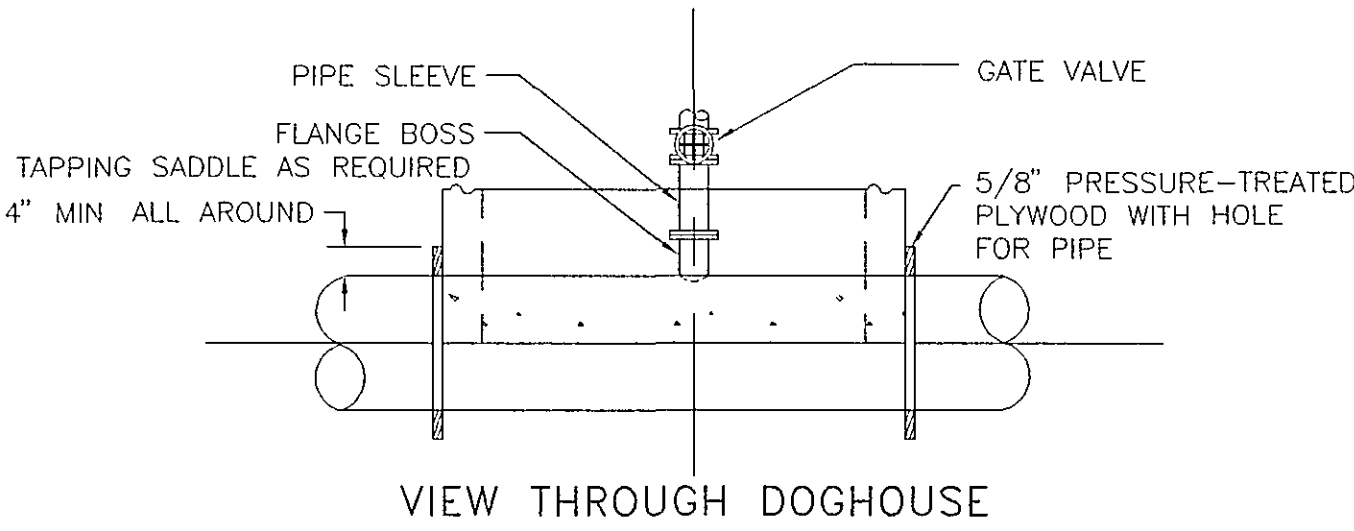
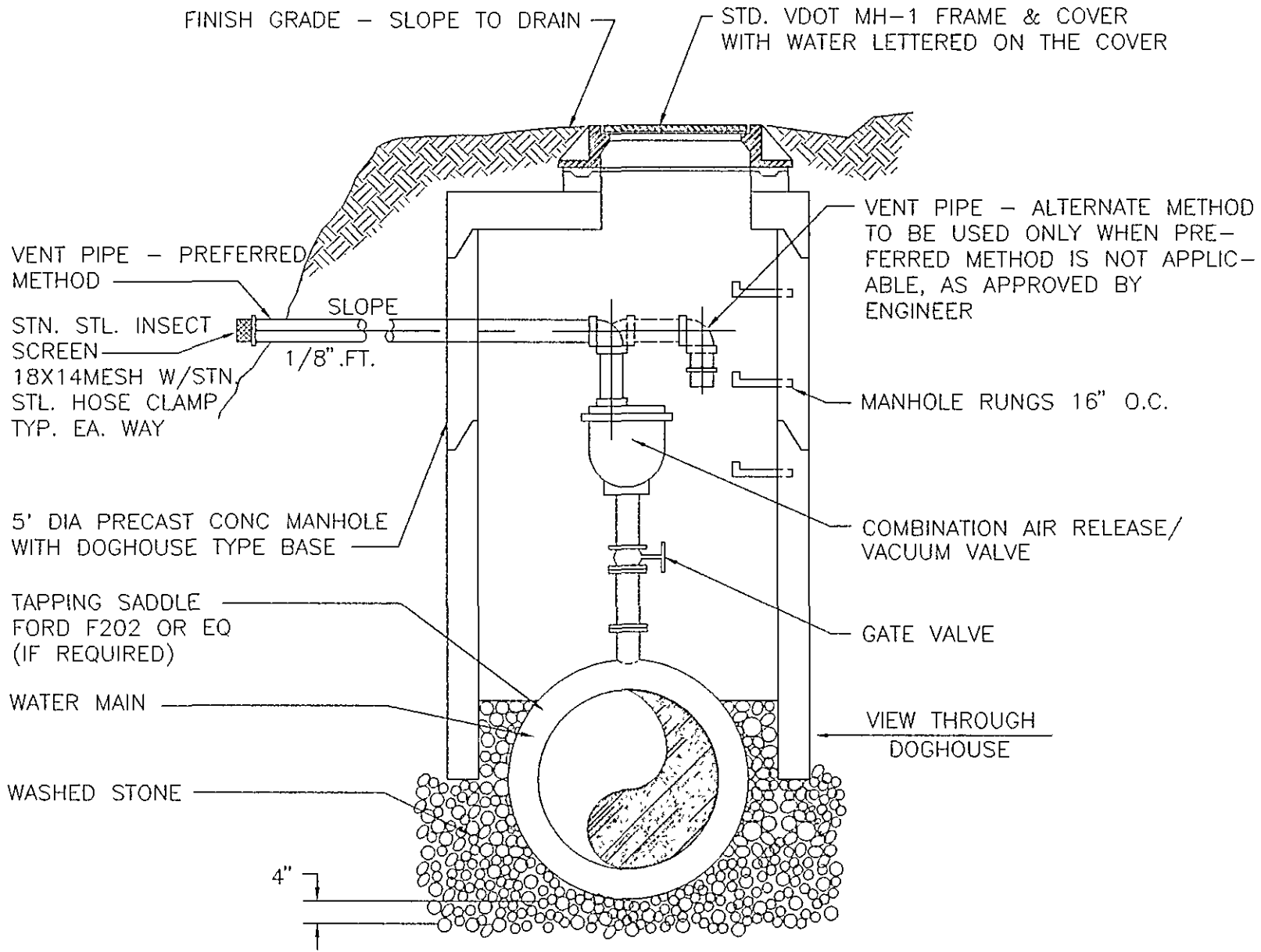
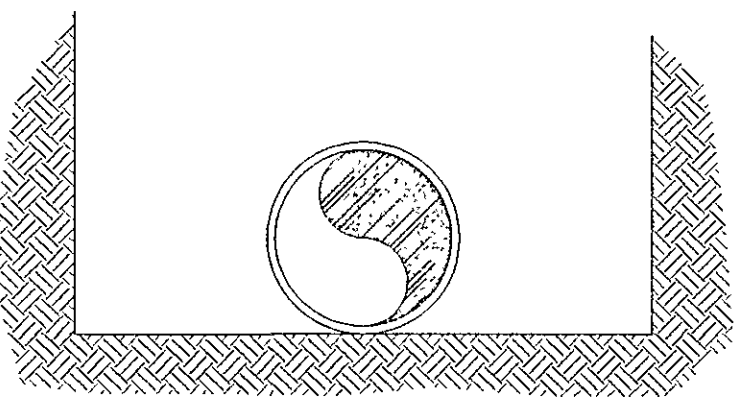


