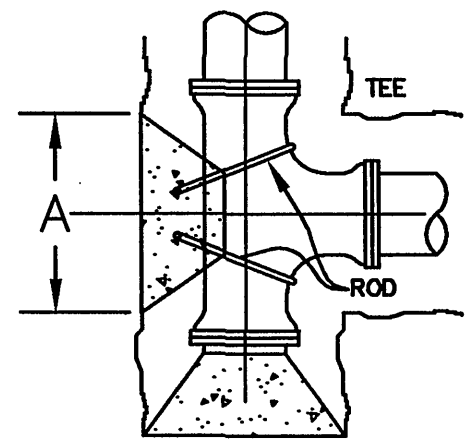
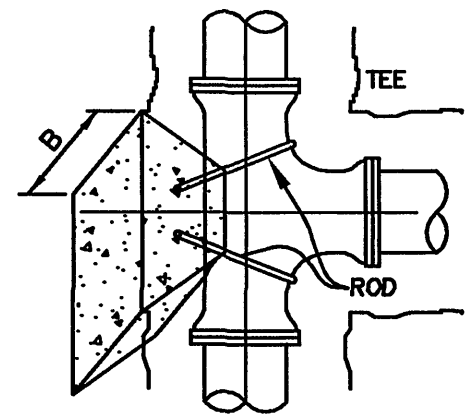
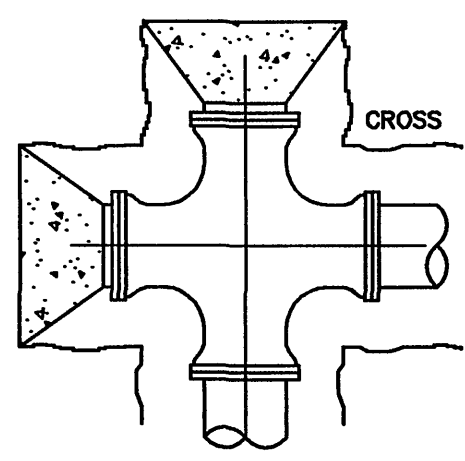


**FORCE MAIN INSTALLATION**  
NTS



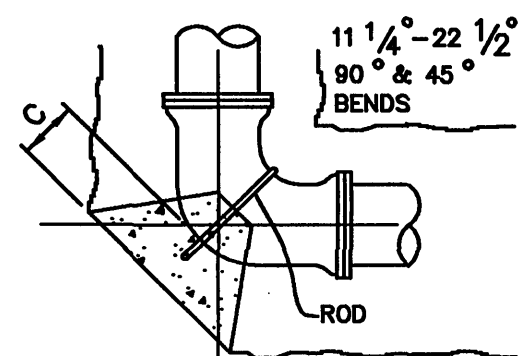
**FOR HORIZONTAL ALIGNMENT**

**HORIZONTAL THRUST BLOCK**  
NTS

TABLE A

BEND	4" & 6"	8"	10"	12"	16"
45°	1'-8"	3'-2"	3'-6"	4'-2"	5'-5"
90°	1'-2"	1'-4"	1'-6"	1'-8"	2'-2"
135°	8"	9"	10"	11"	1'-2"
180°	6"	7"	8"	9"	1'-3"
225°	1'-2"	1'-4"	1'-6"	1'-8"	2'-2"
270°	1'-2"	1'-4"	1'-6"	1'-8"	2'-2"
315°	8"	9"	10"	11"	1'-2"
360°	6"	7"	8"	9"	1'-3"

