

# RELOCATE RAW WATER TRANSMISSION MAIN U.S. HIGHWAY 15-501 TOWN OF CARTHAGE MOORE COUNTY, NORTH CAROLINA NCDOT PROJECT # 37620



**Hobbs, Upchurch & Associates, P.A.**  
 Consulting Engineers, Surveyors & Land Planners  
 Southern Pines, North Carolina 28387  
 300 S.W. Broad Street, Southern Pines, North Carolina 28387  
 Phone: (910) 692-5616 - Fax: (910) 692-7342



## LAYOUT MAP

RELOCATE RAW WATER TRANSMISSION MAIN  
 U.S. HIGHWAY 15-501  
 TOWN OF CARTHAGE  
 MOORE COUNTY, NORTH CAROLINA  
 NCDOT PROJECT # 37620

DATE:	MARCH, 2007
DESIGNED:	BGL
DRAWN:	AGP
CHECKED:	BGL
SCALE:	AS SHOWN

SHEET NO.	UC-1
OF	5

### CONSTRUCTION NOTES:

1. THE CONTRACTOR SHALL CONTACT THE POWER CO., GAS CO., AND TELEPHONE CO. FOR THE EXACT LOCATION OF ALL UNDERGROUND MAINS, CABLES, OR LINES BEFORE CONSTRUCTION BEGINS.
2. PIPE SEPARATION: THE FOLLOWING MINIMUM PIPE SEPARATION WILL BE MAINTAINED: 24 INCHES VERTICAL SEPARATION BETWEEN CROSSING OF SANITARY SEWER AND STORM SEWERS, 24 INCHES VERTICAL SEPARATION BETWEEN CROSSING OF SEWER (INCLUDING FORCE MAINS) AND WATER MAINS, OR 10 FEET HORIZONTAL SEPARATION BETWEEN SANITARY SEWER (INCLUDING FORCE MAINS) AND WATER MAINS. IF THESE SEPARATIONS CANNOT BE MAINTAINED, DUCTILE IRON PIPE WILL BE USED 10 FEET EITHER SIDE OF CROSSING AND ALONG ENTIRE LENGTH OF LINE LESS THAN 10 HORIZONTAL FEET FROM WATER MAINS. THE CONTRACTOR SHALL RECEIVE APPROVAL FROM THE ENGINEER IN THE FIELD BEFORE PAYMENT WILL BE MADE AT DUCTILE IRON PRICES.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND PROTECTING ALL EXISTING WATER SERVICE CONNECTIONS DURING CONSTRUCTION. ANY DAMAGE WHICH OCCURS AS A RESULT OF THE SEWER CONSTRUCTION SHALL BE REPAIRED AT NO ADDITIONAL COST TO THE OWNER. IN THE EVENT OF A TEMPORARY SERVICE INTERRUPTION, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER AND BEGIN REPAIRS.
4. ALL PIPING FOR WATER MAIN AND FORCE MAINS SHALL BE PRESSURE TESTED, GRAVITY LINES SHALL BE AIR TESTED, AND MANHOLE SHALL BE VACUUM TESTED, ALL IN ACCORDANCE WITH THE DETAILED SPECIFICATIONS AND SPECIAL PROVISIONS. THE CONTRACTOR SHALL NOTIFY THE ENGINEER 24 HOURS IN ADVANCE OF ALL SCHEDULED TESTING.
5. THE CONTRACTOR SHALL SAWCUT EXISTING ASPHALT IN A WORKMANLIKE MANNER. THE CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL AND DISPOSAL OF THE EXISTING ASPHALT. FOLLOWING THE INSTALLATION OF THE SEWER LINE AND ACCEPTABLE COMPACTION OF BACKFILL THE CONTRACTOR SHALL INSTALL 6-INCHES OF COMPACTED AGGREGATE BASE WITHIN THE TRENCHES AND SEWER LATERALS IN THE EXISTING STREET. THE CONTRACTOR SHALL INCLUDE THE COST OF SAWCUTTING, REMOVING AND DISPOSING OF EXISTING ASPHALT IN THE UNIT PRICE OF ASPHALT REPLACEMENT IN THE SCHEDULE OF BID ITEMS. PAVING SHALL OCCUR WITHIN FIVE DAYS OF THE INSTALLATION, BUT NOT UNTIL THE SUBGRADE HAS BEEN PROPERLY BACKFILLED AND COMPACTED.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING THE OWNER TO ACCURATELY DETERMINE THE LOCATION OF EXISTING WATER MAINS AND SEWER LINES WITHIN THE PROJECT AREA. THE CONTRACTOR SHALL TAKE ADDITIONAL CAUTION IN EXCAVATING AROUND THE SERVICE LINES AND MAINS WHILE WORKING WITHIN THIS PROJECT. ANY DAMAGE TO THE MAINS OR SERVICE LINES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
7. THE CONTRACTOR SHALL REMOVE AND REPLACE EXISTING CULVERTS AND DRAINAGE STRUCTURES AS NECESSARY DURING CONSTRUCTION. ANY DAMAGE TO THE CULVERTS SHALL BE REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER. SPECIAL CIRCUMSTANCES (I.E. UNREINFORCED CONCRETE PIPE) SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER IMMEDIATELY IN ORDER TO RECEIVE ANY NECESSARY REIMBURSEMENT.
8. THE CONTRACTOR IS INSTRUCTED TO CONTROL SEDIMENTATION RUNOFF BY METHODS APPROVED BY THE ENGINEERS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT. THE CONTRACTOR IS REMINDED THAT ALL WORK SHALL MEET ALL APPLICABLE REQUIREMENTS OF THE RULES AND REGULATIONS OF EROSION AND SEDIMENT CONTROL AS PUBLISHED BY THE DEPARTMENT OF ENVIRONMENT, AND NATURAL RESOURCES, NORTH CAROLINA SEDIMENTATION CONTROL COMMISSION.
9. THE CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS INDICATING THE ACTUAL AS-BUILT CONDITION OF THE PROJECT AT COMPLETION. AS-BUILTS WILL BE FURNISHED AT OR PRIOR TO FINAL INSPECTION BY THE ENGINEER. AS-BUILTS SHALL INCLUDE "MARK-UPS" OF ALL PROJECT PLANS SHOWING ALL FIELD ADJUSTMENTS. IN ADDITION, THE CONTRACTOR SHALL FURNISH SURVEY DATA FOR ALL NEW CONSTRUCTION FEATURES. SURVEY SHALL BE BY LICENSED SURVEYOR AND INCLUDE VERTICAL AND HORIZONTAL DATA.
10. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE RELOCATION OF ANY POWER POLES OR OTHER EXISTING UTILITIES WITH THE ELECTRICAL AND/OR TELEPHONE COMPANY PRIOR TO THE BEGINNING CONSTRUCTION.
11. THE CONTRACTOR SHALL INSTALL TRACER WIRE FOR ALL PVC INSTALLATIONS. THE LOCATOR WIRE IS TO BE STANDARD 12 GAUGE SOLID COPPER WIRE BURIED IMMEDIATELY OVER THE PIPE. LOCATION WIRE CONNECTIONS SHALL BE WATERTIGHT, AND WILL BE ACCOMPLISHED BY USING TWISTER DB PLUS WATERPROOF WIRE CONNECTORS, OR AN APPROVED EQUAL. THE COST FOR TRACER WIRE INSTALLATION SHALL NOT BE PAID FOR DIRECTLY, BUT INCLUDED IN THE COST FOR PIPE INSTALLATION.

