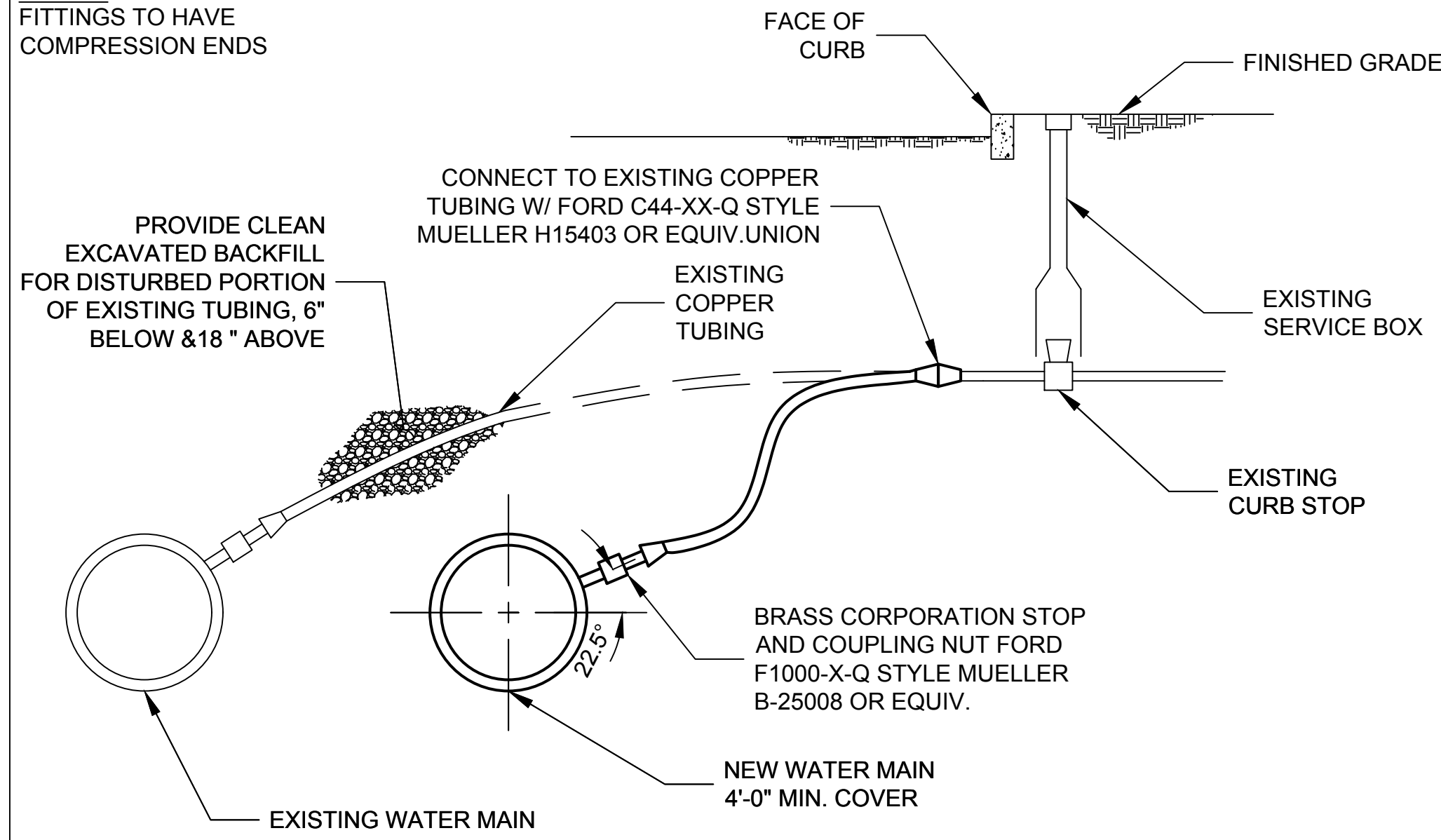
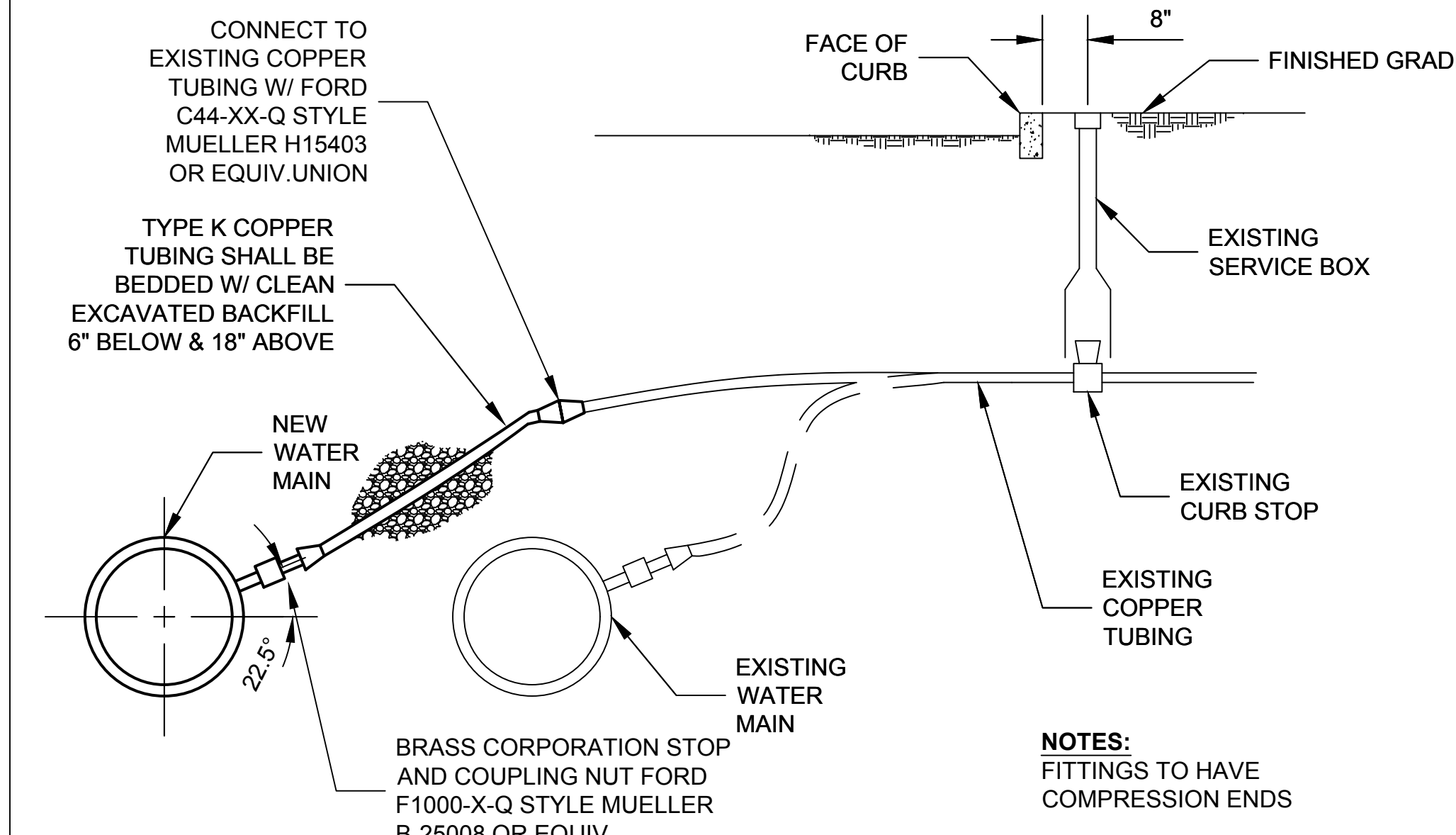