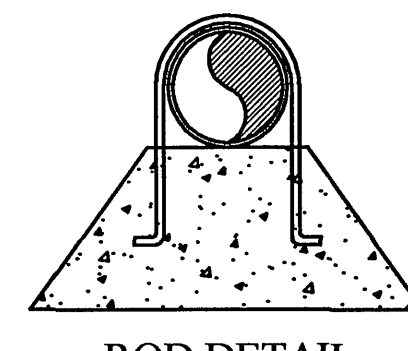
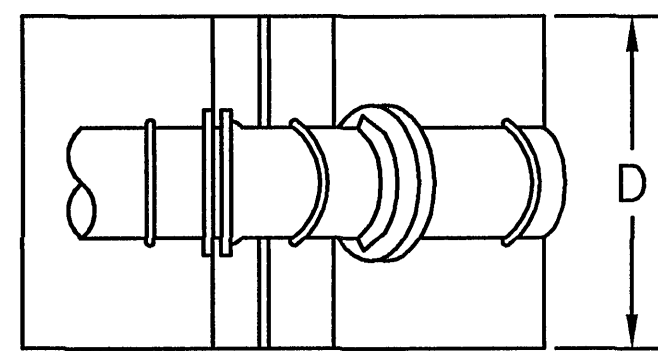
- NOTES:
1. ALL B&C DIMENSIONS TO BE AS REQUIRED TO REACH UNDISTURBED EARTH BUT NOT LESS THAN LISTED ON THRUST BLOCK TABLE.
  2. CAST-IN-PLACE CONCRETE SHALL BE IN ACCORDANCE WITH THE PCI TYPE 1 PORTLAND CEMENT 3,000 PSI.
  3. DIMENSIONS A, B, C, APPLY TO ALL BEND CONDITIONS SHOWN.
  4. INSTALL PLUGS AT ALL RUNS OR BRANCHES DISCONTINUED FOR FUTURE SERVICES.
  5. ALL BENDS, TEES, PLUGS, FITTINGS OR OTHER SIGNIFICANT CHANGES SHALL BE BRACED WITH POURED CONCRETE THRUST BLOCK AS SHOWN ON THIS DETAIL.
  6. ALL PLUGS SHALL BE SEPARATED FROM THE CONCRETE THRUST BLOCK BY A 5 MIL LAYER OF PLASTIC SHEETING.



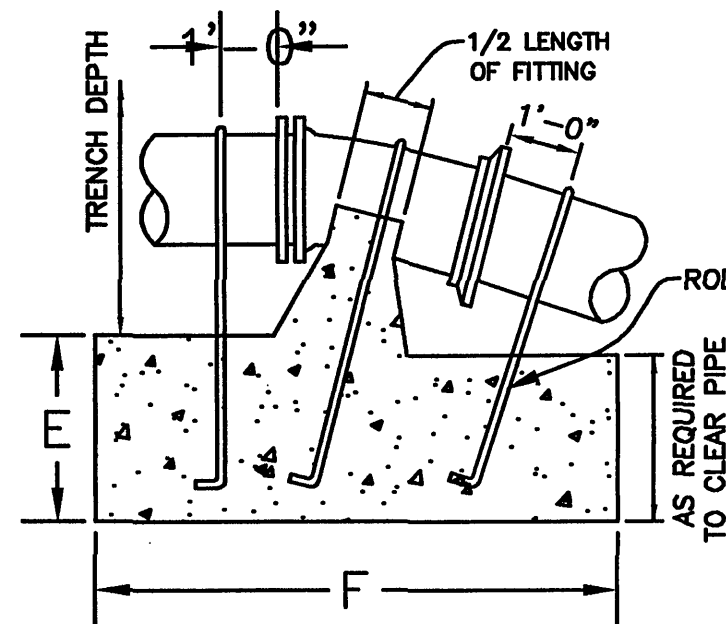
BEND	4" & 6"	8"	10"	12"	16"
45°	1'-8"	3'-2"	3'-6"	4'-2"	5'-5"
90°	1'-2"	1'-4"	1'-6"	1'-8"	2'-2"
135°	8"	9"	10"	11"	1'-2"
180°	6"	7"	8"	9"	1'-3"
225°	1'-2"	1'-4"	1'-6"	1'-8"	2'-2"
270°	1'-2"	1'-4"	1'-6"	1'-8"	2'-2"
315°	8"	9"	10"	11"	1'-2"
360°	6"	7"	8"	9"	1'-3"

PIPE SIZE	45°	90°	135°	180°
4" & 6"	1/2	1/2	1/2	3
8"	1/2	1/2	1/2	3
10"	3/4	3/4	3/4	3
12"	3/4	3/4	3/4	3
16"	3/4	3/4	3/4	3

THIS TABLE APPLIES TO VERTICAL & HORIZONTAL THRUST BLOCKS.