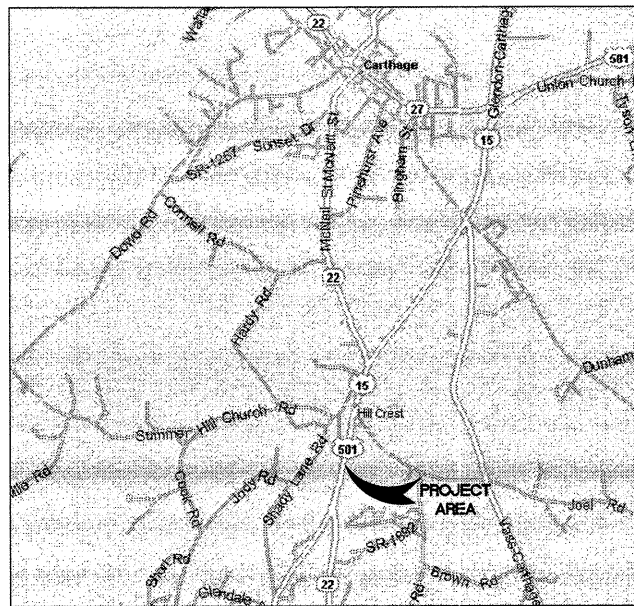
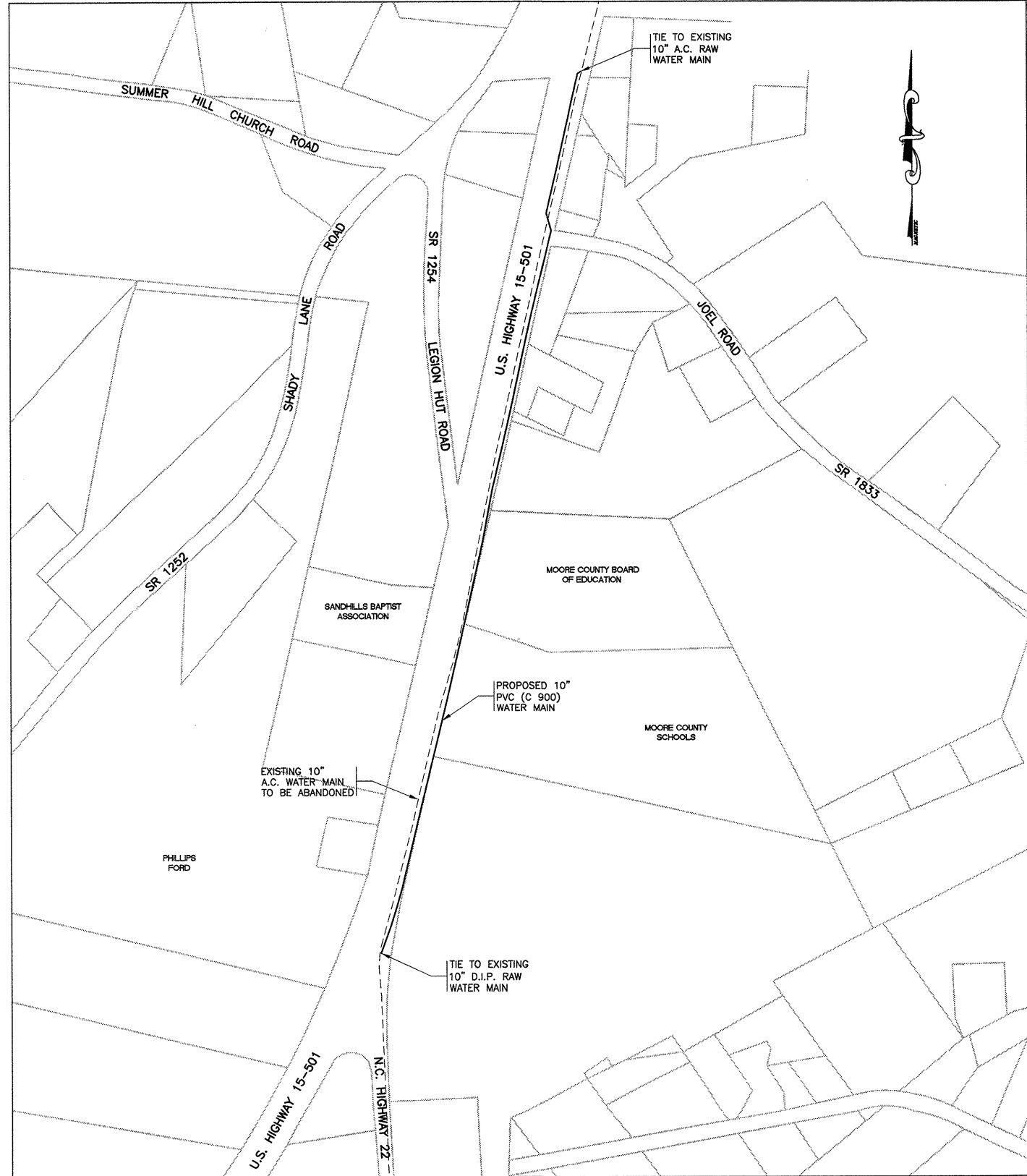