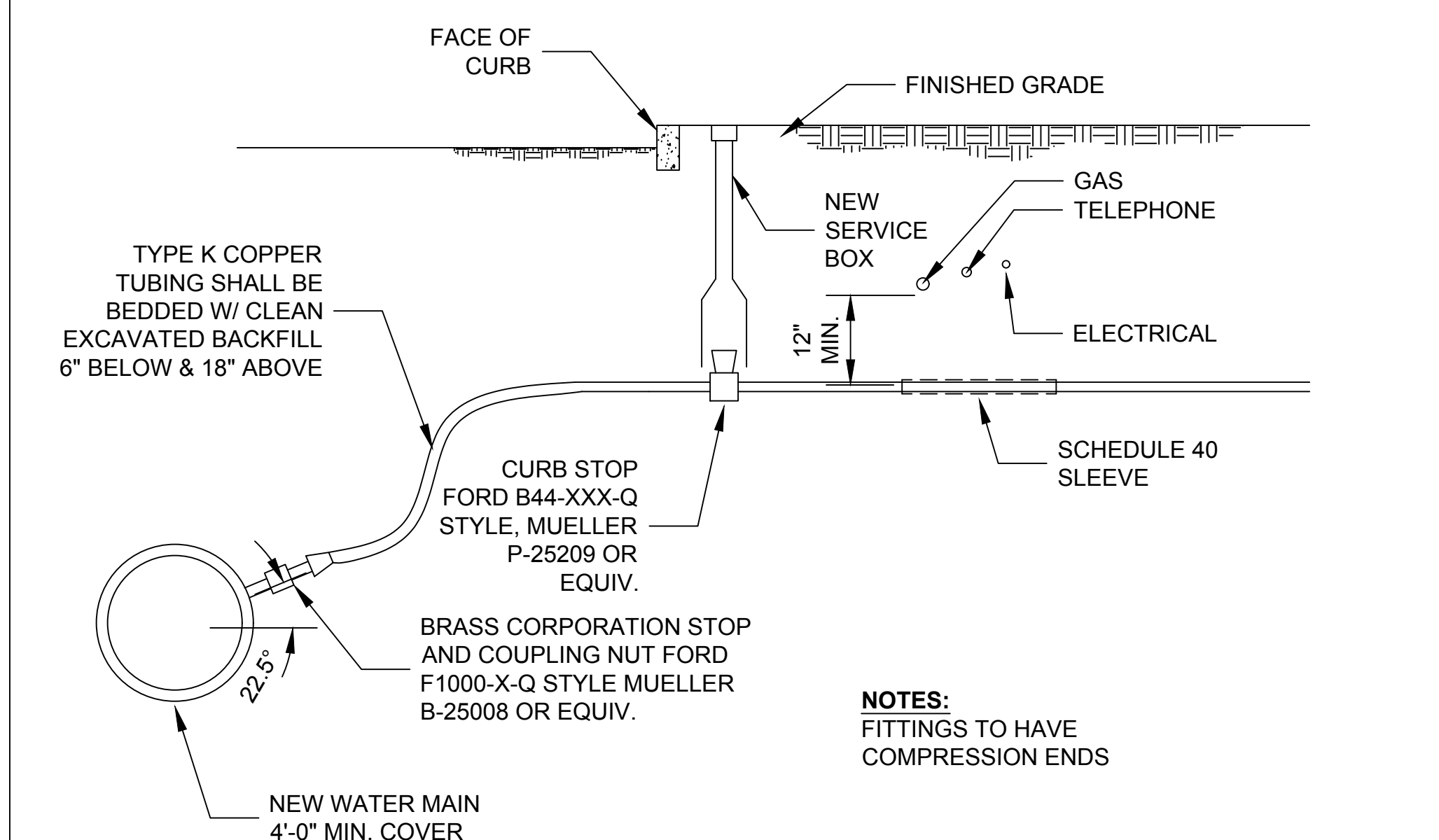
NOTES:
FITTINGS TO HAVE
COMPRESSION ENDS