**ROD DETAIL**

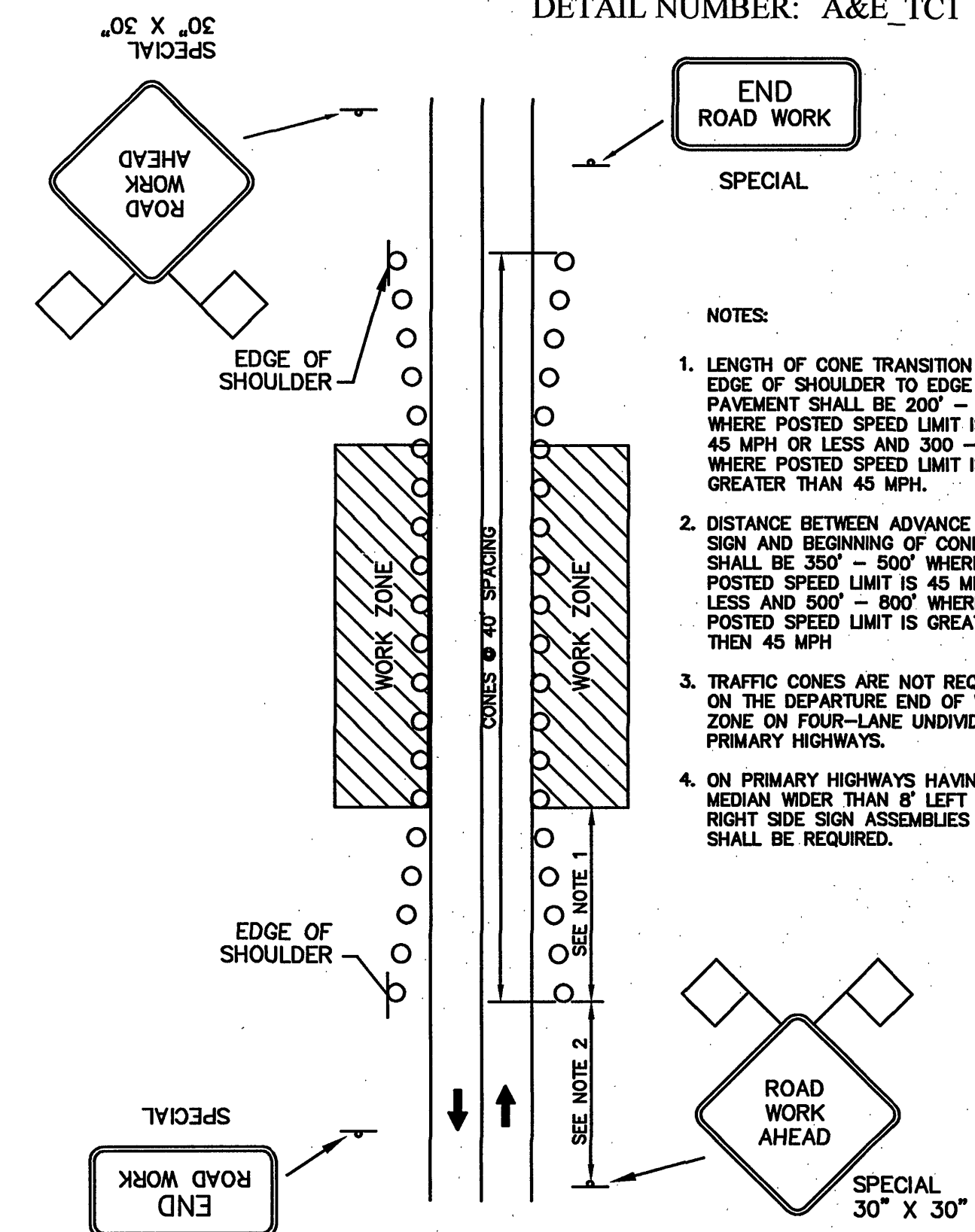


NOTES:

1. ALL POURED CONCRETE SHALL BE LAID ON UNDISTURBED EARTH AFTER EXCAVATION ACCORDING TO DIMENSIONS INDICATED ON THRUST BLOCK DIMENSION TABLE OR IT SHALL BE LAID THE FULL WIDTH OF TRENCH FROM UNDISTURBED WALL BUT NOT LESS THAN LISTED ON THRUST BLOCK TABLE.
2. CAST IN PLACE CONCRETE SHALL BE IN ACCORDANCE WITH THE PCI TYPE 1 PORTLAND CEMENT, 3,000 PSI.
3. ALL RODS TO BE 316 OR 304 STAINLESS STEEL.

**FOR VERTICAL ALIGNMENT**

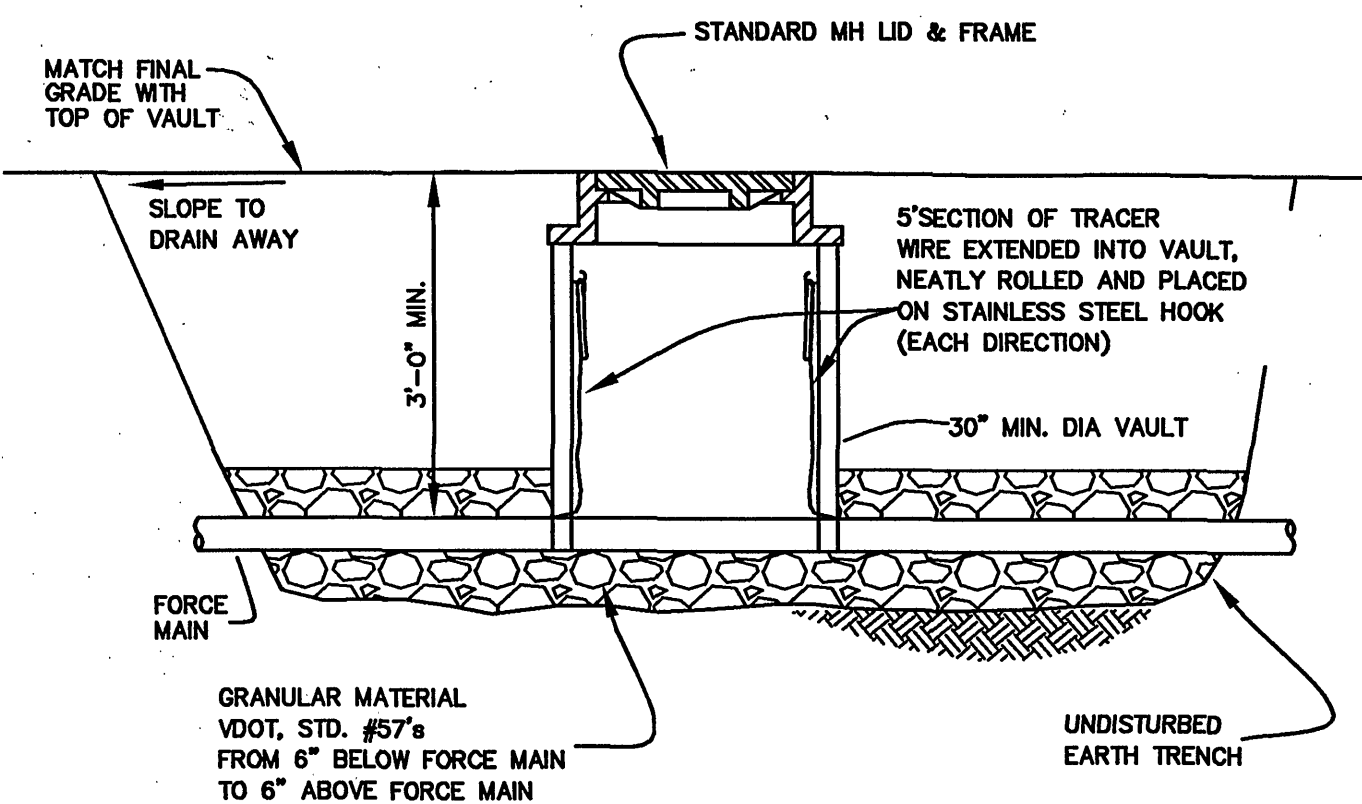
**VERTICAL THRUST BLOCK**  
NTS



TYPICAL TRAFFIC CONTROL WORK BETWEEN PAVEMENT AND DITCH LINE ON PRIMARY HIGHWAYS (NON-LIMITED ACCESS) - NTS

NOTES:

1. LENGTH OF CONE TRANSITION FROM EDGE OF SHOULDER TO EDGE OF PAVEMENT SHALL BE 200' - 400' WHERE POSTED SPEED LIMIT IS 45 MPH OR LESS AND 300 - 600' WHERE POSTED SPEED LIMIT IS GREATER THAN 45 MPH.
2. DISTANCE BETWEEN ADVANCE WARNING SIGN AND BEGINNING OF CONE TAPER SHALL BE 350' - 500' WHERE POSTED SPEED LIMIT IS 45 MPH OR LESS AND 500' - 800' WHERE POSTED SPEED LIMIT IS GREATER THAN 45 MPH.
3. TRAFFIC CONES ARE NOT REQUIRED ON THE DEPARTURE END OF WORK ZONE ON FOUR-LANE UNDIVIDED PRIMARY HIGHWAYS.
4. ON PRIMARY HIGHWAYS HAVING A MEDIAN WIDER THAN 8' LEFT AND RIGHT SIDE SIGN ASSEMBLIES SHALL BE REQUIRED.