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UC-3	STA. 13+00 TO STA. 26+00 LINE W-1
UC-4	STA. 26+00 TO STA. 35+28 LINE W-1
UC-5	MISCELLANEOUS DETAILS



LEGEND

	SHRUB		PROPOSED WATER MAIN
	TREE		EXISTING WATER MAIN
	POWER POLE & ANCHOR		EXISTING GRAVITY SEWER
	FENCING		PROPOSED GRAVITY VALVE
	WATER METER		EXISTING GRAVITY VALVE
	TELEPHONE PEDESTAL		PROPOSED FIRE HYDRANT
	EXISTING CATCH BASIN		EXISTING FIRE HYDRANT
	RIGHT-OF-WAY		EDGE OF PAVEMENT
	BOC		EXISTING WELL

NOTES:

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- 3.) THE RIGHT-OF-WAY OR SHOWN TEMPORARY CONSTRUCTION EASEMENT SHALL DICTATE THE LIMITS OF CONSTRUCTION.
- 4.) THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION OF THE ADJUSTMENT OF EXISTING UTILITIES, INCLUDING POWER POLES.
- 5.) THE CONTRACTOR SHALL REMOVE AND REPLACE ANY EXISTING HEADWALLS, AS REQUIRED FOR THE CONSTRUCTION OF THE PROJECT.
- 6.) THE CONTRACTOR SHALL INSTALL DUCTILE IRON PIPE ALONG PROPOSED SANITARY SEWER WITHIN 100' RADIUS OF WELLS THAT ARE TO REMAIN IN OPERATION.

