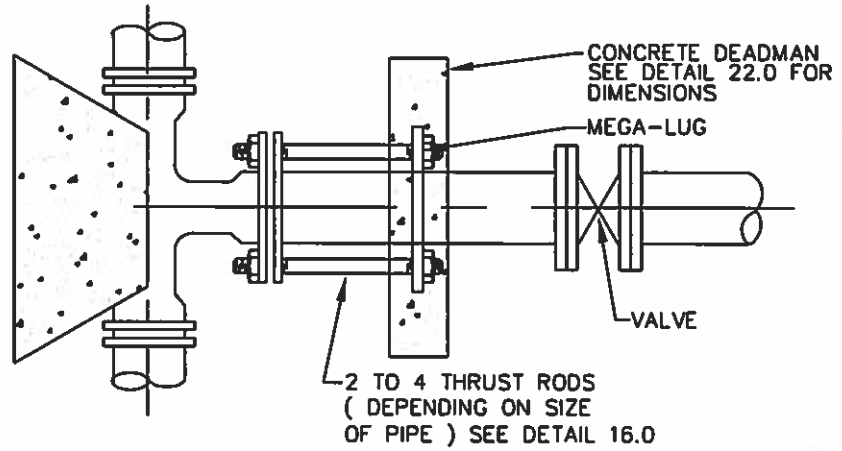
**REUSE DETAILS
THRUST BLOCK DIMENSIONS**

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DECEMBER 2014

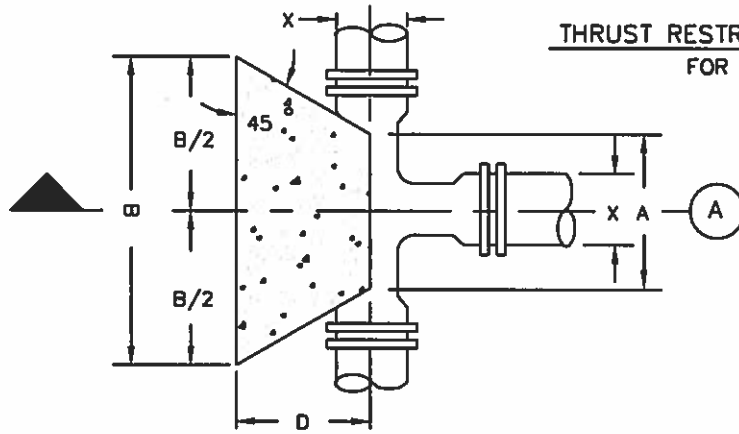


HALL COUNTY PUBLIC WORKS & UTILITIES
ENGINEERING DIVISION

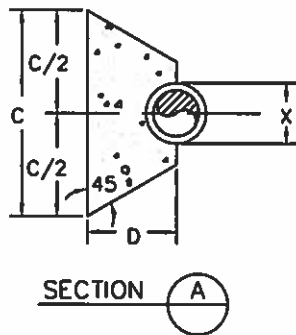
STANDARD
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**THRUST RESTRICTING DEAD MAN FOR TEE
FOR USE IN FILL AREAS.**



TEE - PLAN



SECTION A

Line Pressure = 150 PSI Soil Pressure = 2000 PSF				
Pipe Size X	A	B	C	D
24"	2'-6"	6'-0"	6'-0"	3'-6"
20"	2'-4"	5'-0"	5'-0"	3'-0"
18"	1'-2"	4'-6"	4'-6"	2'-9"
16"	1'-6"	4'-0"	4'-0"	2'-6"
14"	1'-6"	3'-6"	3'-6"	2'-3"
12"	1'-3"	3'-0"	3'-0"	2'-0"
10"	1'-3"	2'-6"	2'-6"	1'-6"
8"	1'-0"	2'-0"	2'-0"	1'-6"
6"	0'-11"	1'-6"	1'-6"	1'-3"
4"	0'-10"	1'-0"	1'-0"	1'-0"

NOTES :

1. BLOCKING SHALL BE CLASS "C" CONCRETE ; "SACKCRETE" WILL NOT BE ALLOWED.
2. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI AT 28 DAYS.
3. THRUST BLOCK SHALL BE POURED AGAINST UNDISTURBED SOIL.
4. BOLTS/NUTS SHALL BE PROTECTED FROM CONCRETE COVERAGE.

**REUSE DETAILS
THRUST BLOCK - TEE**

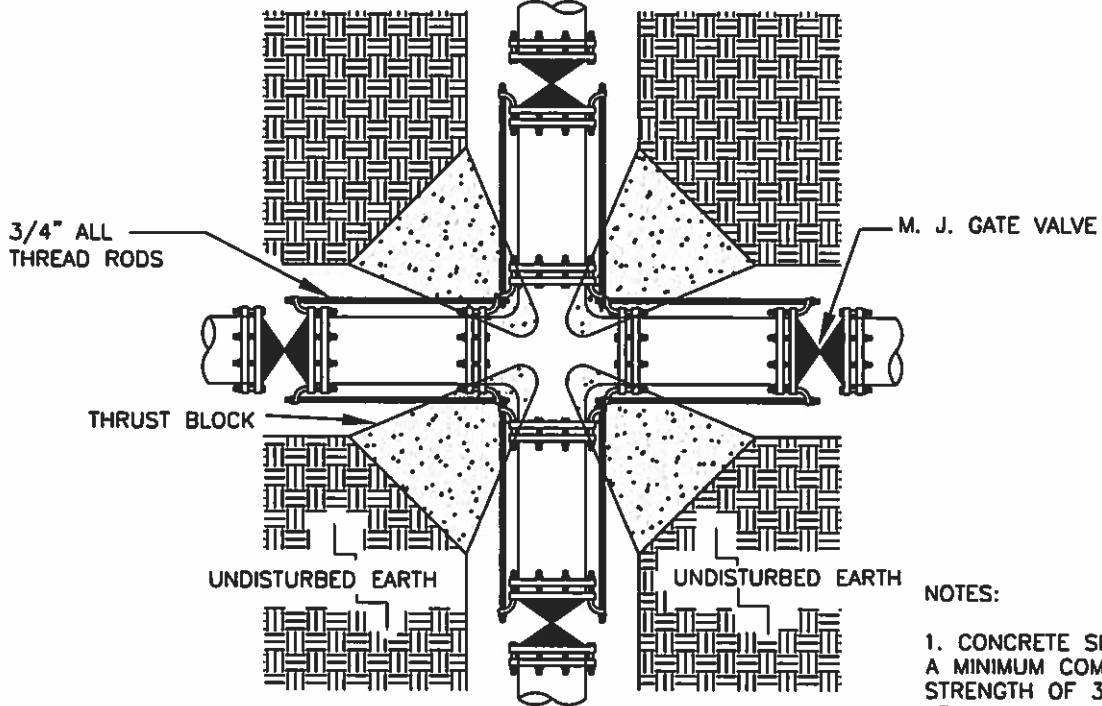
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DECEMBER 2014**