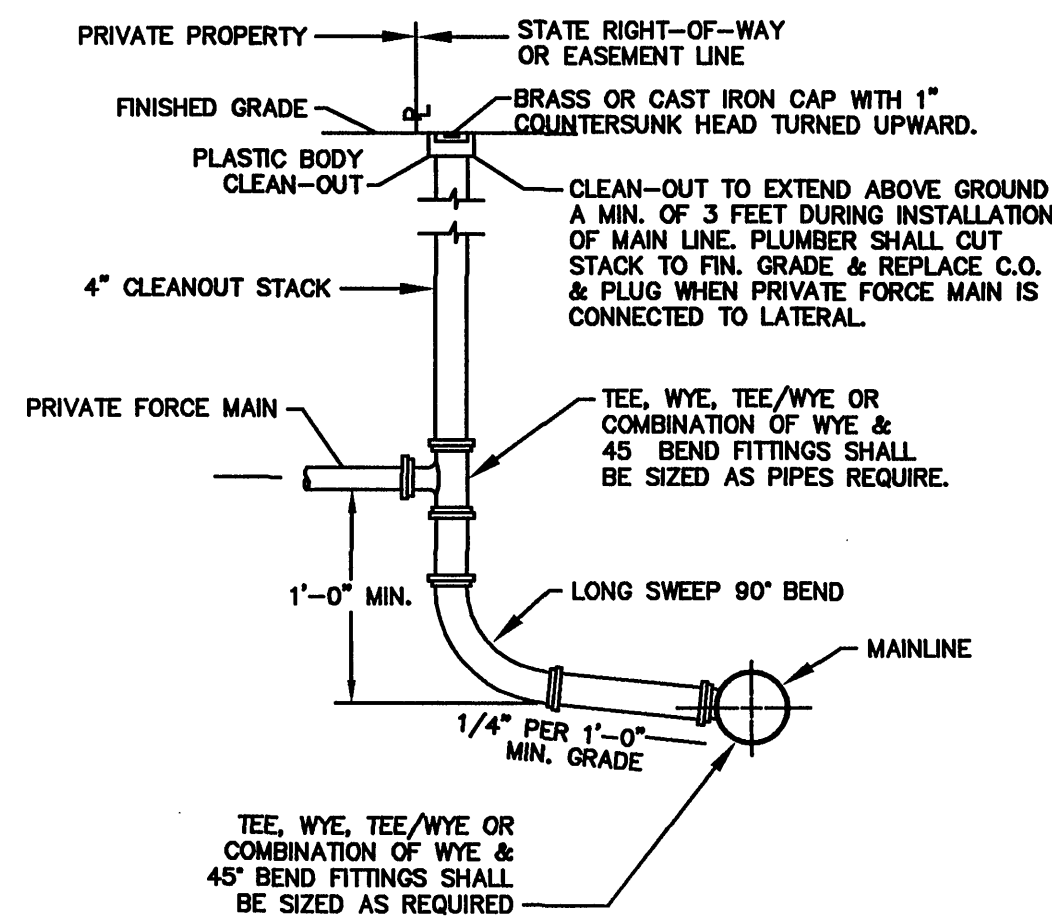


**TRACER WIRE ACCESS VAULT**  
NTS

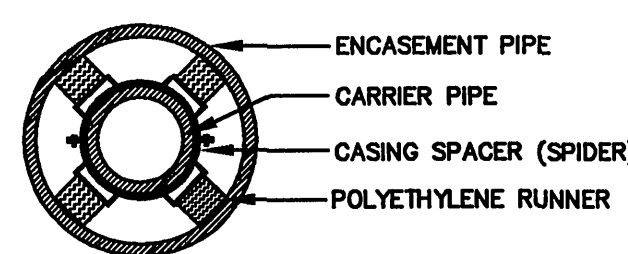
GENERAL NOTES:

1. TRAFFIC BEARING BOX REQUIRED IN TRAFFIC AREAS.
2. ALL PIPE AND FITTINGS SHALL BE OF SIMILAR MATERIAL.
3. ALL PIPE SHALL BE OF SAME SIZE.
4. NO BENDS ARE ALLOWED IN THE LATERAL FROM THE MAIN TO THE CLEAN-OUT STACK WYE. (EXCEPT AS NOTED)
5. MINIMUM COVER FOR ALL SEWER LATERALS SHALL BE THREE (3') FEET