REVISIONS			
SYM.	DESCRIPTION	DATE	BY

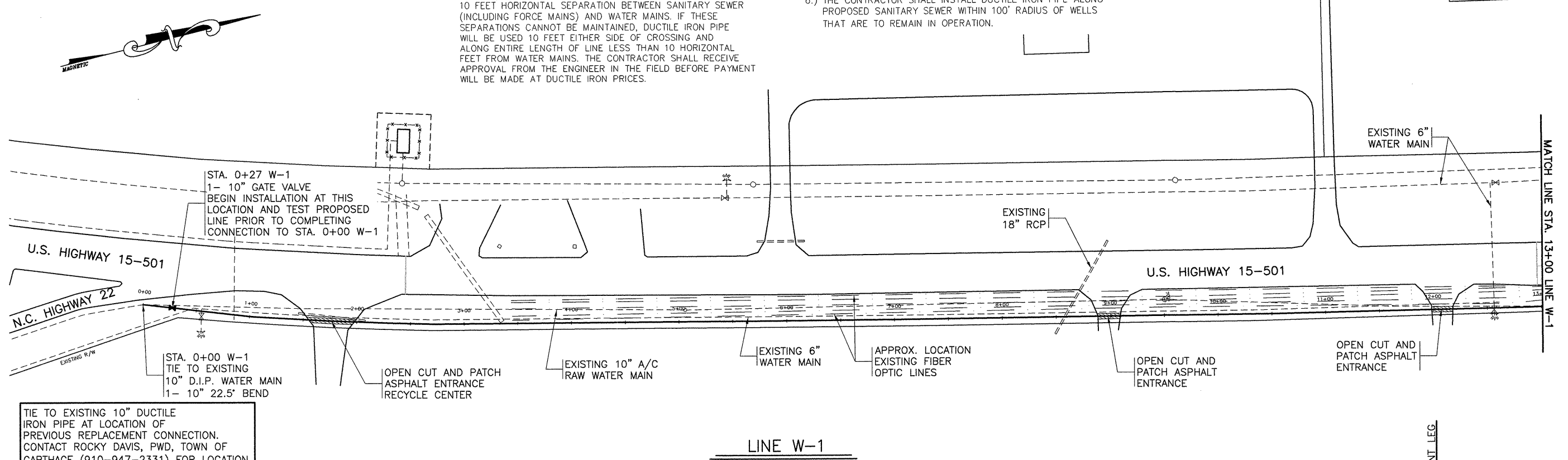


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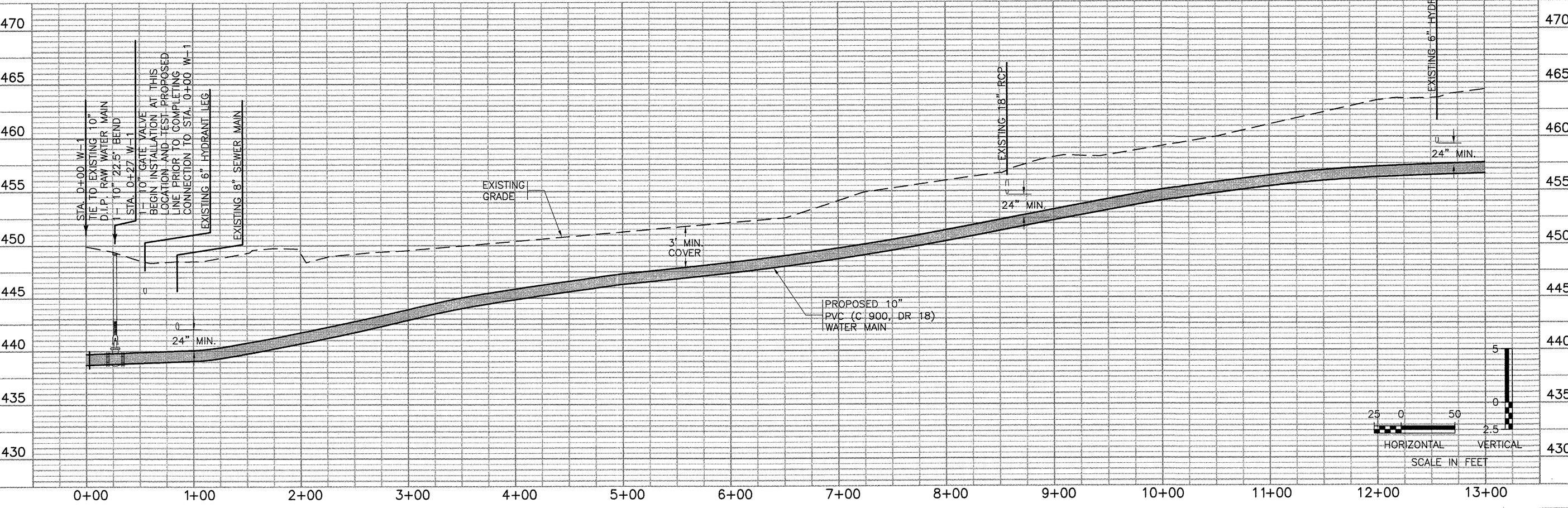
**LINE W-1**  
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TIE TO EXISTING 10" DUCTILE IRON PIPE AT LOCATION OF PREVIOUS REPLACEMENT CONNECTION. CONTACT ROCKY DAVIS, PWD, TOWN OF CARTHAGE (910-947-2331) FOR LOCATION.