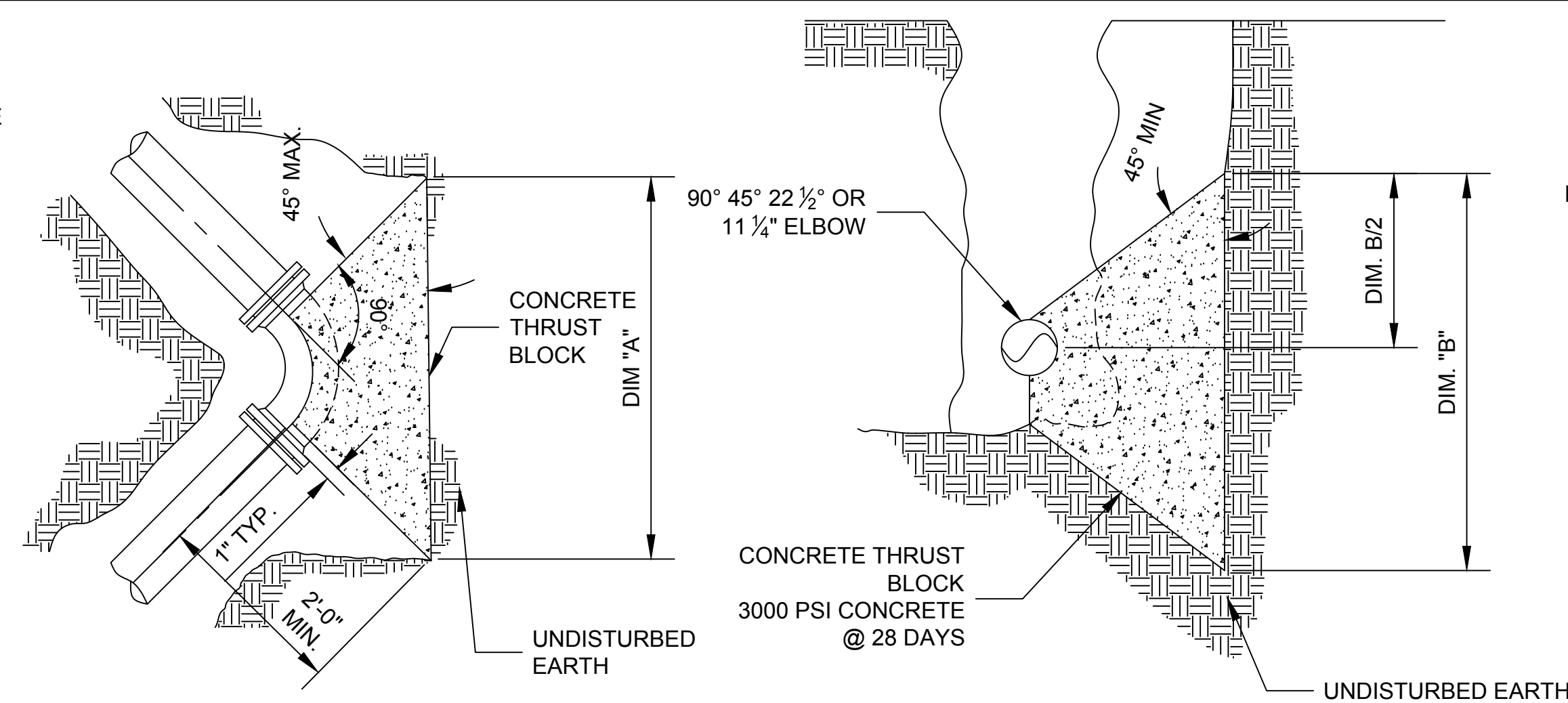
1 STANDARD EXISTING COPPER SERVICE - TYPE I INSTALLATION
SCALE: NONE



2 STANDARD EXISTING COPPER SERVICE - TYPE II INSTALLATION
SCALE: NONE

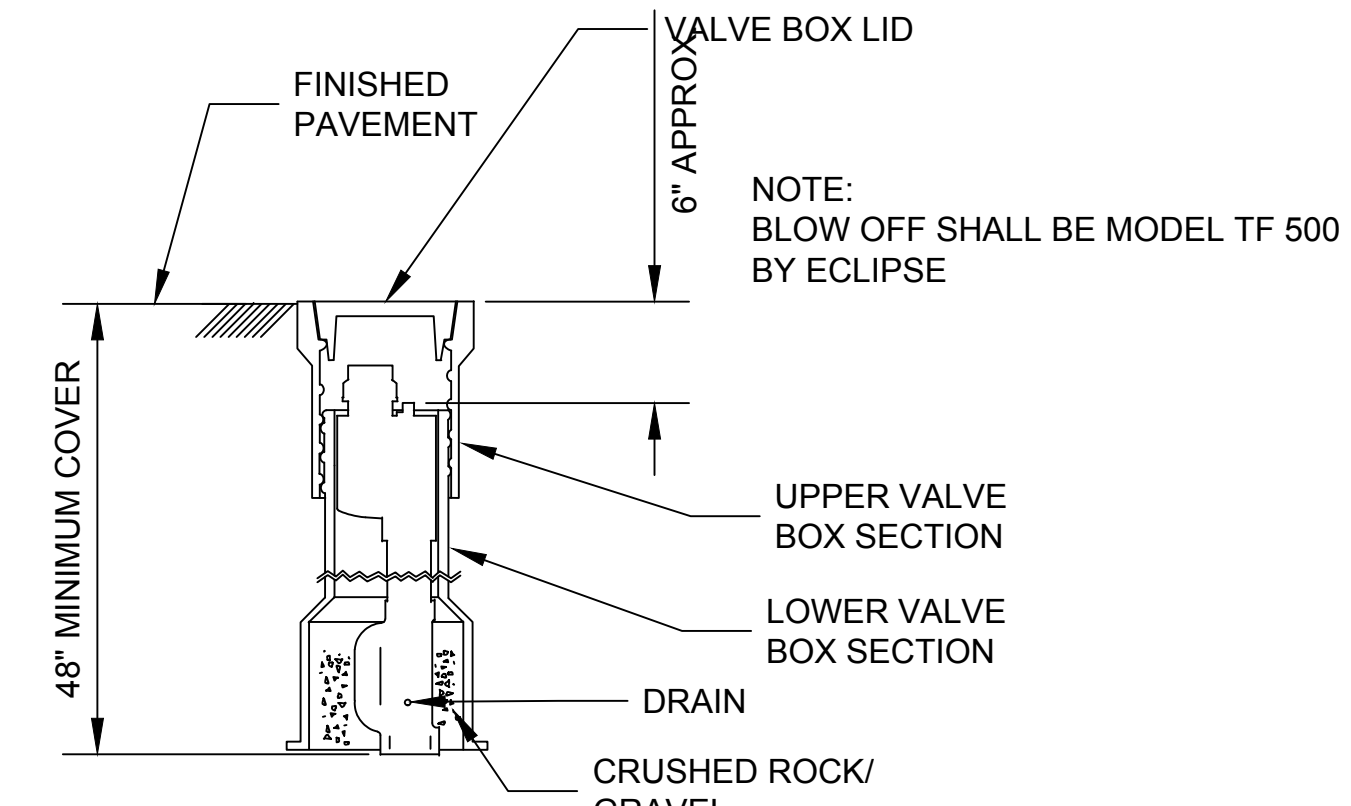


3 STANDARD NEW COPPER SERVICE INSTALLATION
SCALE: NONE

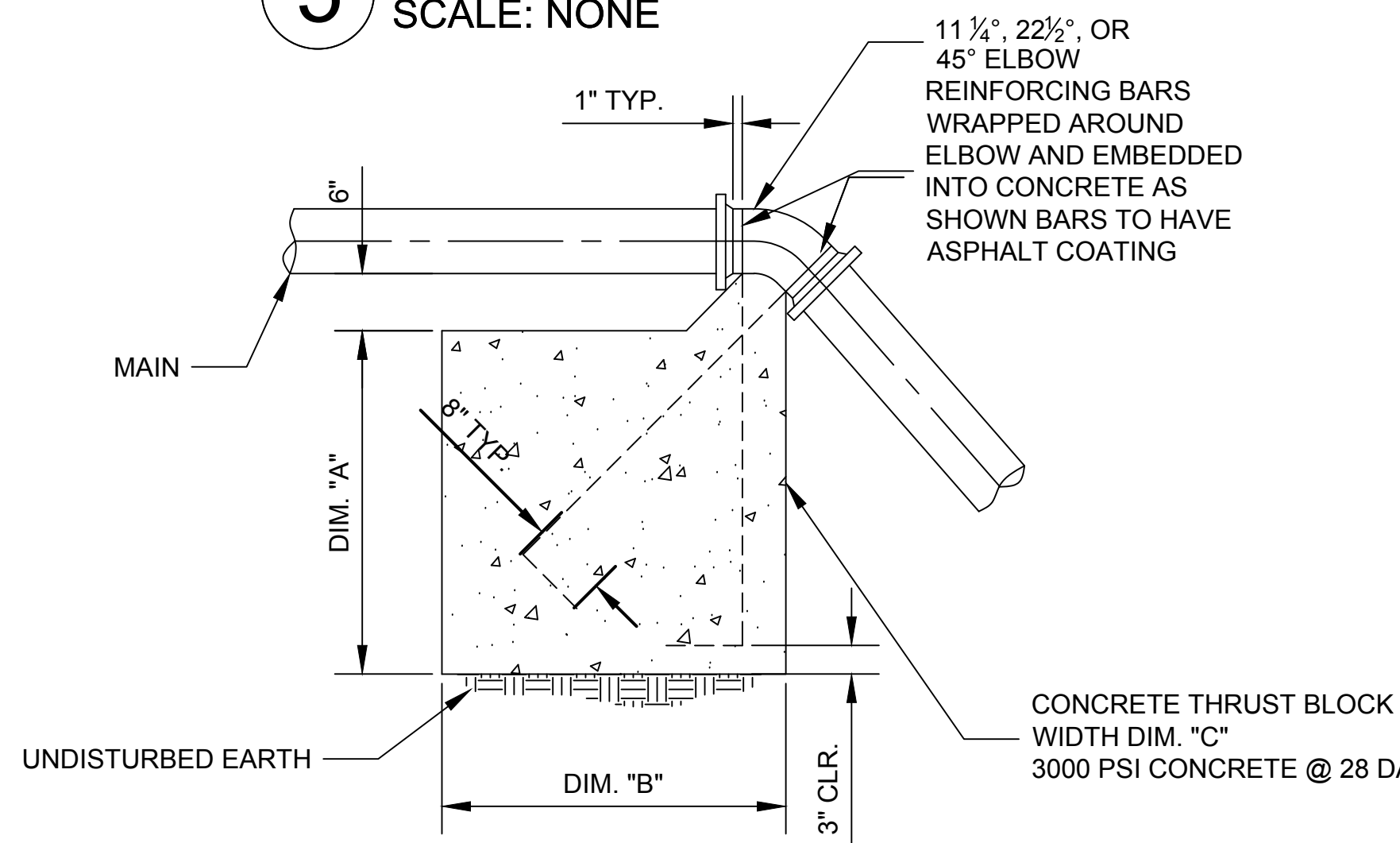


| DIAM. | ELBOW DEFLECTION ANGLE | | | | |
|-------|------------------------|---------|-----|-----|-----|
| | 11 1/4° | 22 1/2° | 45° | 90° | |
| 6"Ø | A | 18" | 24" | 30" | 42" |
| | B | 12" | 18" | 24" | 30" |
| 8"Ø | A | 24" | 24" | 42" | 60" |
| | B | 12" | 24" | 30" | 36" |