AIR VACUUM VALVE CHART

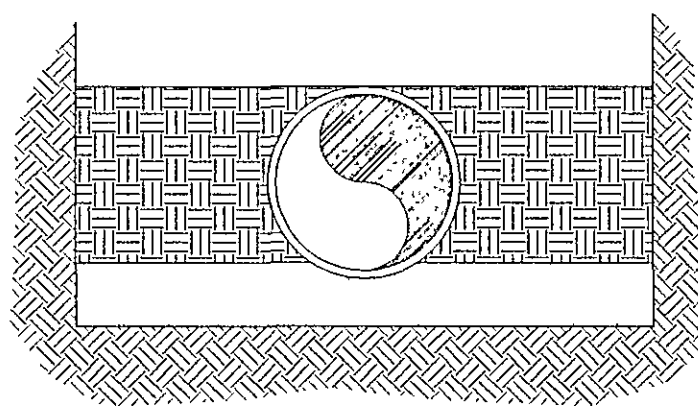
| PIPE SIZE | VALVE SIZE | CONNECTOR      | VALVE         |
|-----------|------------|----------------|---------------|
| 30" - 36" | 6"         | 6" FLANGE      | 6" BALL VALVE |
| 24"       | 4"         | 4" FLANGE      | 4" BALL VALVE |
| 18"       | 3"         | TAPPING SADDLE | BALL VALVE    |
| 10" - 16" | 2"         | TAPPING SADDLE | BALL VALVE    |
| 6" - 8"   | 1"         | TAPPING SADDLE | BALL VALVE    |



COMBINATION AIR RELEASE/  
VACUUM VALVE DETAIL  
NTS

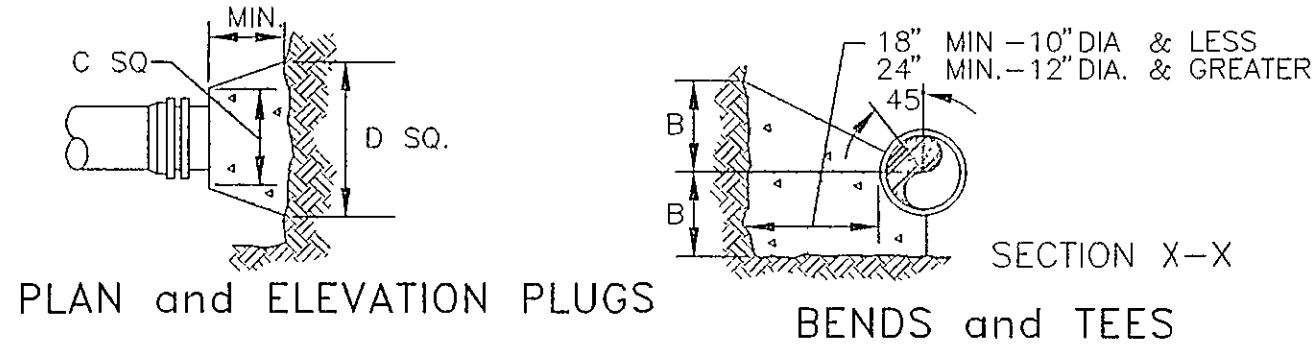
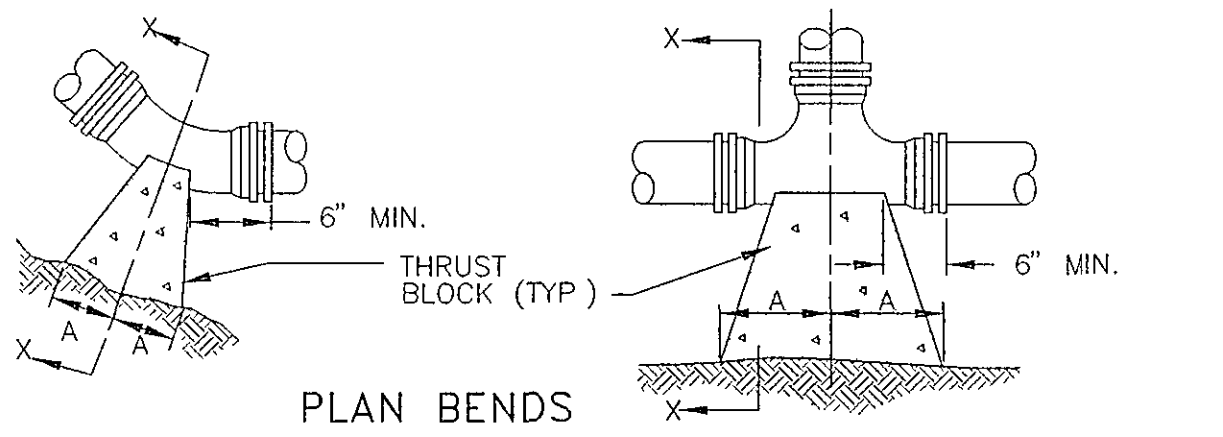


TYPE 1  
FLAT BOTTOM TRENCH. LOOSE BACKFILL.