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LEGEND

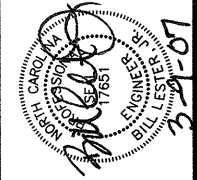
- SHRUB
- TREE
- POWER POLE & ANCHOR
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- TELEPHONE PEDESTAL
- EXISTING CATCH BASIN
- RIGHT-OF-WAY
- BOC
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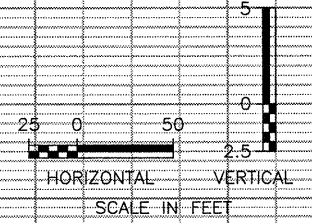
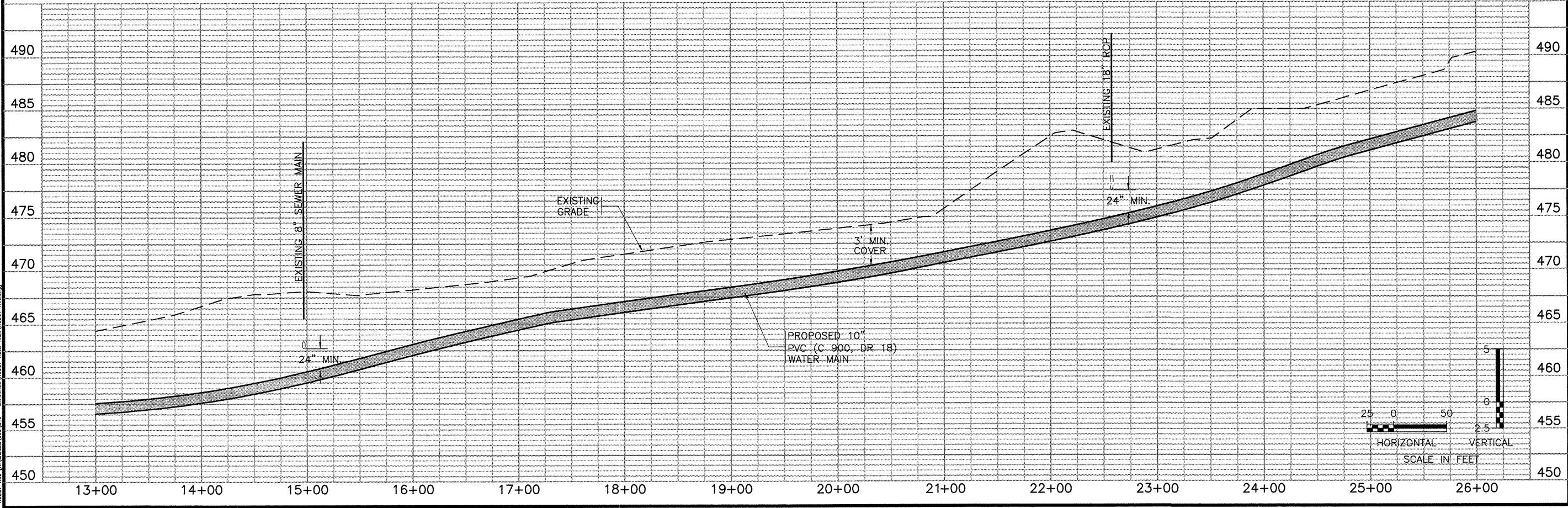
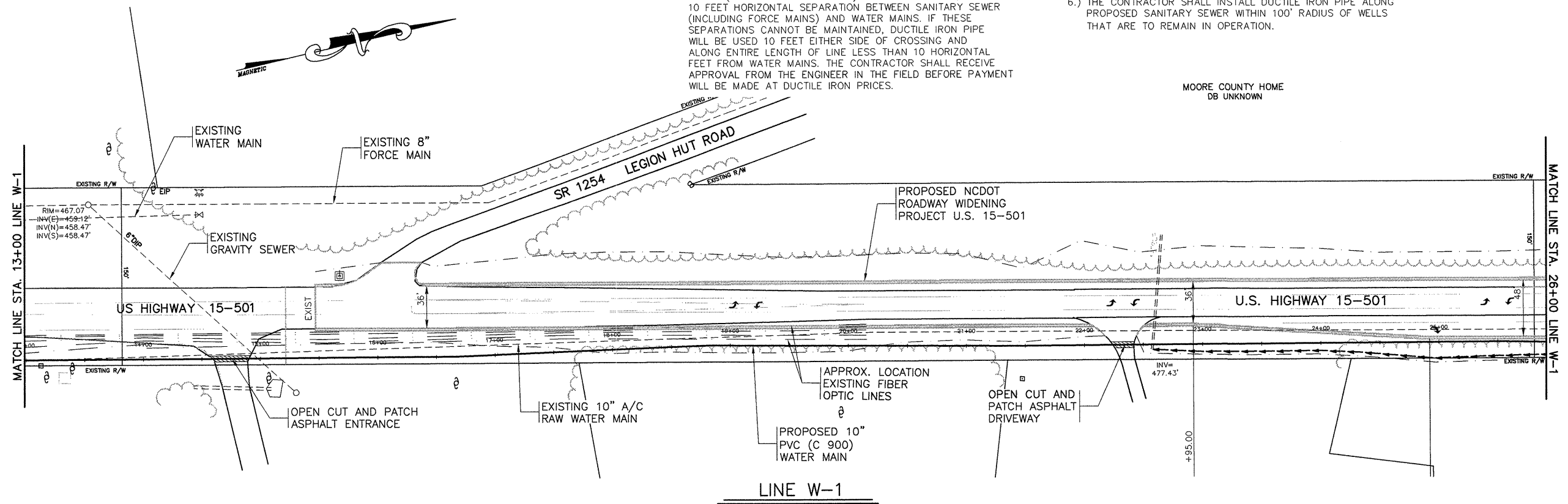
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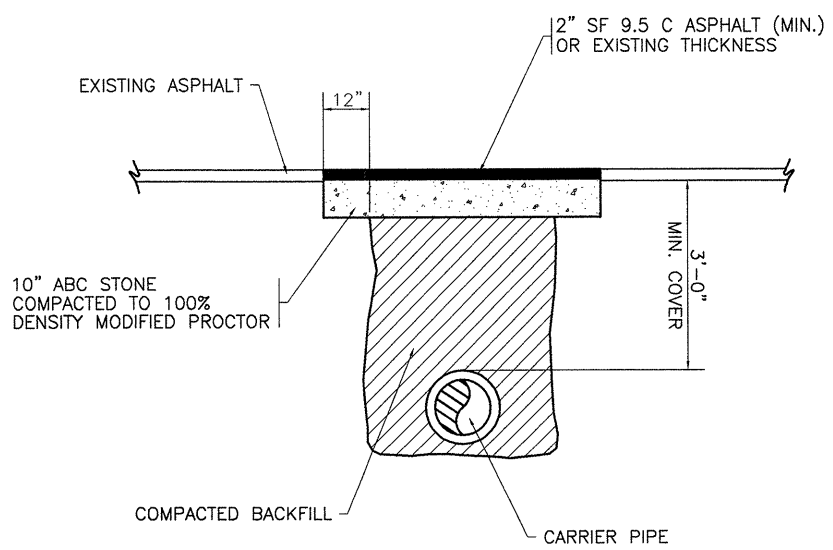
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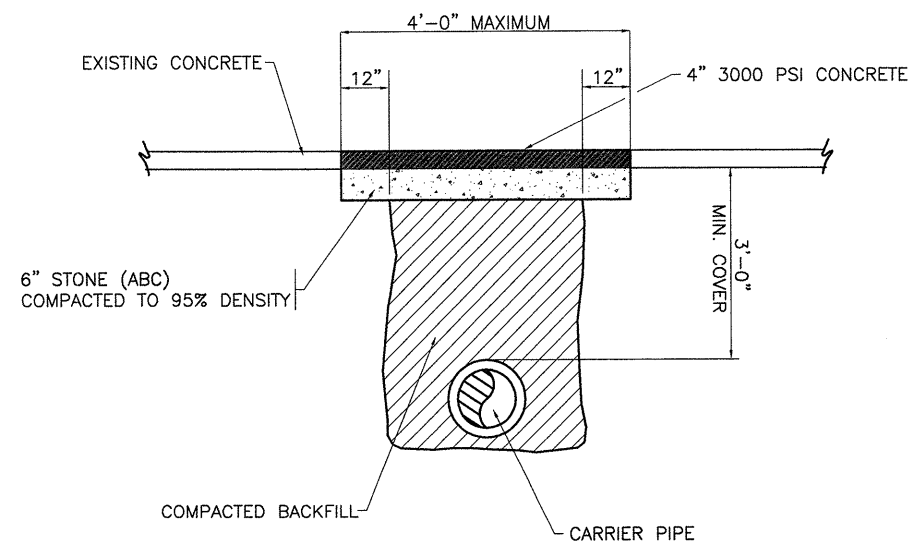
MISCELLANEOUS DETAILS