DETAIL NUMBER: A&E\_SS15



**PRIVATE FORCE MAIN TO GRAVITY LATERAL CONNECTION**  
NTS

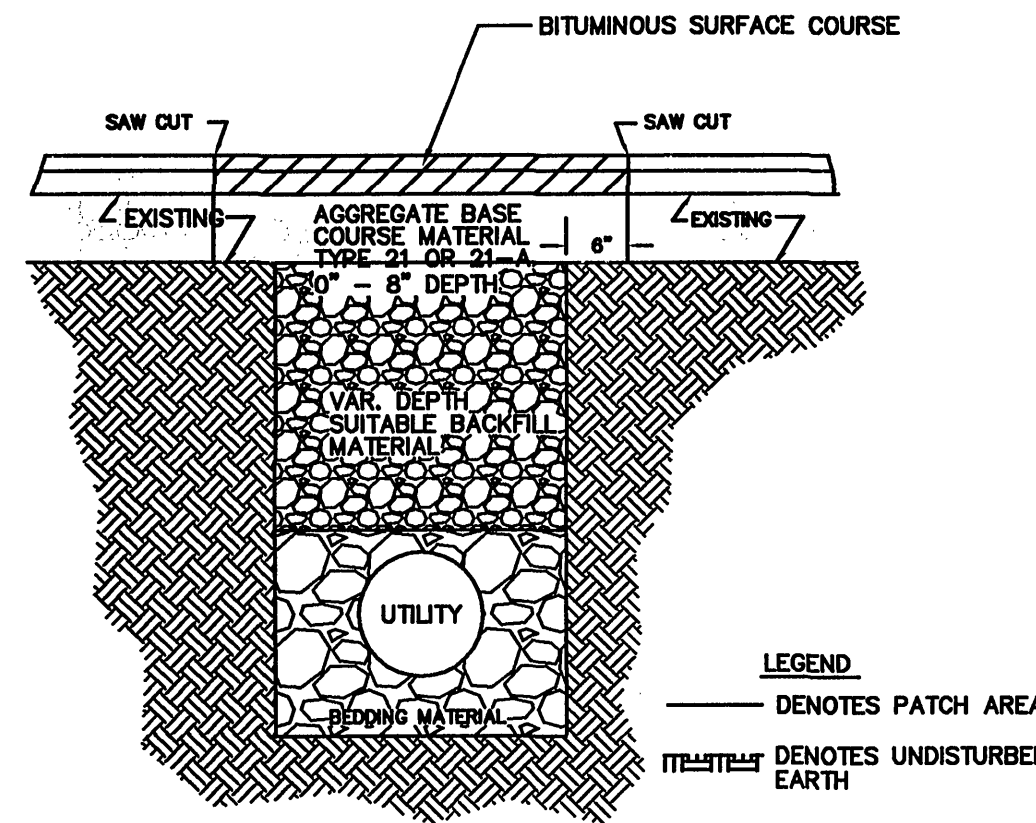
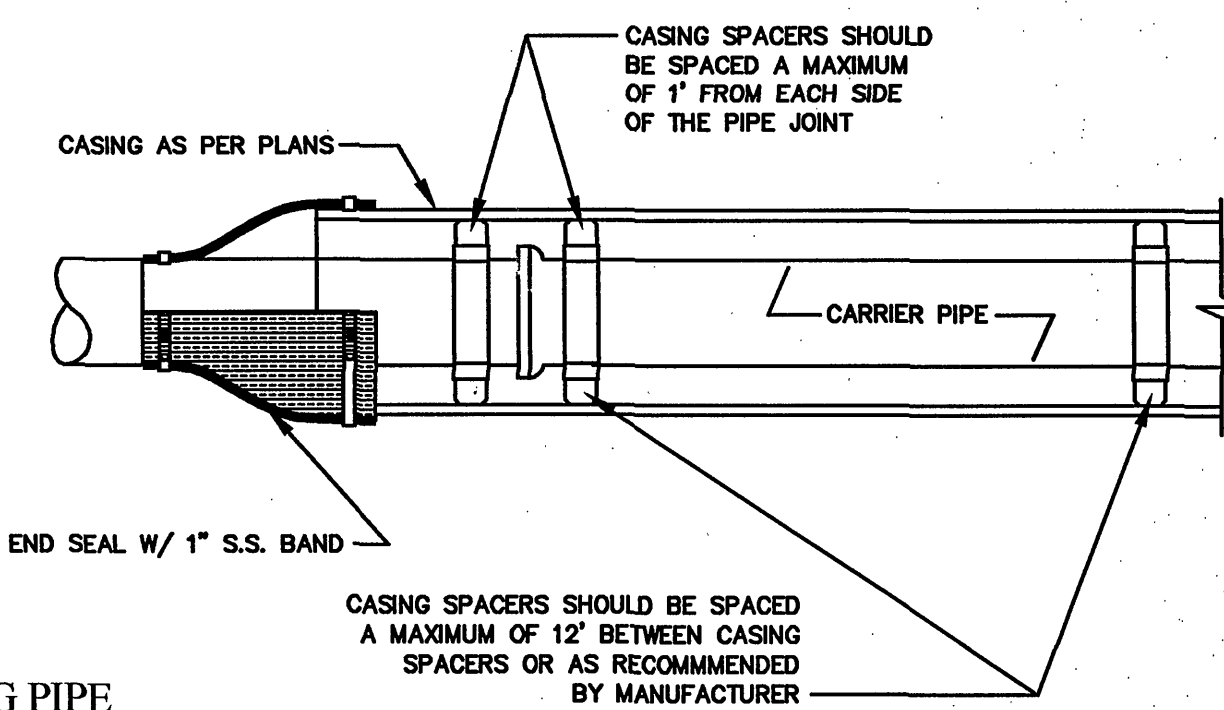