**HALL COUNTY PUBLIC WORKS & UTILITIES
ENGINEERING DIVISION**

**STANDARD
R-18**

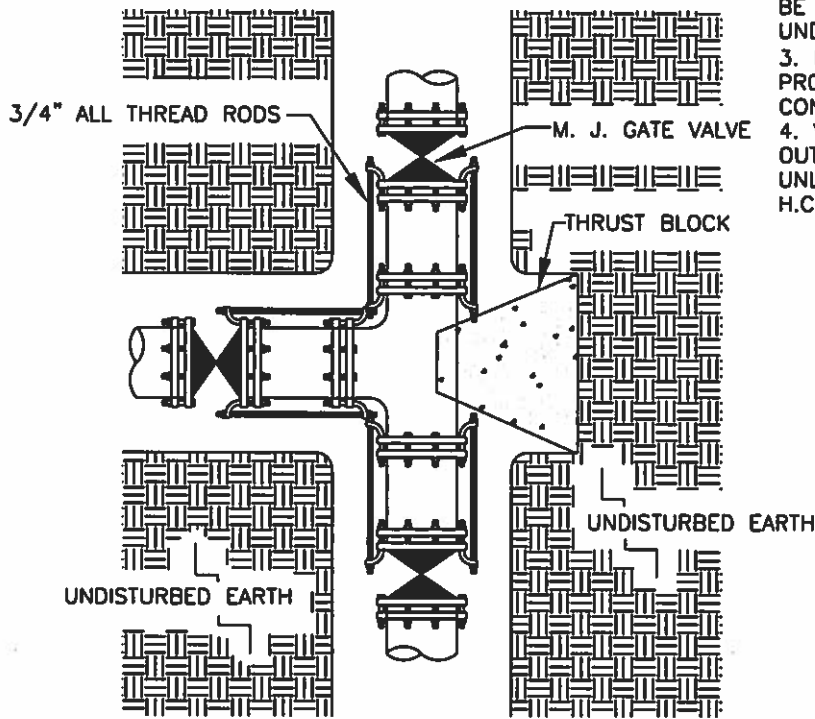
CROSS INSTALLATION



NOTES:

1. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI AT 28 DAYS.
2. THRUST BLOCK SHALL BE POURED AGAINST UNDISTURBED SOIL.
3. BOLTS/NUTS SHALL BE PROTECTED FROM CONCRETE COVERAGE.
4. VALVES TO BE LOCATED OUTSIDE OF PAVEMENT UNLESS APPROVED BY H.C.D.P.W.U.

TEE INSTALLATION



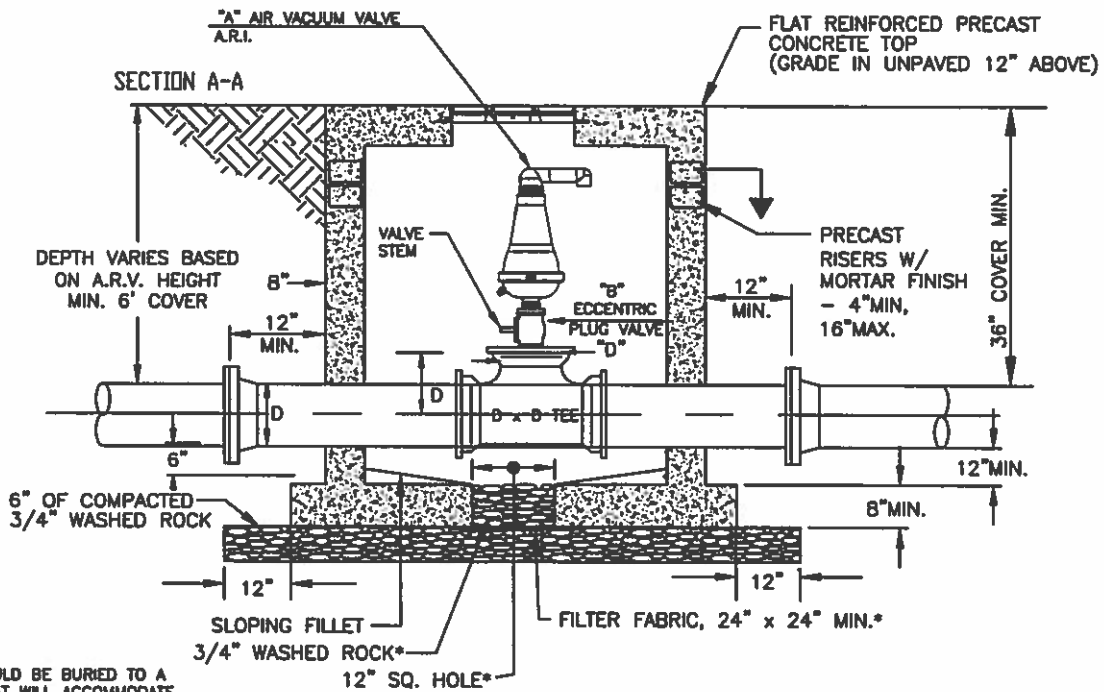
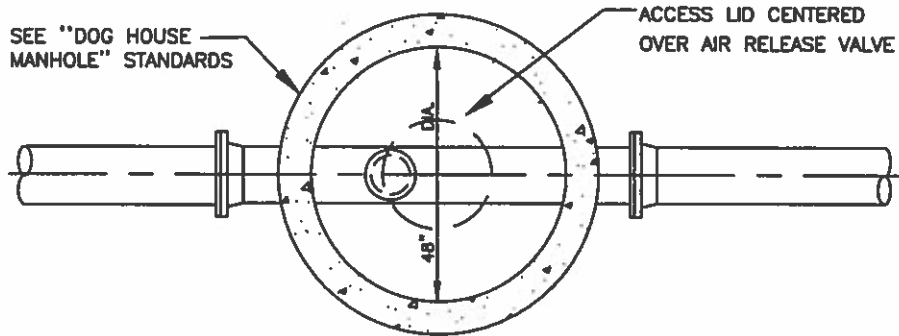
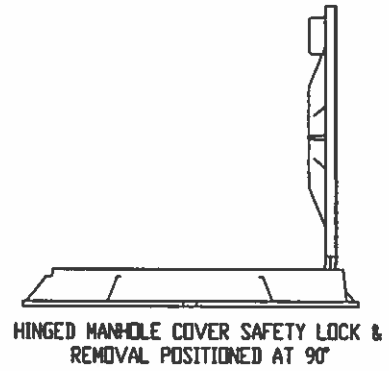
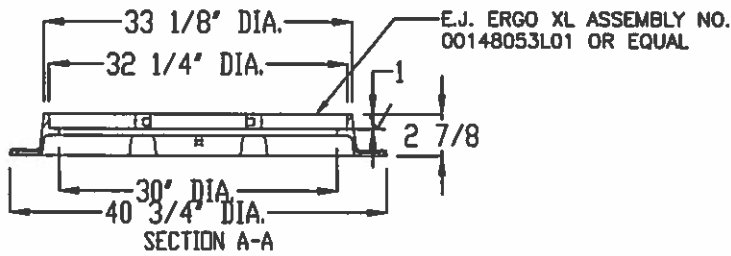
**REUSE DETAILS
THRUST RESTRAINT AT FITTING**