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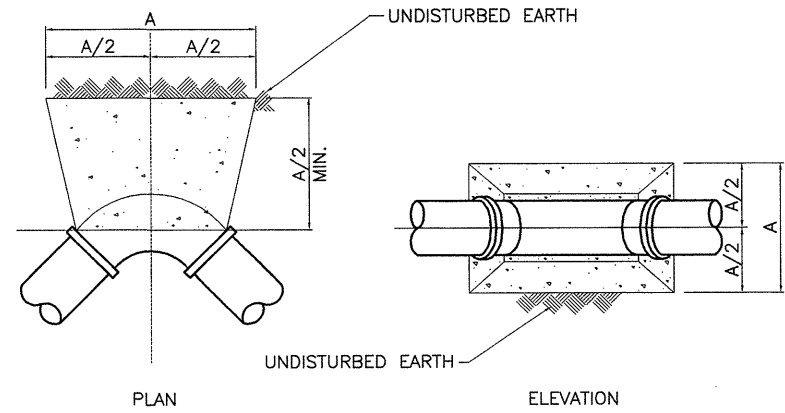
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 OF 5



**TYPICAL ASPHALT OPEN CUT AND PATCH**  
 N.T.S.



**TYPICAL CONCRETE OPEN CUT AND PATCH**  
 N.T.S.

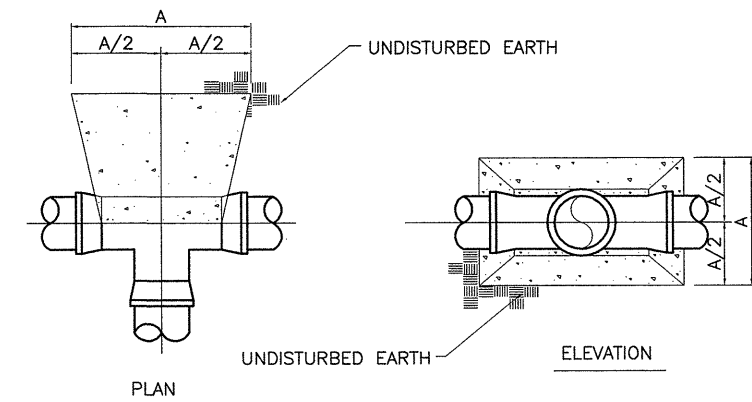


NOTE: THRUST BLOCKS SHALL BE CONSTRUCTED OF 2000 P.S.I. CONCRETE

TABLE "A" DIMENSIONS (IN FEET)

BEND	PIPE SIZE (NOM. DIA. IN INCHES)								
	2	4	6	8	10	12	16	18	20
90°	1.5	1.9	2.8	3.8	4.7	5.9	7.5	8.5	9.4
45°	1.0	1.4	2.1	2.8	3.5	4.3	5.5	6.2	6.9
22-1/2°	0.8	1.0	1.5	2.0	2.5	3.1	4.0	4.5	4.9
11-1/4°	0.8	1.0	1.1	1.5	1.8	2.2	2.2	3.2	3.6