ALTERNATE PIPE SUPPORT IN CASING PIPE:

18" LONG TREATED TIMBER SKIDS OF APPROPRIATE WIDTH SO THAT BELLS OR FLANGES DO NOT REST ON CASING WITH MORE THAN 3/4" FREE PLAY. SKIDS TO BE PLACED AT 4'-0" O.C. AND SECURED WITH 2" x 1/4" GALV. STEEL STRAPS OR 1" S.S. BANDS. SOAP-BASED LUBRICANT MAY BE USED FOR SLIDING OF SKID WITH DUCTILE IRON PIPE AND FLAX-BASED LUBRICANT MAY BE USED FOR SLIDING OF SKID WITH PVC PIPE.

NOTE: A 1" DRAIN WILL BE REQUIRED ON THE LOWER END OF THE CASING IF THE CASING ENDS ARE SEALED WITH MORTAR AND BRICK.

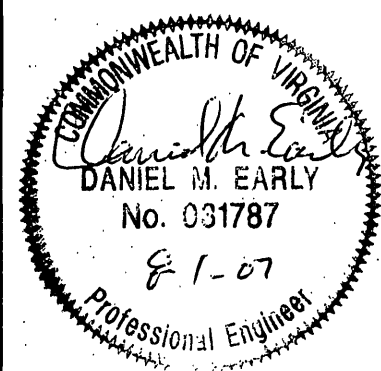
**PIPE SUPPORT IN CASING PIPE**  
NTS



**PAVEMENT CUTTING & REPLACEMENT**  
NTS

NOTES:

1. SURFACE AND BASE REPLACEMENT WILL GENERALLY BE REQUIRED TO MATCH EXISTING ASPHALT LAYERS AND SHALL BE COMPACTED IN LIFTS ACCORDING TO VIRGINIA DEPARTMENT OF TRANSPORTATION ROAD AND BRIDGE SPECIFICATIONS.
2. AGGREGATE BASE MATERIAL SHALL BE REPLACED TO A DEPTH GREATER THAN EXISTING STONE BASE TO ENSURE LOAD BEARING CAPACITY OF CUT RELATED TO UNDISTURBED EARTH AREAS. AGGREGATE BASE SHALL BE COMPACTED ACCORDING TO VIRGINIA DEPARTMENT OF TRANSPORTATION ROAD AND BRIDGE SPECIFICATIONS.
3. BEDDING MATERIAL SHALL BE ACCORDING TO REQUIREMENT OF EACH UTILITY (GENERALLY FROM BOTTOM OF REPAIR DITCH TO SIX INCHES ABOVE PIPE WITH MINIMUM OF FOUR INCHES BELOW PIPE).
4. SAW CUT TO BE MADE WITH MECHANICAL SAW AND SIDES TO BE TACKED WITH BITUMINOUS MATERIAL TYPE RC-250 OR EQUAL.



**ACS DESIGN**  
Engineering-Planning-Surveying  
Landscape Architecture  
Construction Management

2203 Peters Creek Road, NW  
Roanoke, Virginia 24017  
Phone: 540 562 2345  
Fax: 540 562 2344  
Email: info@acsdesignllc.com  
www.acsdesignllc.com

GRAVITY SEWER 2 DETAILS  
PLANNED COMMERCIAL DEVELOPMENT  
LAKEWATCH PLANTATION  
GILLS CREEK MAGISTERIAL DISTRICT  
FRANKLIN COUNTY, VIRGINIA

DRAWN BY: DME

DESIGNED BY: CEK

CHECKED BY: DME

DATE: 05/15/07

SCALE: NOT TO SCALE

REVISIONS

REVISION	DATE	COMMENT

SHEET No.  
**31 OF 32**

JOB No. 21-04