TYPE 3  
PIPE BEDDED IN 4 in. MINIMUM OF LOOSE SOIL.  
BACKFILL LIGHTLY CONSOLIDATED TO TOP OF PIPE.

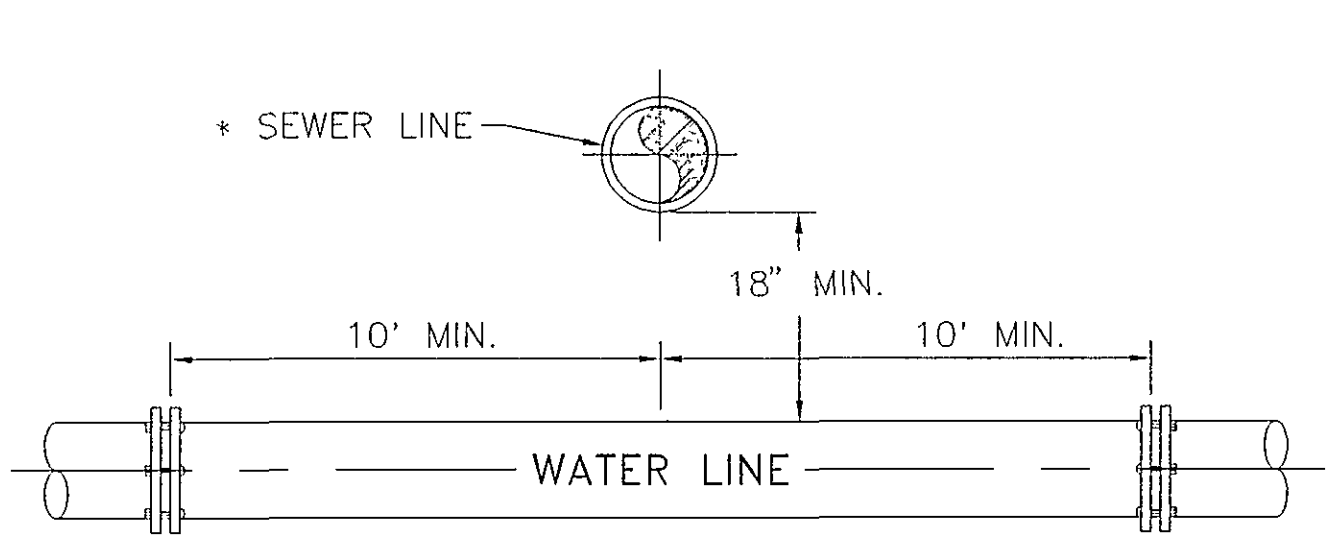
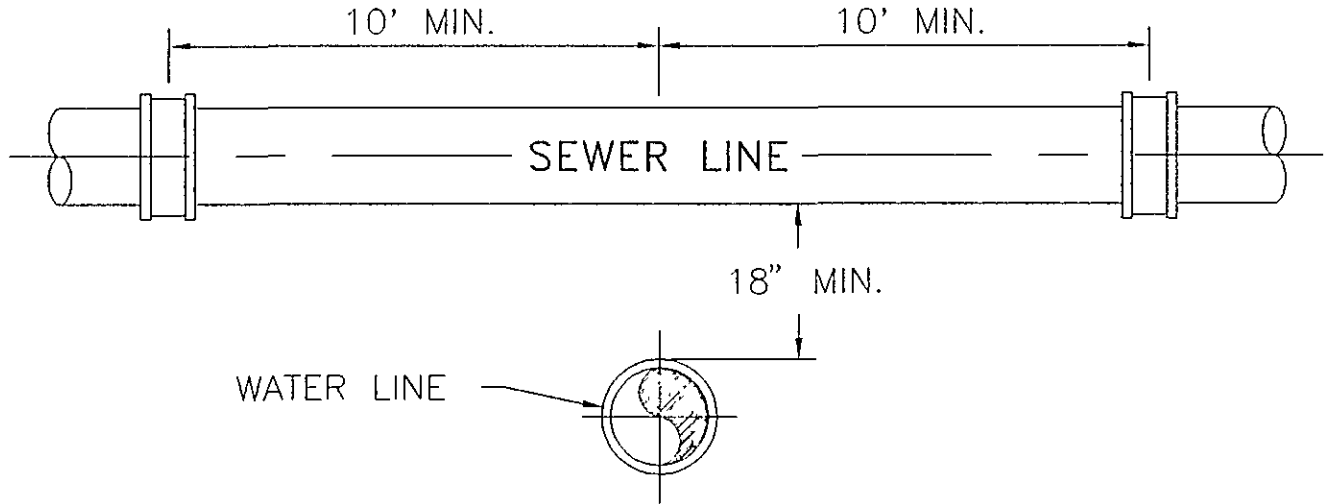
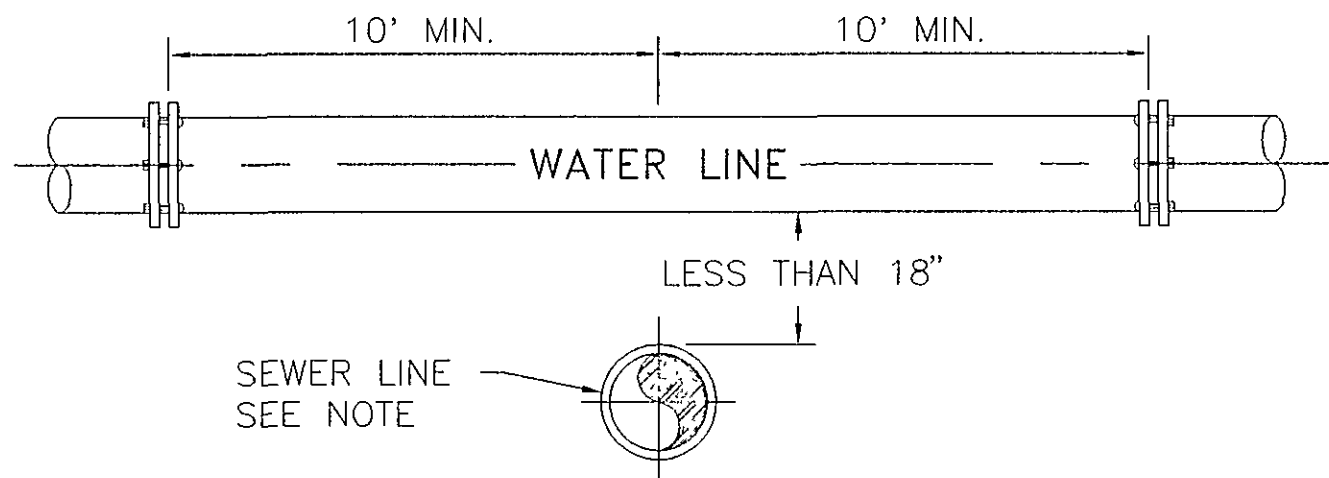
BEDDING DETAIL  
NTS