**THRUST BLOCK DETAIL FOR BENDS**  
 N.T.S.

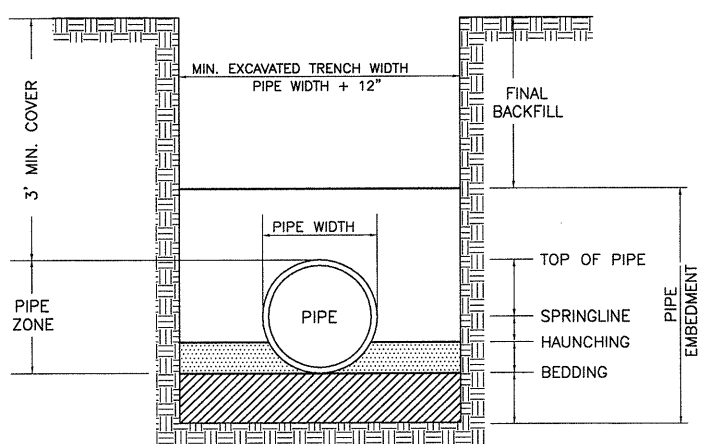


NOTE: THRUST BLOCK SIZE DETERMINED BY SMALLEST DIA. OF TEE

DIM. (IN FEET)	PIPE SIZE (INCHES)									
	2	4	6	8	10	12	14	16	18	20
A	1.6	1.9	2.8	3.8	4.7	5.9	6.6	7.5	8.5	9.4

**THRUST BLOCK DETAIL FOR TEES**  
 N.T.S.

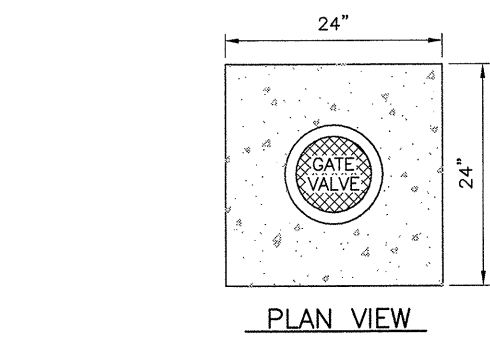
NOTE:  
 THE CONTRACTOR SHALL USE UNI-FLANGE CONSTRUCTION IN ADDITION TO CONCRETE THRUST BLOCKING AS SHOWN.



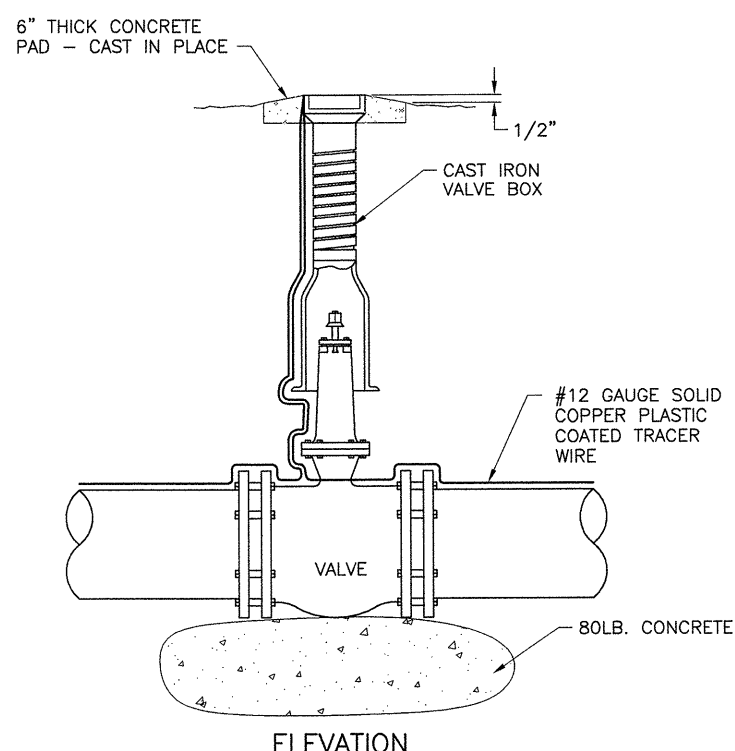
**TRENCH DETAIL**  
 N.T.S.

**NOTE:**

- BEDDING SHALL BE SMOOTH TRENCH BOTTOM, OR COMPACTED LOOSE FILL MATERIAL AS REQUIRED TO PROVIDE A FIRM, STABLE AND UNIFORM SUPPORT FOR THE FULL LENGTH OF PIPE.
- PVC SDR 35 SHALL BE BEDDED WITH STONE TO THE SPRINGLINE OF THE PIPE AT ALL TIMES. STONE BEDDING SHALL CONTINUE TO TOP OF PIPE IN WET OR UNSUITABLE CONDINTIONS.
- DUCTILE IRON PIPE SHALL BE BEDDED AND HAUNCHED WITH CLASS I, II, III OR IV MATERIALS. STONE SHALL BE USED FOR BEDDING AND HAUNCHING IN WET AND UNSUITABLE CONDINTIONS.
- DEFLECTION TESTING WILL BE REQUIRED FOR ALL PIPE.



**PLAN VIEW**



**ELEVATION**

**GATE VALVE ASSEMBLY DETAIL**  
 N.T.S.