4 HORIZ. RESTRAINING THRUST BLOCK DETAIL - ELBOW
SCALE: NONE

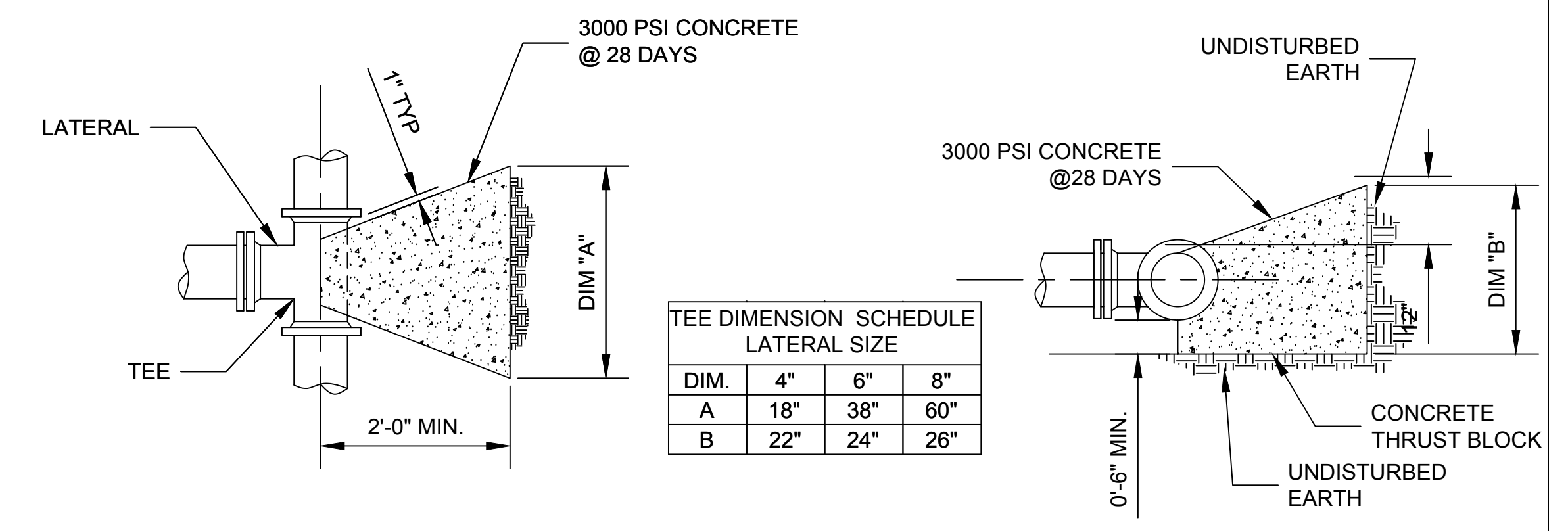


5 BLOW OFF DETAIL
SCALE: NONE



| PIPE SIZE | VERTICAL ELBOW DIMENSION SCHEDULE | | | | | |
|------------|-----------------------------------|---------|-----|---------|---------|-----|
| | 6" | 8" | 10" | 12" | 14" | 16" |
| DEF. ANGLE | 11 1/4° | 22 1/2° | 45° | 11 1/4° | 22 1/2° | 45° |
| DIM. "A" | 18" | 24" | 30" | 18" | 24" | 30" |
| DIM. "B" | 12" | 18" | 24" | 12" | 18" | 24" |
| DIM. "C" | 24" | 24" | 42" | 24" | 24" | 42" |
| REBAR SIZE | 12" | 24" | 30" | 12" | 24" | 30" |

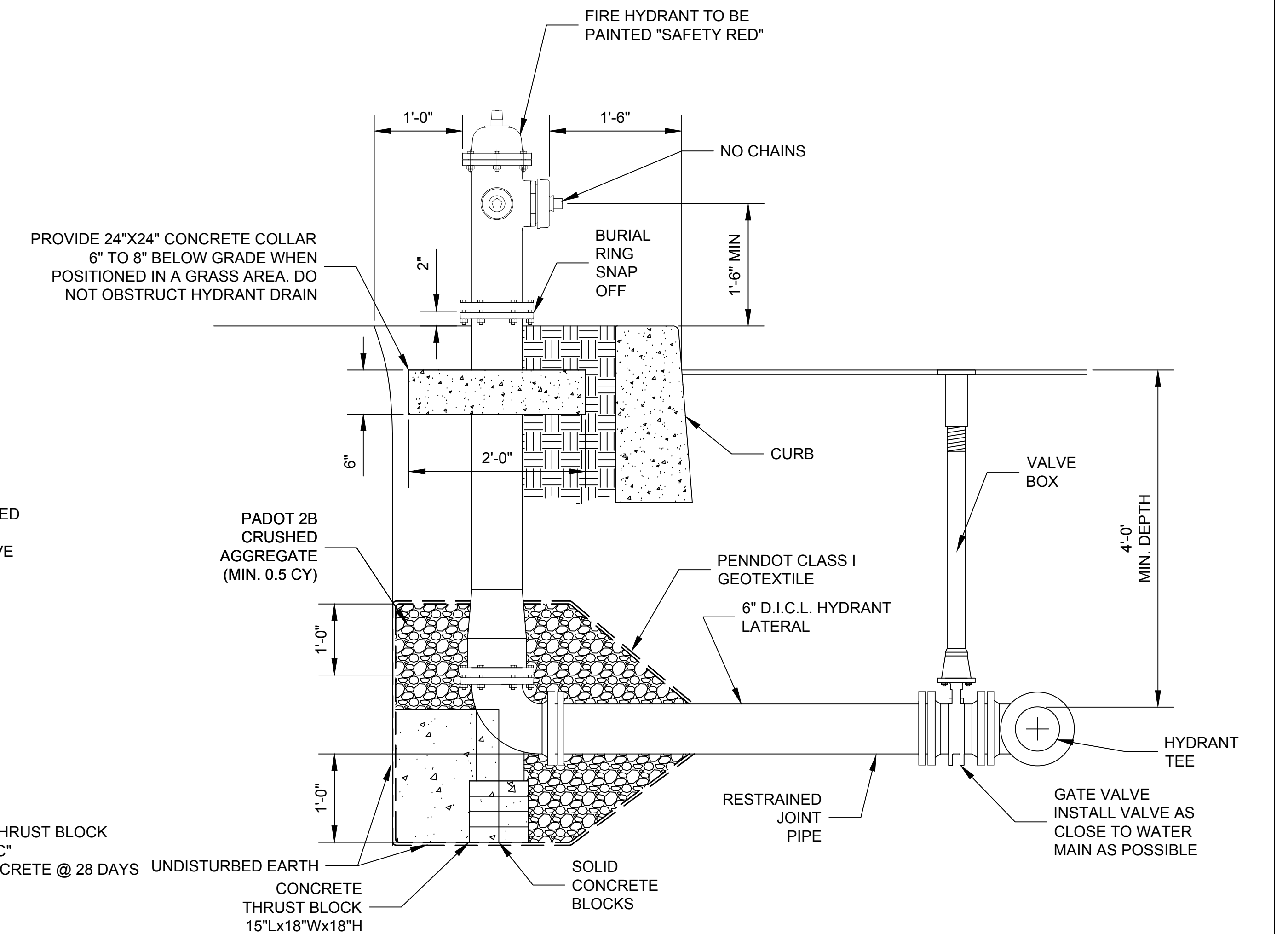
6 VERTICAL RESTRAINT THRUST BLOCK DETAIL FOR 11-1/4°, 22-1/2° & 45° ELBOWS
SCALE: NONE



| DIM. | TEE DIMENSION SCHEDULE LATERAL SIZE | | |
|------|-------------------------------------|-----|-----|
| | 4" | 6" | 8" |
| A | 18" | 38" | 60" |
| B | 22" | 24" | 26" |