**REVISED:
DECEMBER 2014**



**HALL COUNTY PUBLIC WORKS & UTILITIES
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- NOTES:
1. PIPE SHOULD BE BURIED TO A DEPTH THAT WILL ACCOMMODATE THE MINIMUM REQUIREMENTS OF THIS STANDARD AND THOSE OF THE SPECIFIED ARV.
 2. ORIFICE AREA OF A.R.V. SHALL NOT EXCEED TOTAL AREA PROVIDED BY VENT HOLES IN MANHOLE LID.

"A" - TO BE SIZED PER ARV MANUFACTURERS SPECIFICATIONS.
"B" - TO BE SIZED PER ARV MANUFACTURERS SPECIFICATIONS.
"D" - MAIN SIZE

*SEE NOTE 7 ON "AIR RELEASE VALVE AND VAULT NOTES" STANDARD (P-6)

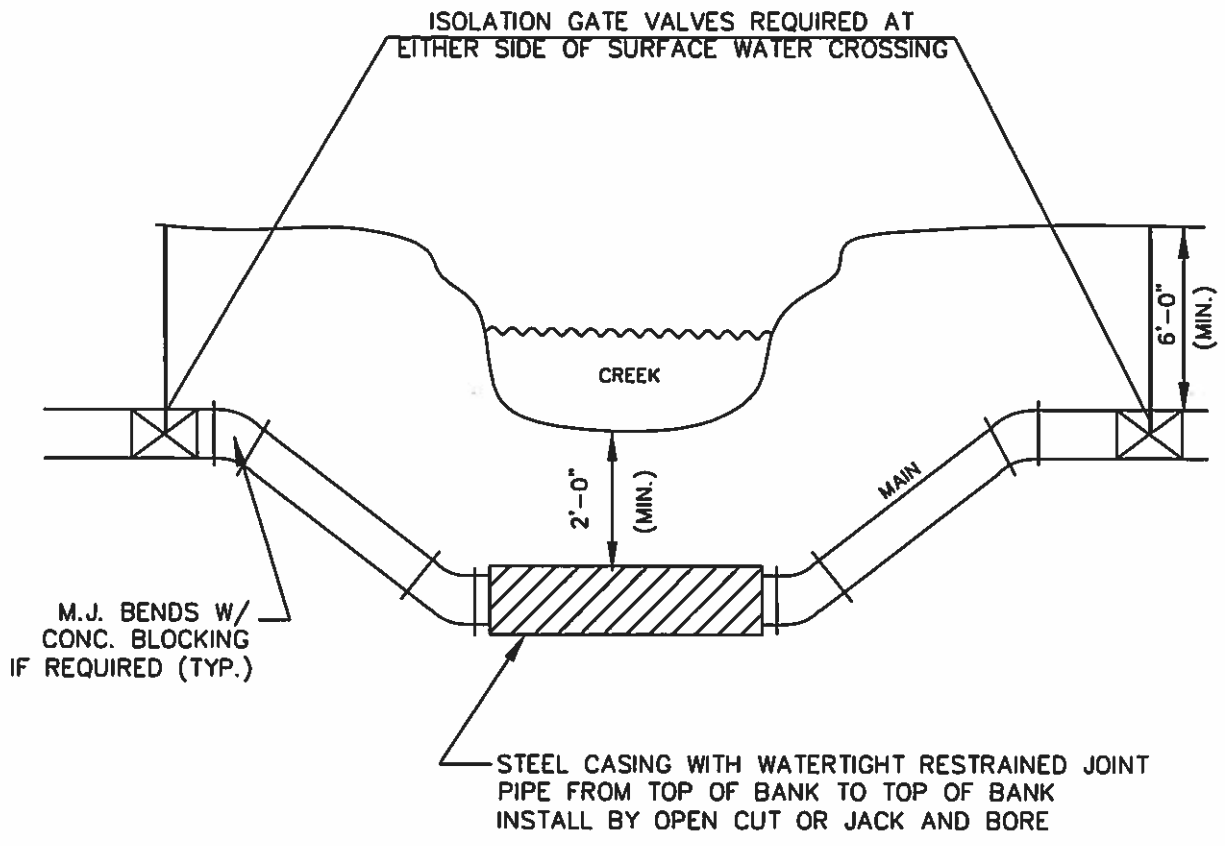
REUSE DETAILS AIR/VACUUM RELEASE VALVE 2" AND SMALLER

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HALL COUNTY PUBLIC WORKS & UTILITIES
ENGINEERING DIVISION

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NOTE:

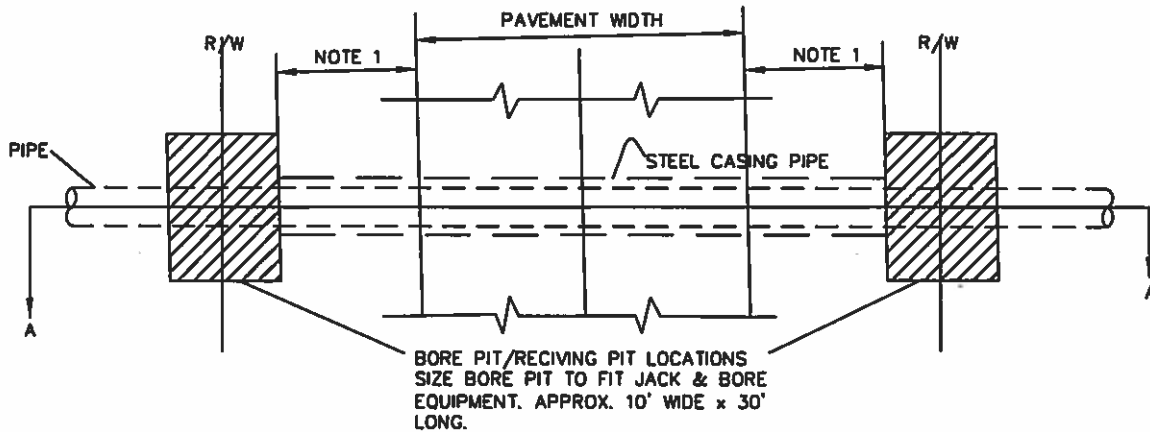
1. IF STATE WATERS ARE JACK AND BORED, BORE PITS MUST BE OUTSIDE OF THE STATE BUFFERS.

**REUSE DETAILS
PRESSURE MAIN CREEK CROSSING**

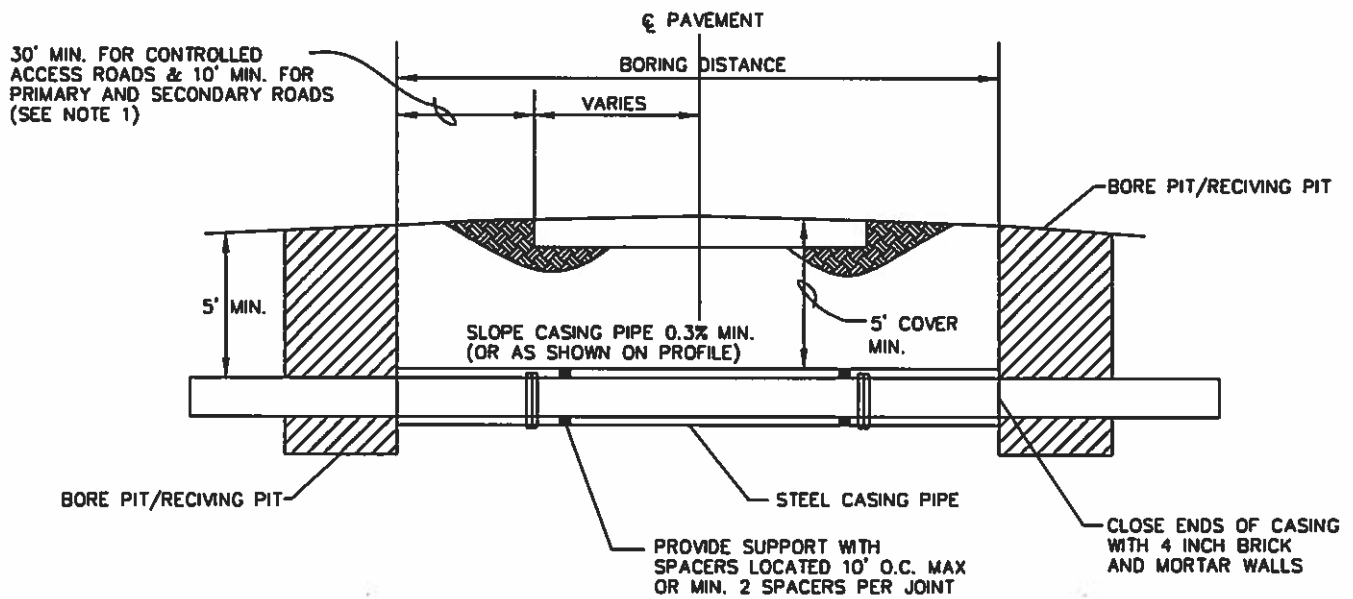
<p>REVISED: DECEMBER 2014</p>		<p align="center">HALL COUNTY PUBLIC WORKS & UTILITIES ENGINEERING DIVISION</p>	<p align="center">STANDARD R-21</p>
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NOTES:

1. THE NEAR EDGE OF THE PIT CAN BE NO CLOSER TO THE EDGE OF THE TRAVELED WAY THAN THE DEPTH BELOW THE SURFACE OF THE TRAVEL WAY UNLESS BULKHEADED.
2. CASING PIPE UP TO 20" SHALL HAVE A THICKNESS OF .375"
3. CASING PIPE OVER 20" SHALL HAVE A THICKNESS OF .5"
4. CASING PIPE UNDER RAILROAD MUST MEET RAILROAD REQUIREMENTS
5. ALL PIPE WITHIN CASING TO BE RESTRAINED JOINT.