- NOTES:
- FOR VERT. BEND DOWN IN EXCESS OF 125', ANCHORAGE SHALL BE RECOMMENDED BY ENGINEER
  - FOR VERT. BEND UPWARD, BLOCKING TO BE SIMILAR TO THAT FOR HORIZ. BEND
  - GLANDS & BOLTS SHALL BE PROTECTED FROM CONC. WHEN POURING THRUST BLOCKS
  - ALL THRUST BLOCK & SUPPORT CONC. SHALL BE CLASS B
  - THRUST BLOCKS WITH 'B' DIMENSION GREATER THAN 30" SHALL HAVE THE RESTRAINED PIPE INSTALLED WITH A MINIMUM OF 4' OF COVER
- PRESSURE = 200psi  
BEARING = 2,000psf  
FACTOR OF SAFETY = 1.5

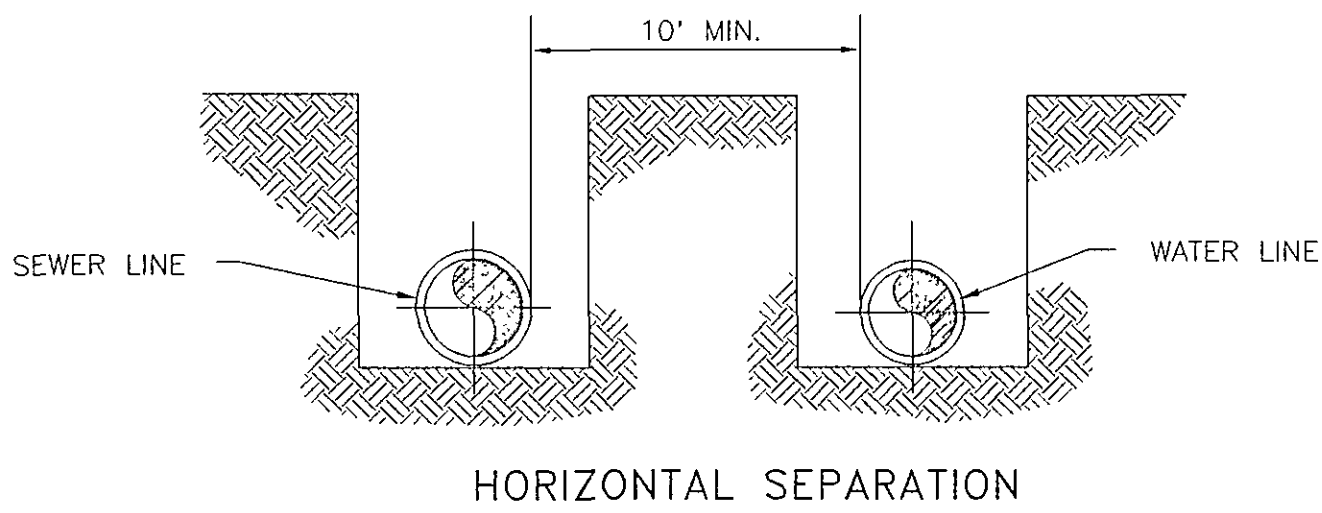
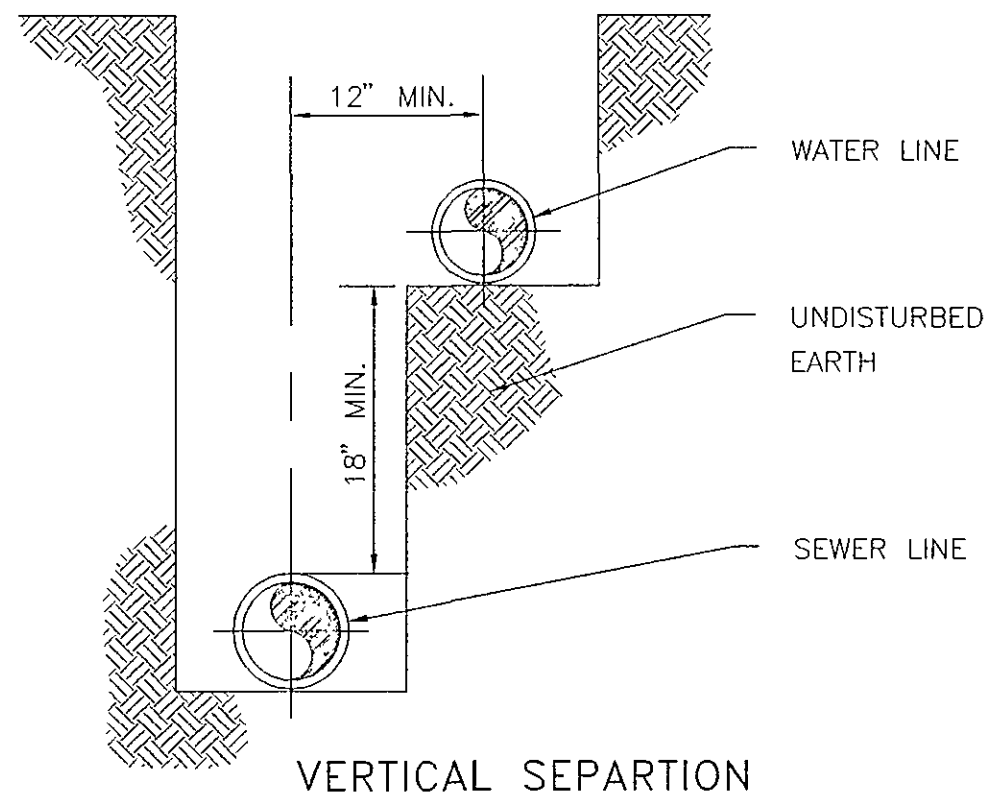
| PIPE SIZE | 90° BEND | 45° BEND | 22 1/2° BEND | 11 1/4° BEND | TEE      | PLUG     |
|-----------|----------|----------|--------------|--------------|----------|----------|
|           | A B      | A B      | A B          | A B          | A B      | C D      |
| 4"        | 8" 12"   | 8" 8"    | 6" 6"        | 6" 6"        | 11" 9"   | 10" 6"   |
| 6"        | 18" 12"  | 8" 10"   | 8" 8"        | 8" 8"        | 10" 10"  | 12" 18"  |
| 8"        | 15" 13"  | 10" 10"  | 8" 8"        | 8" 8"        | 10" 12"  | 12" 24"  |
| 10"       | 20" 16"  | 12" 14"  | 8" 12"       | 8" 12"       | 14" 16"  | 16" 30"  |
| 12"       | 20" 16"  | 12" 14"  | 8" 12"       | 8" 12"       | 14" 16"  | 16" 30"  |
| 16"       | 26" 20"  | 16" 18"  | 11" 13"      | 13" 18"      | 20" 20"  | 36"      |
| 24"       | 82" 42"  | 62" 30"  | 44" 22"      | 22" 16"      | 82" 42"  | 82" 42"  |
| 36"       | 185" 42" | 100" 42" | 52" 42"      | 40" 30"      | 185" 42" | 185" 42" |