7 HORIZ. RESTRAINING THRUST BLOCK DETAIL - TEES AND WYES
SCALE: NONE

NOTE:
1. ALL CONCRETE THRUST BLOCKING MAY BE REPLACED WITH RESTRAINED MECHANICAL JOINTS (MEGALUGS) WITH INSPECTORS APPROVAL

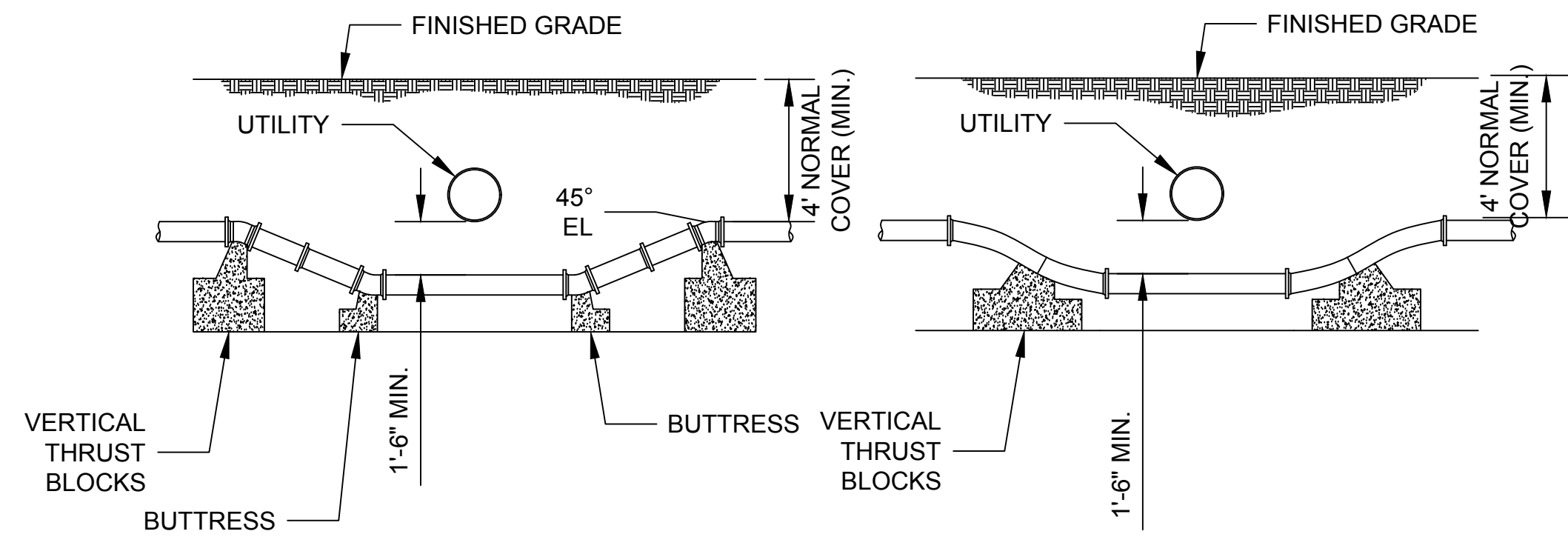


8 STANDARD FIRE HYDRANT INSTALLATION
SCALE: NONE

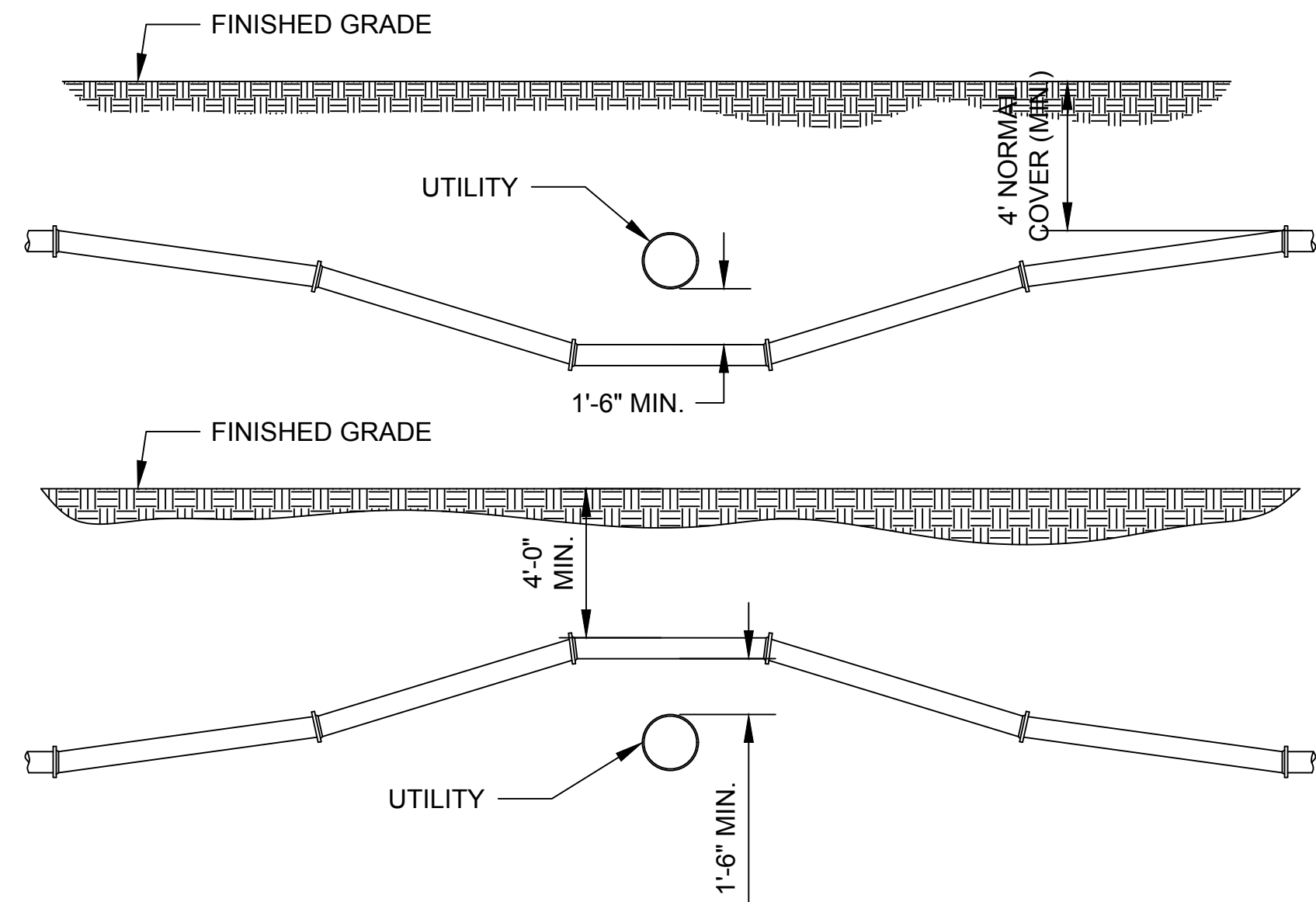
| CITY OF LANCASTER | | WATER INSTALLATION STANDARD DETAILS | | | |
|-------------------------|---------|-------------------------------------|-------------|-----|--|
| LANCASTER, PENNSYLVANIA | | 2/15/17 | REVISED | BMP | |
| BUREAU OF ENGINEERING | | DATE | DESCRIPTION | BY | |
| SCALE: NOTED | SHEET 1 | CITY OF LANCASTER | | | |

NOTES:
ALL VERTICAL THRUST BLOCKS MUST BE APPROVED BY THE ENGINEER.