PLAN



SECTION A-A

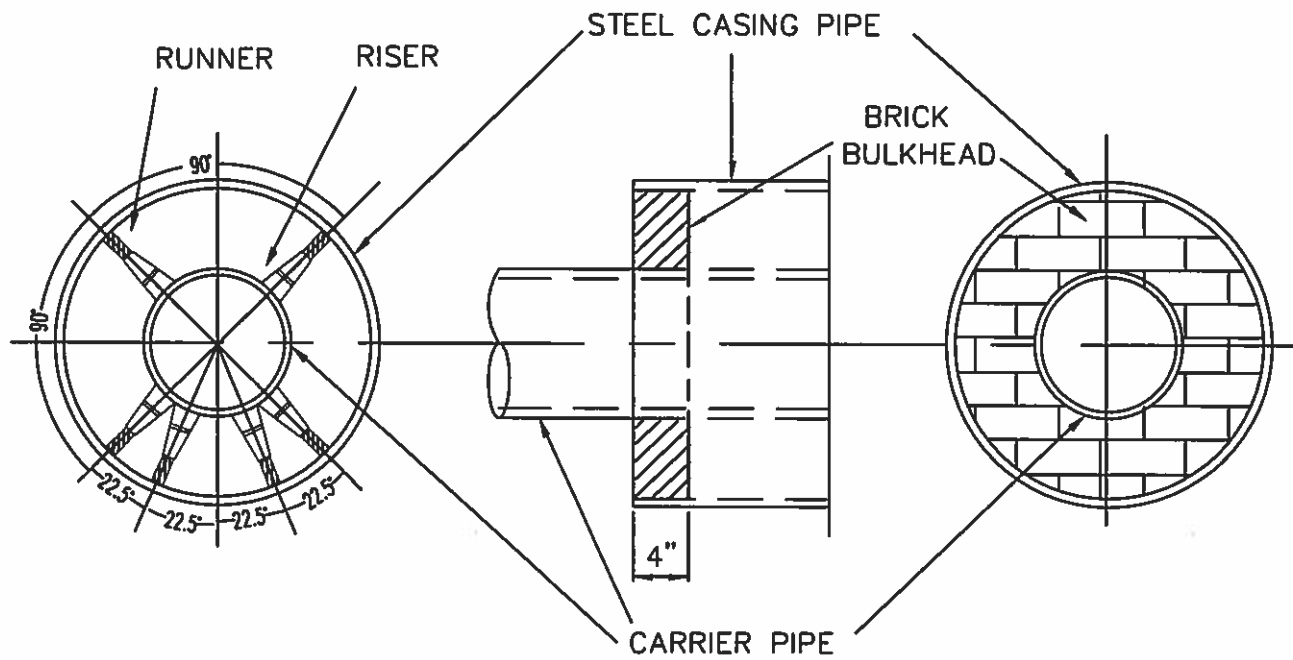
**REUSE DETAILS
CASING PIPE JACK AND BORE**

REVISED:
DECEMBER 2014



HALL COUNTY PUBLIC WORKS & UTILITIES
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TYPICAL LAYOUT STAINLESS
STEEL CASING SPACER DETAIL

BULKHEAD DETAIL

NOTES:

1. SPACER SHELL MUST BE A MINIMUM 14 GA. T 304 STAINLESS STEEL
ALL SURFACES ARE FULLY CHEMICALLY PASSIVATED.
2. CASING PIPE UP TO 20" SHALL HAVE A THICKNESS OF .375 INCH
3. CASING PIPE OVER 20" SHALL HAVE A THICKNESS OF .5 INCH
4. SPACER LINER MUST BE PVC - .90 THICK, 85-90 DUROMETER
(ASTM D1706-61T) (ASTM - B117) (ASTM - D149-61)
5. RUNNERS MUST BE ULTRA HIGH MOLECULAR WEIGHT POLYMER.
WITH HIGH RESISTANCE TO ABRASION AND SLIDE WEAR, LOW
DEFLECTION UNDER COMPRESSION AND DIELECTRIC INSULATION.
6. SPACER FASTENERS MUST BE 5/16" T304 STAINLESS STEEL
7. SPACER RISERS MINIMUM 10 GA. T 304 STAINLESS STEEL,
MUST BE REINFORCED IF OVER 6".

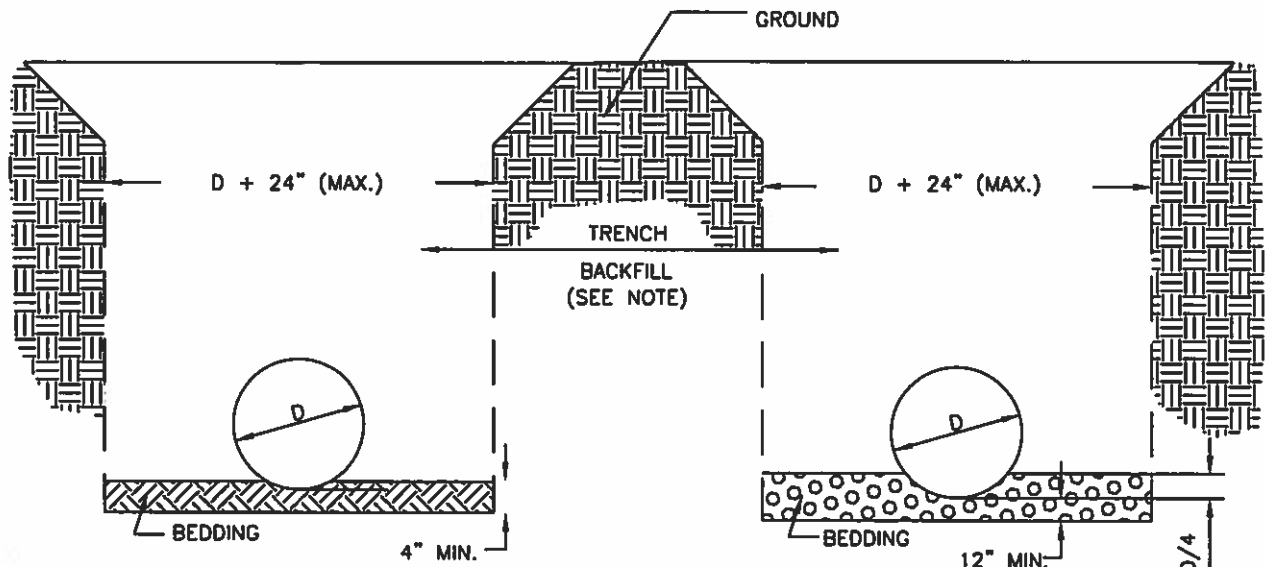
**REUSE DETAILS
AUGERED JACKED CASING**

**REVISED:
DECEMBER 2014**



**HALL COUNTY PUBLIC WORKS & UTILITIES
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**STANDARD
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PIPE BEDDED IN 4" COMPACTED EARTH, BACKFILL TO 90% (SEE NOTE 1)