THRUST BLOCK DETAILS  
NTS

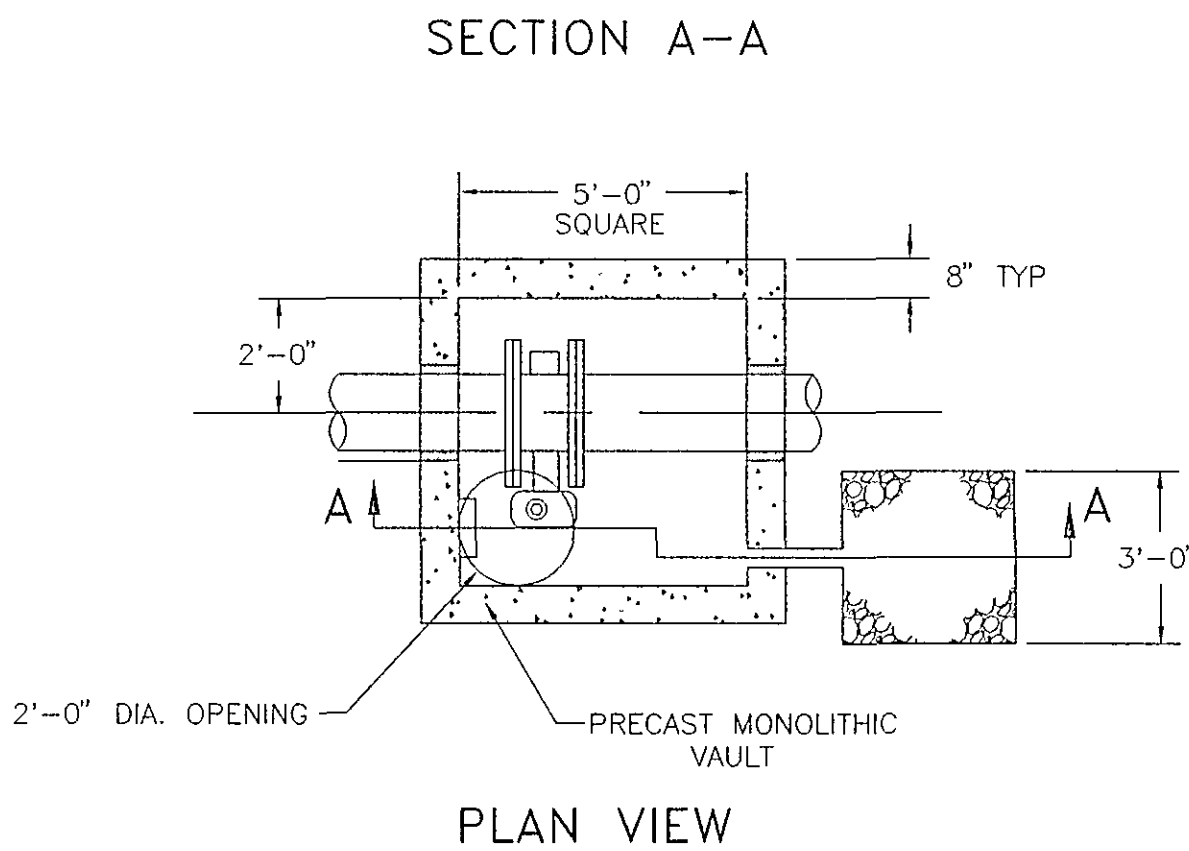
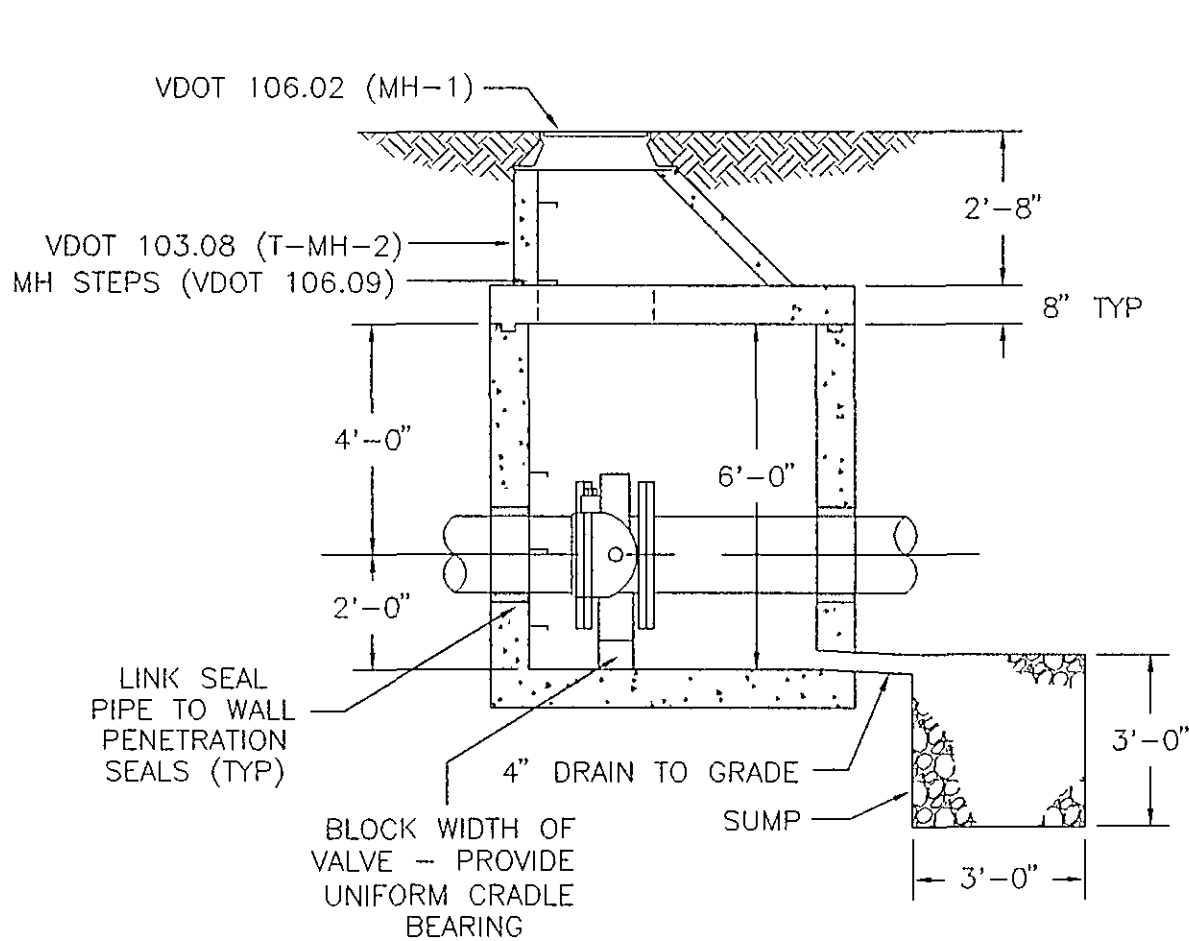