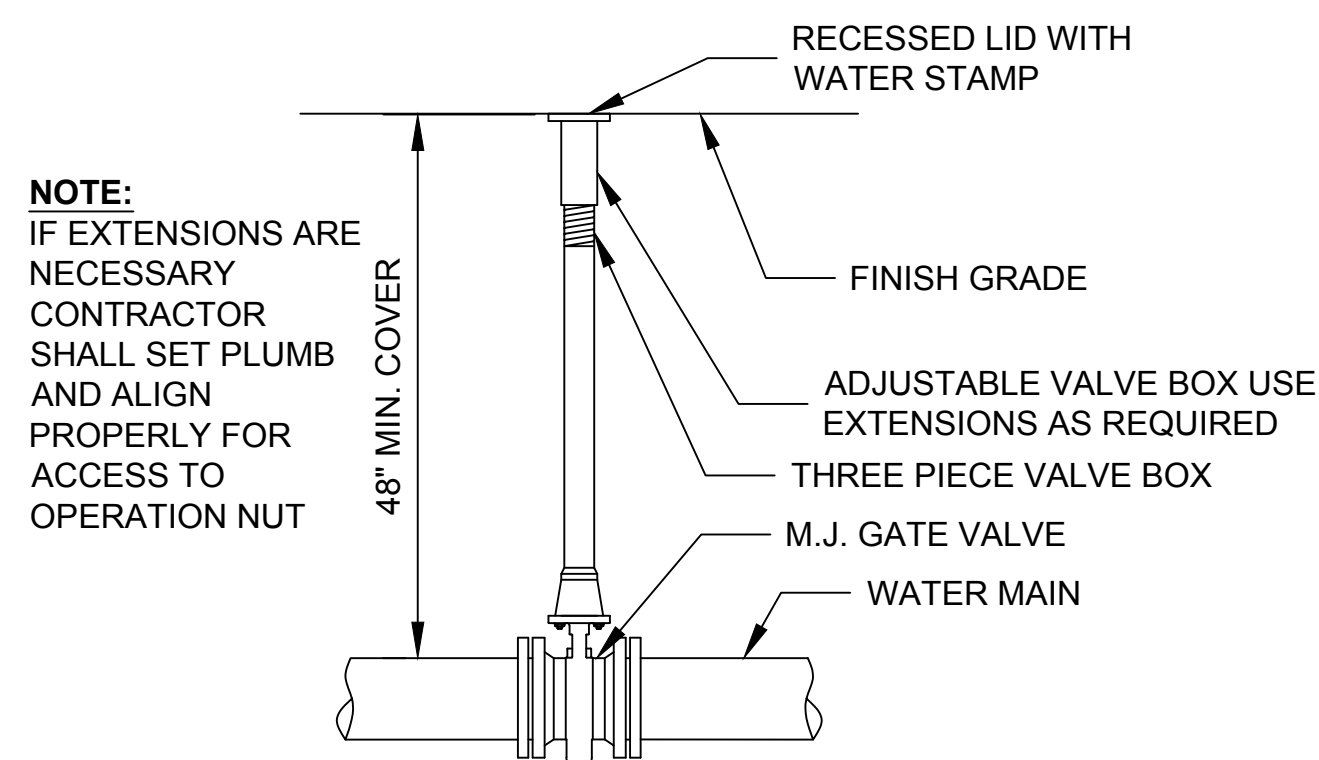
WHERE FIELD CONDITIONS WARRANT THAT A VERTICAL CLEARANCE OF 1'-6" CANNOT BE MAINTAINED BETWEEN THE WATER LINE AND SANITARY OR STORM SEWERS, ENCASE THE WATER LINE IN CONCRETE AS SHOWN