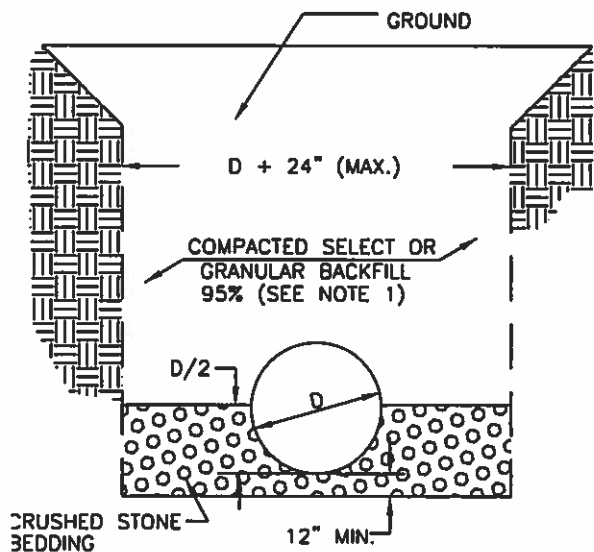
TYPE "III" BEDDING

PIPE BEDDED IN CRUSHED STONE (#57) TO DEPTH OF 1/4 PIPE DIAMETER. BACKFILL COMPACTED TO GRADE 90% (SEE NOTE 1)

TYPE "IV" BEDDING

NOTES:

1. COMPACTION % BASED UPON THE MAXIMUM DRY DENSITY AS DETERMINED BY A STANDARD PROCTOR ANALYSIS +/- 3% OF THE OPTIMUM MOISTURE CONTENT
2. TRENCH SHALL PROVIDE UNIFORM AND CONTINUOUS SUPPORT BETWEEN BELL HOLES.
3. COMPACTION BACKFILLS SHALL BE BUILT UP IN LAYERS AND EACH LAYER SHALL BE THOROUGHLY COMPACTED BEFORE BEGINNING ANOTHER LAYER. PUDDLING IS NOT ALLOWED. NO FROZEN OR WET MATERIALS MAY BE PLACED IN TRENCHES.
4. COMPACTION TESTS MAY BE REQUIRED IN EXISTING OR PROPOSED STREETS, SIDEWALKS, DRIVES AND OTHER EXISTING OR PROPOSED PAVED AREAS AT VARYING DEPTHS AND AT INTERVALS AS DETERMINED BY HALL COUNTY WITH A MINIMUM OF ONE TEST ON EACH JOB, OF ONE REQUIRED TEST FOR EACH 400' OR LESS OF NPRL CONSTRUCTION OR WHEN CONDITIONS IN THE OPINION OF HALL COUNTY WARRANT THE NEED FOR ADDITIONAL TEST.
5. NO LARGE ROCKS PERMITTED IN THE BACKFILL FROM BOTTOM OF TRENCH TO 2' (FEET) ABOVE PIPE.
6. FOR EXCAVATION IN POOR SOIL OR ROCK, REMOVE UNSUITABLE MATERIAL TO WIDTH AND DEPTH AS DIRECTED BEFORE PIPE IS LAID. THE SUBGRADE SHALL BE BACKFILLED WITH AN APPROVED MATERIAL TAMPED TO 95%.
7. IN EXCAVATING ROCK, MINIMUM OF 6" SELECT MATERIAL UNDER BOTTOM OF PIPE.
8. 95% COMPACTION REQUIRED WITHIN THE COUNTY RIGHT OF WAY.



CRUSHED STONE BEDDING

TYPE "V" BEDDING

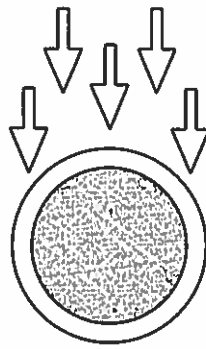
**REUSE DETAILS
BEDDING FOR DUCTILE IRON PIPE**

REVISED:
DECEMBER 2014



**HALL COUNTY PUBLIC WORKS & UTILITIES
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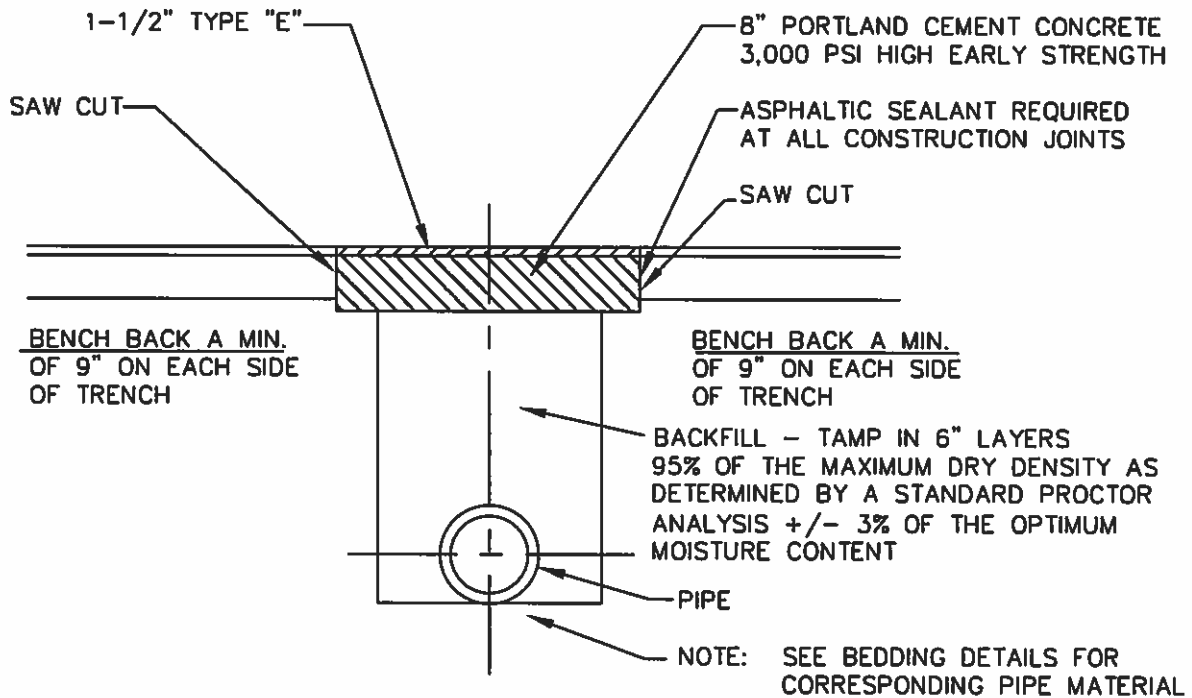


DUCTILE IRON PIPE DEPTH

SIZE INCHES	PRESSURE CLASS P.S.I.	LAYING CONDITIONS MAXIMUM DEPTH OF COVER IN FEET		
		TYPE III	TYPE IV	TYPE V
6	350	37	47	65
8	350	25	34	50
10	350	19	28	45
12	350	19	28	44
14	250	15	23	36
	300	17	26	42
	350	19	27	44
16	250	15	24	34
	300	17	26	39
	350	20	28	44
18	250	14	22	31
	300	17	26	36
	350	19	28	41
20	250	14	22	30
	300	17	26	35
	350	19	28	38
24	200	12	17	25
	250	15	20	29
	300	17	24	32
	350	19	28	37

AWWA M41 TABLE 4 - 6

REUSE DETAILS
MAXIMUM TRENCH DEPTHS, D.I.P.