NOTE:  
\* SEWER LINE ABOVE WATERLINE TO BE CONSTRUCTED OF AWWA WATER LINE MATERIAL & PRESSURE TESTED (SEE SPEC.) AT NO ADDITIONAL COST (SEE SEWER LINE COUPLING DETAIL).

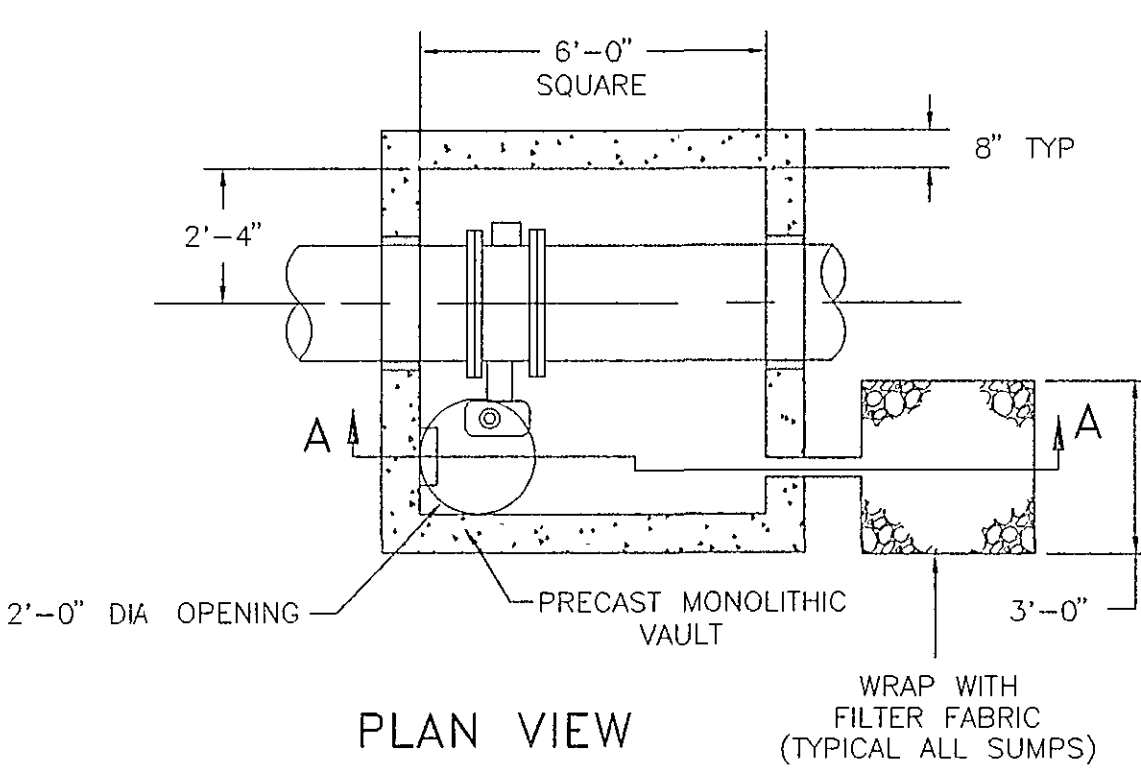
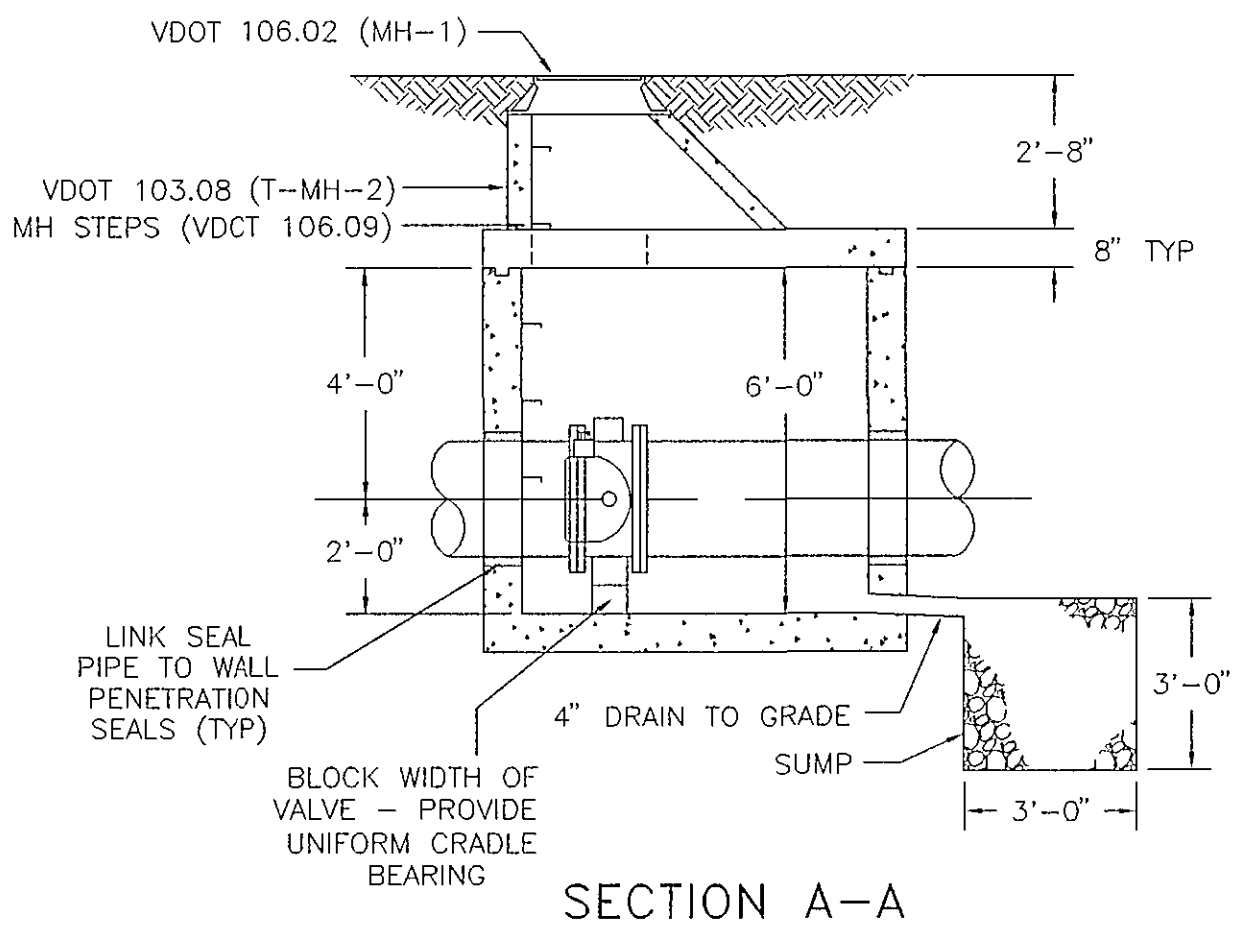
WATER and SEWER CROSSING DETAIL  
NTS