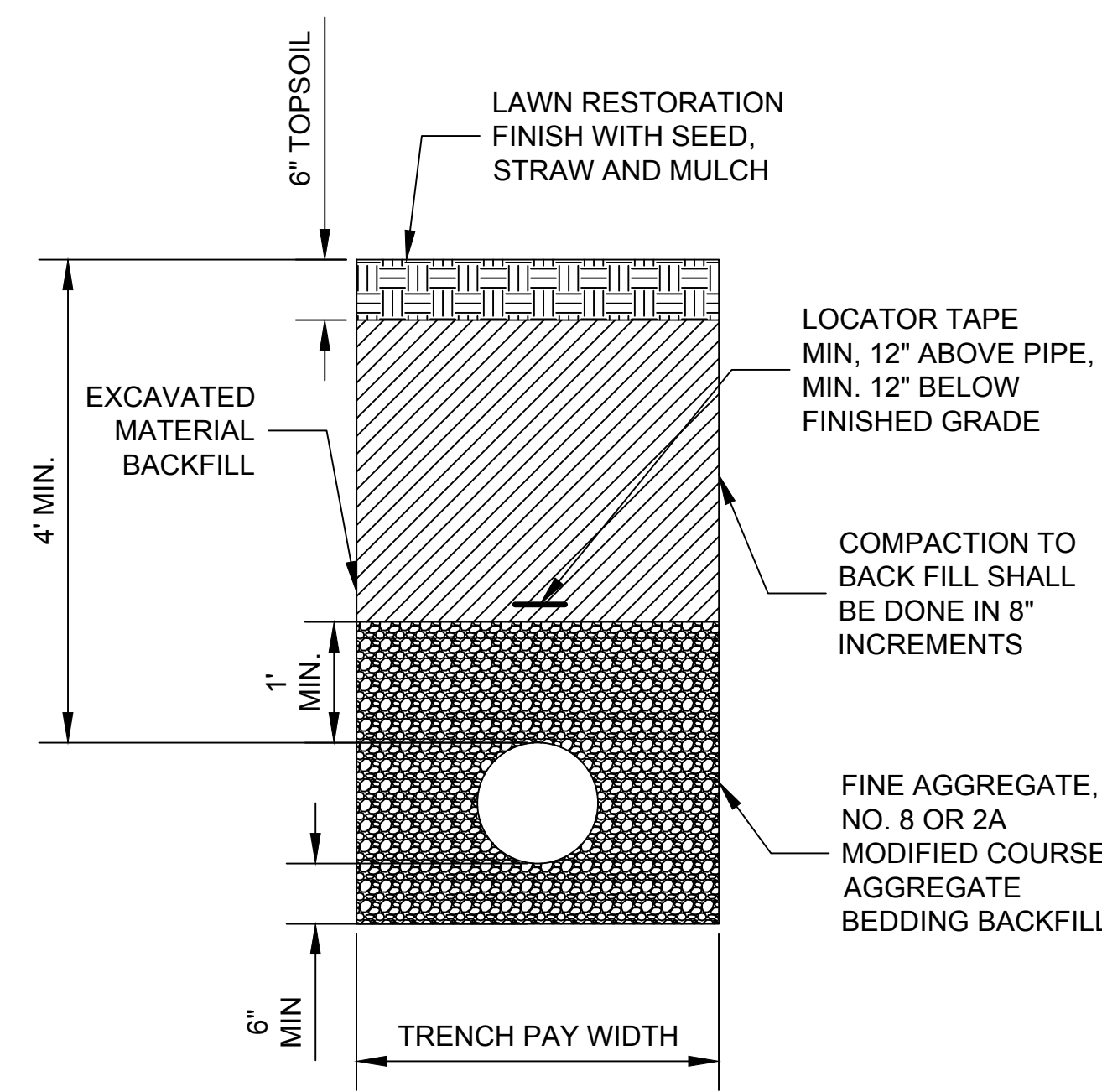
1 WATER MAIN CROSSING UTILITIES (USING FITTINGS)
SCALE: NONE



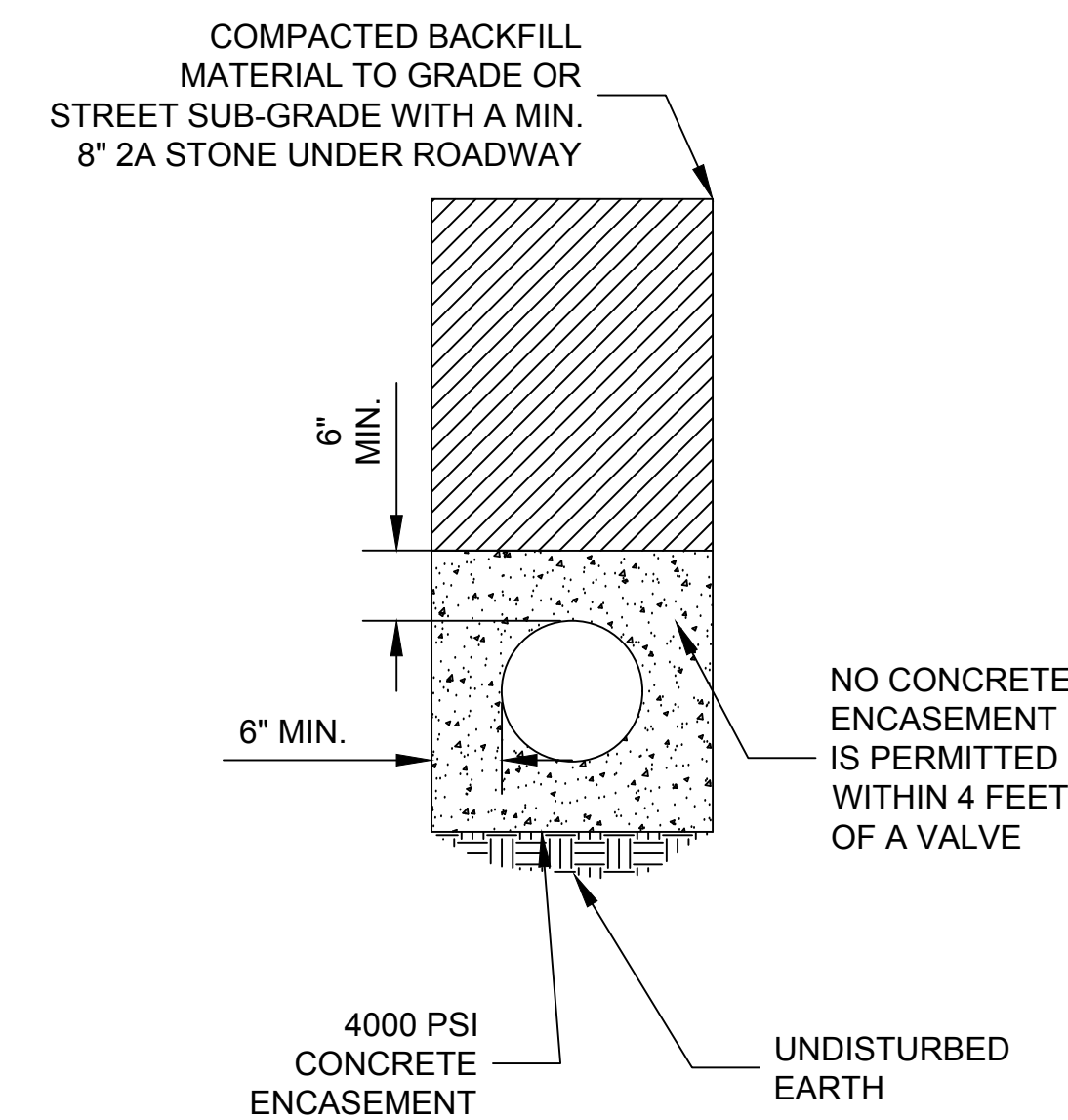
2 WATER MAIN CROSSING UTILITIES (DEFLECTING JOINTS)
SCALE: NONE



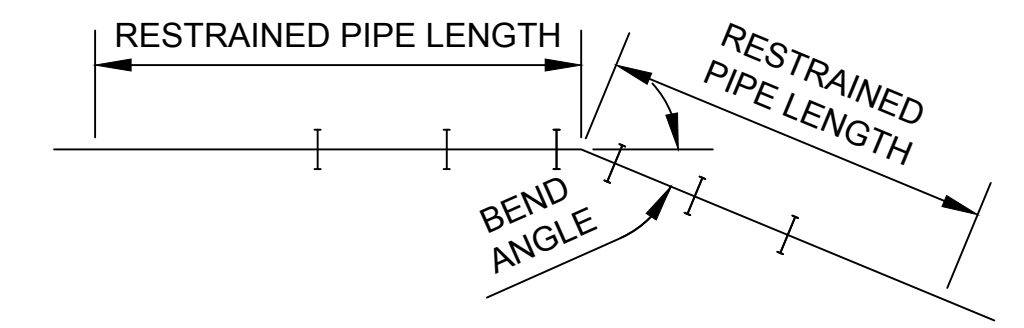
3 GATE VALVE AND VALVE BOX DETAIL
SCALE: NONE



4 LAWN RESTORATION DETAIL
SCALE: NONE



5 CONCRETE ENCASING DETAIL
SCALE: NONE



RESTRAINED PIPE LENGTH FOR HORIZONTAL BENDS AND VERTICAL BENDS UP

| HORIZONTAL BEND ANGLE OR VERTICAL BEND UP | DIAM. | 90° | 45° | 22 1/2° | 11 1/4° |
|---|-------|------|------|---------|---------|
| 4" | 13.2' | 3.2' | 2.6' | 1.3' | |
| 6" | 18.3' | 7.6' | 3.6' | 1.8' | |
| 8" | 24.0' | 9.9' | 4.8' | 2.4' | |