NOTES:

1. EXISTING PAVEMENT SHALL BE REPLACED IN ACCORDANCE TO THE STANDARDS REQUIRED BY HALL COUNTY DEPARTMENT OF PUBLIC WORKS AND UTILITIES AND/OR THE GEORGIA DEPARTMENT OF TRANSPORTATION.
2. ALL LATERAL STREET CUTS MUST BE COVERED WITH STEEL PLATES OF SUFFICIENT THICKNESS TO SPAN THE CUT WITHOUT NOTICEABLE DEFLECTION. PLATES TO REMAIN IN PLACE UNTIL THE CONCRETE BASE HAS GAINED SUFFICIENT STRENGTH TO WITHSTAND TRAFFIC LOADS (24 HOUR MINIMUM).
3. ON LONGITUDINAL CUTS EXCEEDING 150 FT. IN LENGTH, THE CONCRETE IN THE TRENCH WILL BE BROUGHT FLUSH WITH THE EXISTING PAVEMENT AND THE ENTIRE WIDTH OF ROADWAY RESURFACED WITH A MINIMUM OF 1-1/2" OF TYPE "E" ASPHALT TOPPING OR SURFACE COURSE.
4. CONTRACTOR'S TRAFFIC CONTROL PLAN MUST BE APPROVED BY THE AUTHORITY HAVING JURISDICTION BEFORE WORK BEGINS.
5. FINAL APPROVAL OF CONTRACTOR'S PAVEMENT CUT REPAIRS RESIDES WITH THE AUTHORITY HAVING JURISDICTION. CONTRACTOR SHALL MEET ALL REQUIREMENTS OF SAID AUTHORITY.

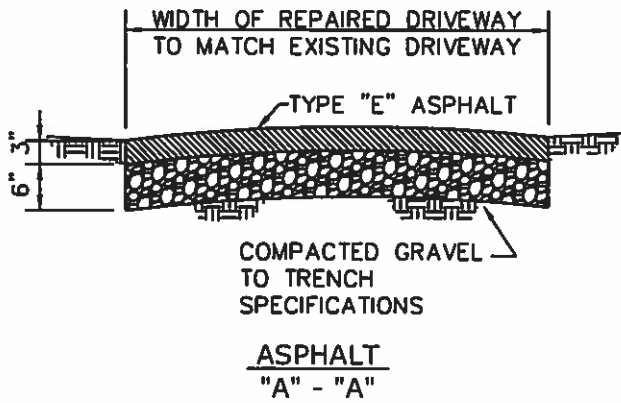
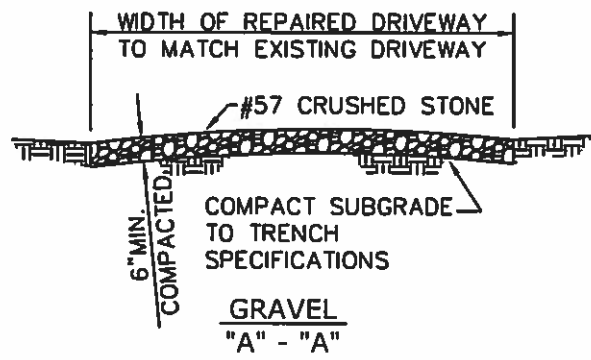
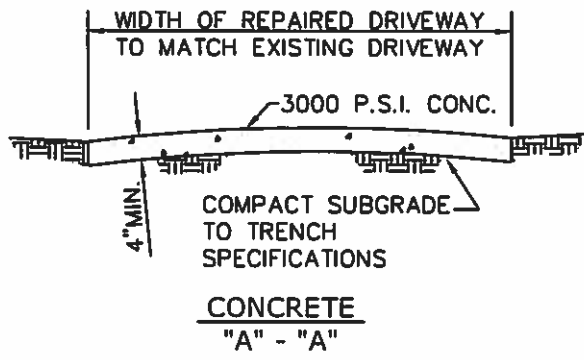
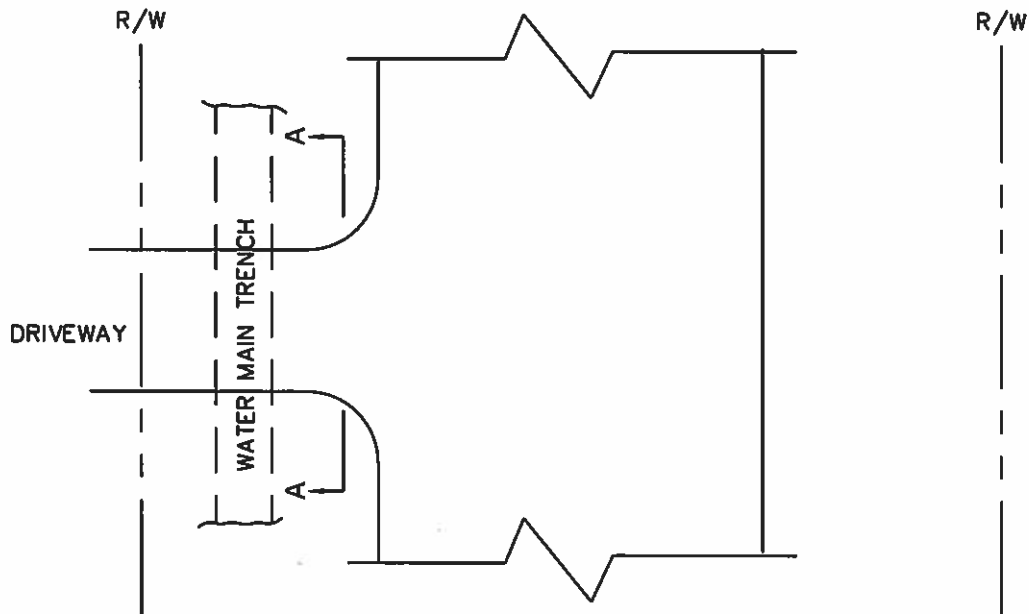
**REUSE DETAILS
BACKFILLING UTILITY CUTS & REPLACING PAVEMENT**

**REVISED:
DECEMBER 2014**



**HALL COUNTY PUBLIC WORKS & UTILITIES
ENGINEERING DIVISION**

**STANDARD
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NOTES:

1. PAVED DRIVES - FINISH SURFACE OF REPAIRED AREA TO MATCH EXISTING SURFACE. EDGES OF CUT TO BE SAWN VERTICAL. EXPANSION MATERIAL TO BE USED AS DIRECTED.
2. GRAVEL DRIVES - FINISHED GRADE TO BE FLUSH WITH EDGE OF DRIVE - TYPICAL ALL DRIVES.