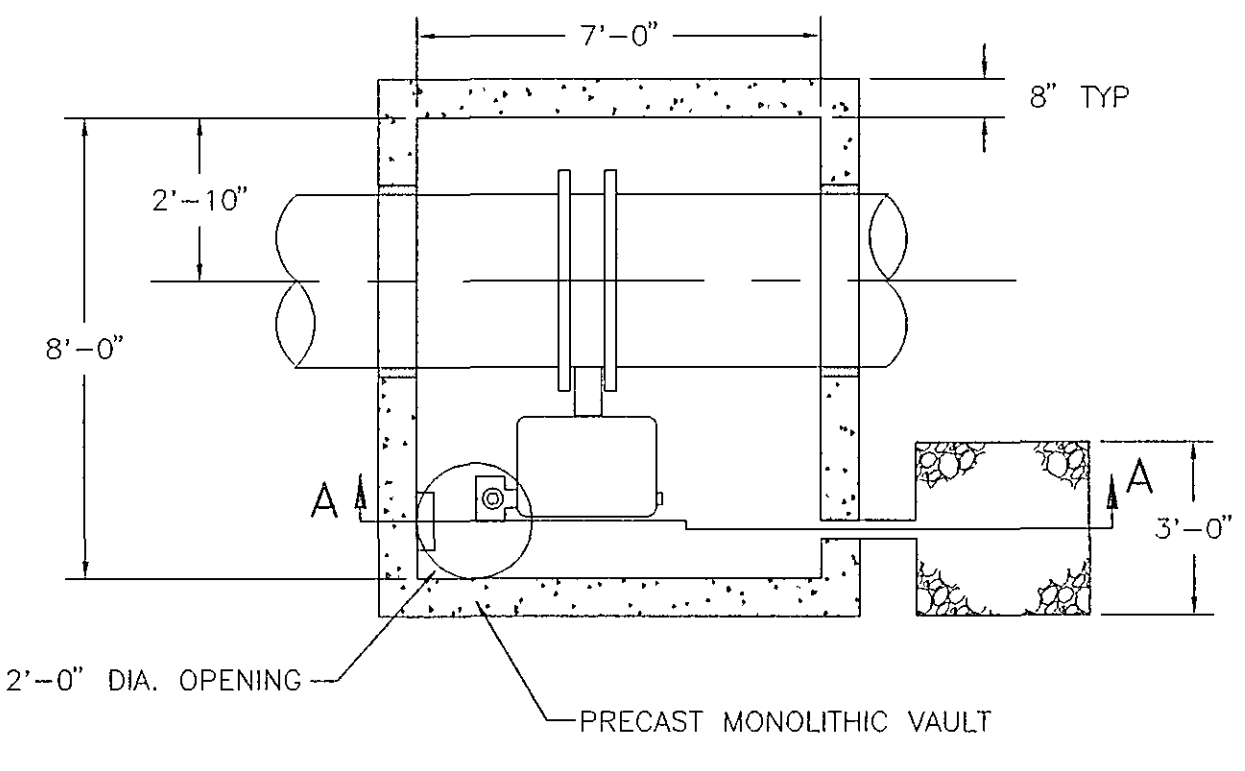
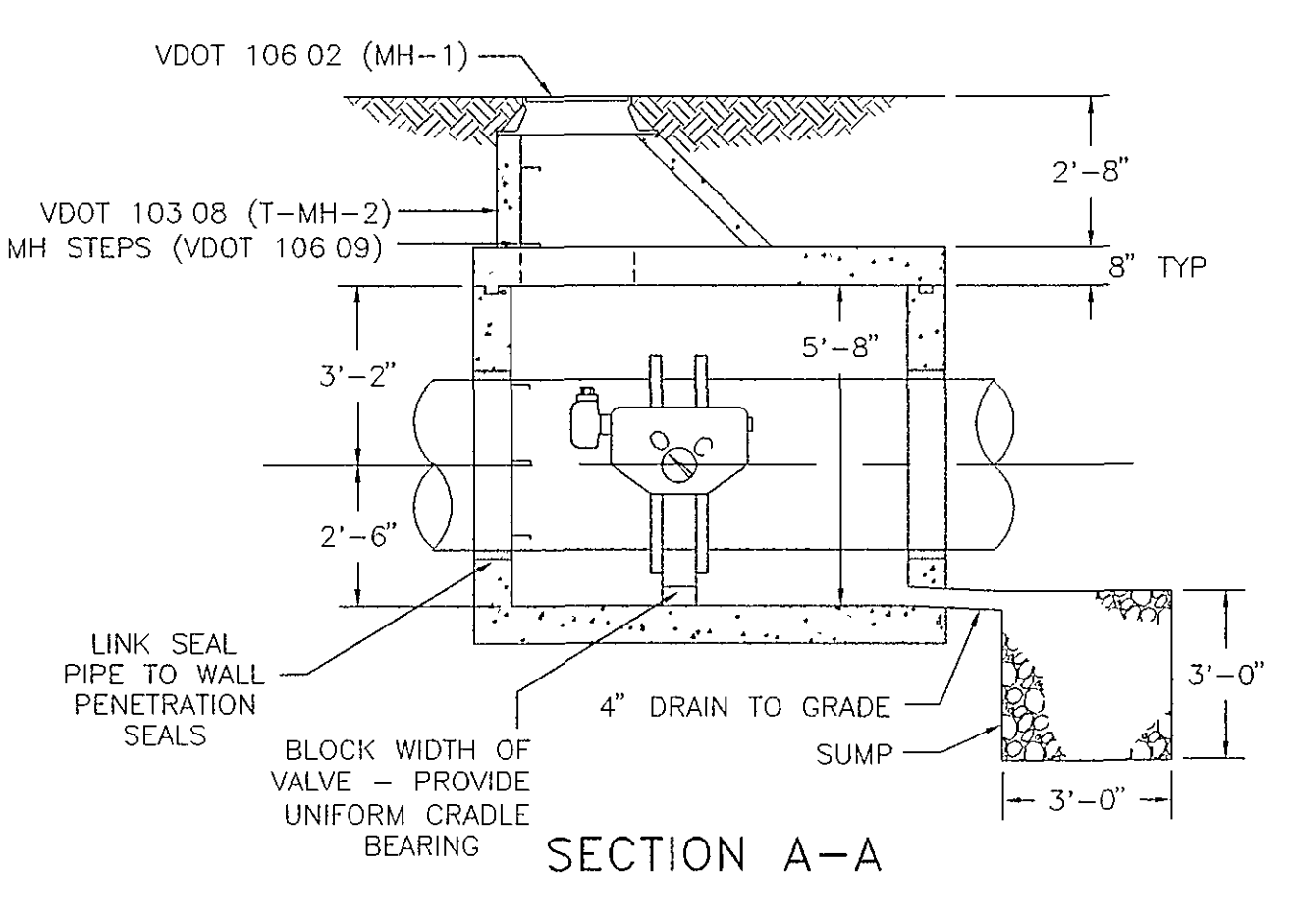
WATER and SEWER SEPARATION DETAIL  
NTS



16" BUTTERFLY VALVE VAULT  
NTS



24" BUTTERFLY VALVE VAULT  
NTS



36" BUTTERFLY VALVE VAULT  
NTS

WATER DEP'T. #93-25

Architects  
Engineers  
Planners  
Surveyors

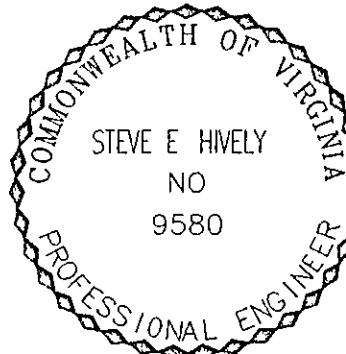
Dewberry & Davis

5238 Valleypointe Parkway, Suite One-B  
Roanoke, Virginia 24019  
703 362-7725

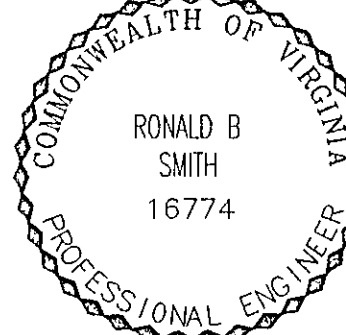
Carvins Cove, Phase II  
City of Roanoke  
Roanoke, Virginia

CONTRACT "C2"  
DETAILS

AS BUILT



ENGINEER'S SEAL



ENGINEER'S SEAL

|             |          |
|-------------|----------|
| Drawn By    | ACF      |
| Designed By | RBS      |
| Checked By  | SEH      |
| Date        | MARCH 93 |
| Scale       | AS SHOWN |
| Plan Number | C2DTRWL1 |
| Zoned       | NONE     |
| Sheet       | 23 of 25 |
| File Number | C1160    |