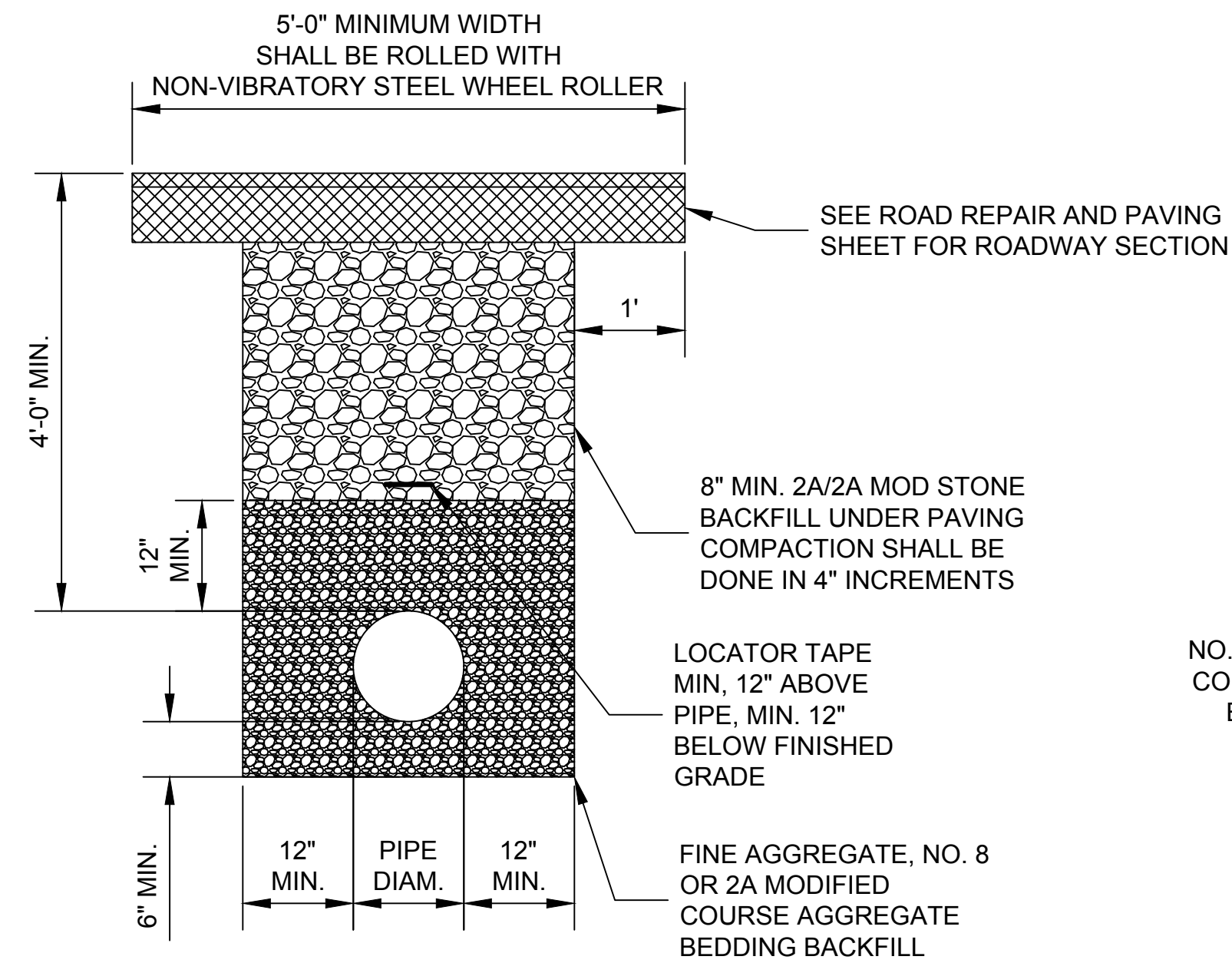
*ADD 12% TO LENGTH IF PIPE IS POLYETHYLENE ENCASED

RESTRAINED PIPE LENGTH FOR VERTICAL BENDS DOWN

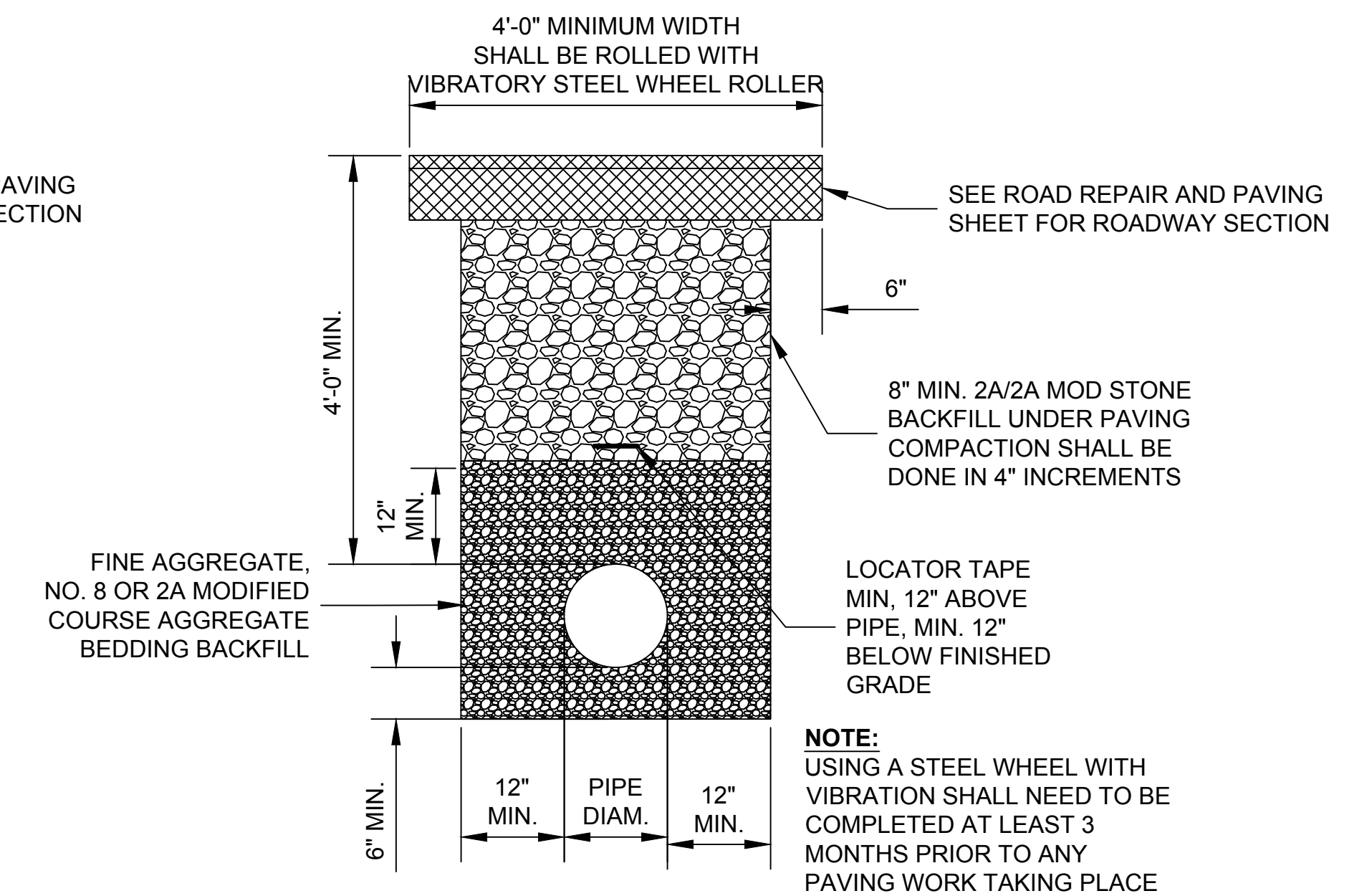
| VERTICAL BEND ANGLE DOWN | DIAM. | 45° | 22 1/2° | 11 1/4° |
|--------------------------|-------|-------|---------|---------|
| 4" | 16.5 | 9.4' | 5.0' | |
| 6" | 23.3' | 13.2' | 7.0' | |
| 8" | 29.8' | 16.9' | 9.0' | |

*ADD 12% TO LENGTH IF PIPE IS POLYETHYLENE ENCASED

6 RESTRAINED PIPE LENGTH SCHEDULE
SCALE: NONE



7 UTILITY TRENCH RESTORATION NON-VIBRATORY ROLLING DETAIL
SCALE: NONE



8 UTILITY TRENCH RESTORATION VIBRATORY ROLLING DETAIL
SCALE: NONE

| | | | | |
|--|--|-------------------|-------------|-----|
| CITY OF LANCASTER LANCASTER, PENNSYLVANIA | WATER INSTALLATION STANDARD DETAILS | 2/15/17 | REVISED | BMP |
| BUREAU OF ENGINEERING | | DATE | DESCRIPTION | BY |
| SCALE: NOTED | SHEET 2 | CITY OF LANCASTER | | |