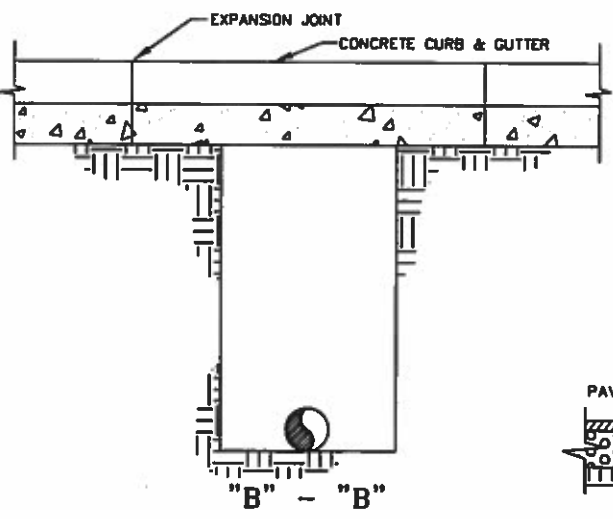
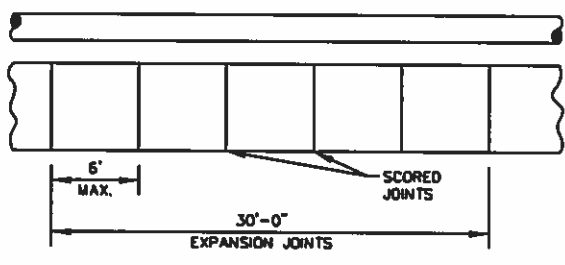
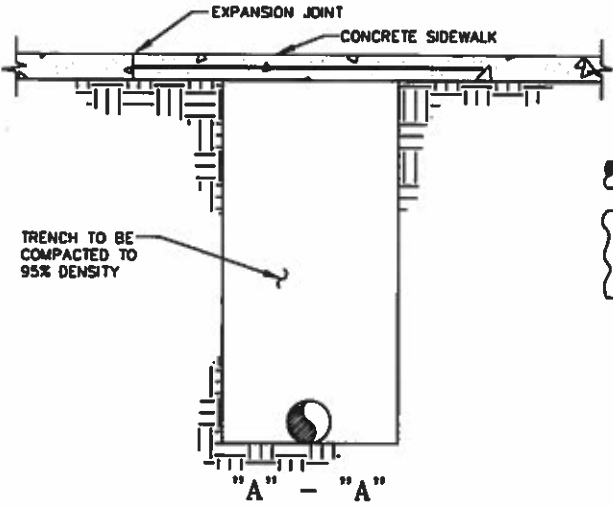
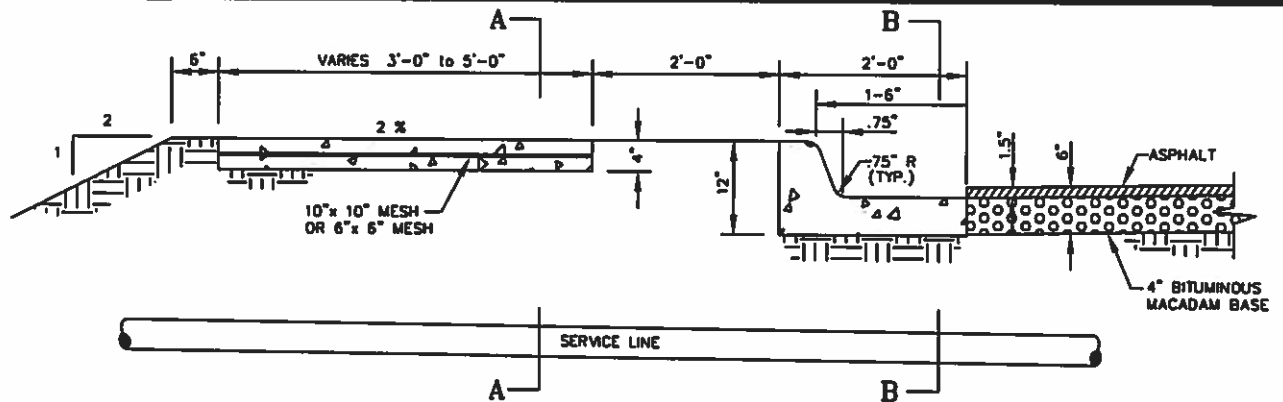
**REUSE DETAILS
DRIVEWAY CUT REPAIRS**

**REVISED:
DECEMBER 2014**

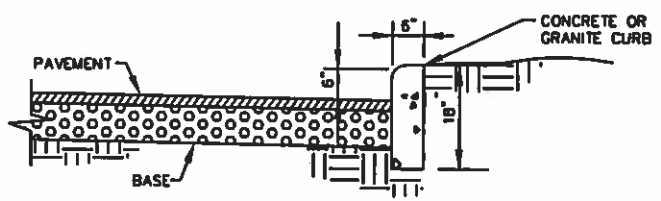


**HALL COUNTY PUBLIC WORKS & UTILITIES
ENGINEERING DIVISION**

**STANDARD
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- NOTES:**
1. DETAILS ARE TYPICAL.
 2. REPLACE SIDEWALKS, CURB AND GUTTER AND CURBING TO MATCH EXISTING MATERIALS OR AS DIRECTED.



**REUSE DETAILS
SIDEWALK, CURB & GUTTER REPAIRS**

**REVISED:
DECEMBER 2014**



**HALL COUNTY PUBLIC WORKS & UTILITIES
ENGINEERING DIVISION**

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