

**Kimley»Horn**  
 P.O. BOX 33068  
 RALEIGH, N.C. 27636-3068

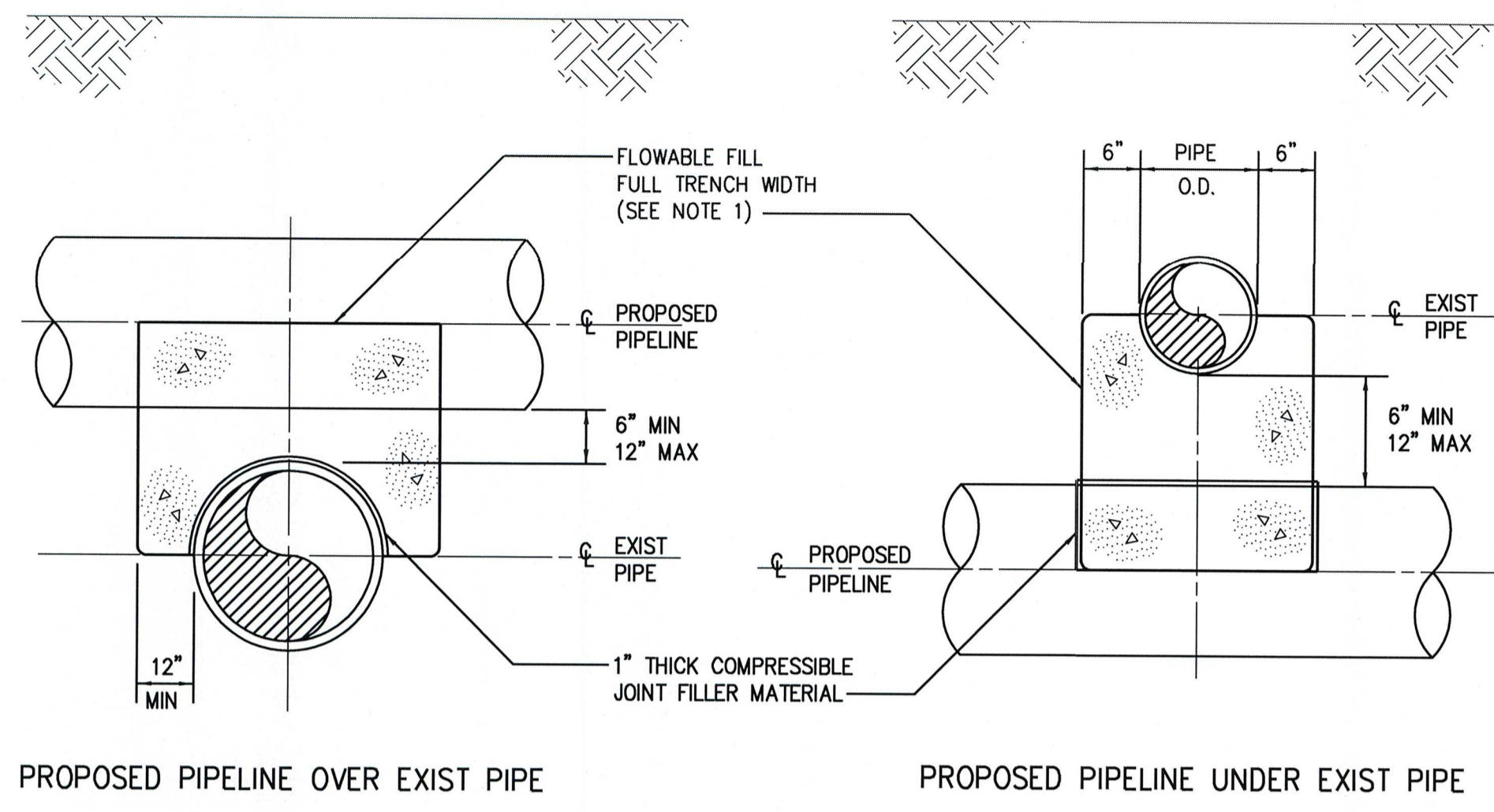
CITY OF DURHAM PUBLIC WORKS DEPARTMENT APPROVED

PROJECT REFERENCE NO. EB-4707B SHEET NO. UC-4A

UTILITY CONSTRUCTION ENGINEER

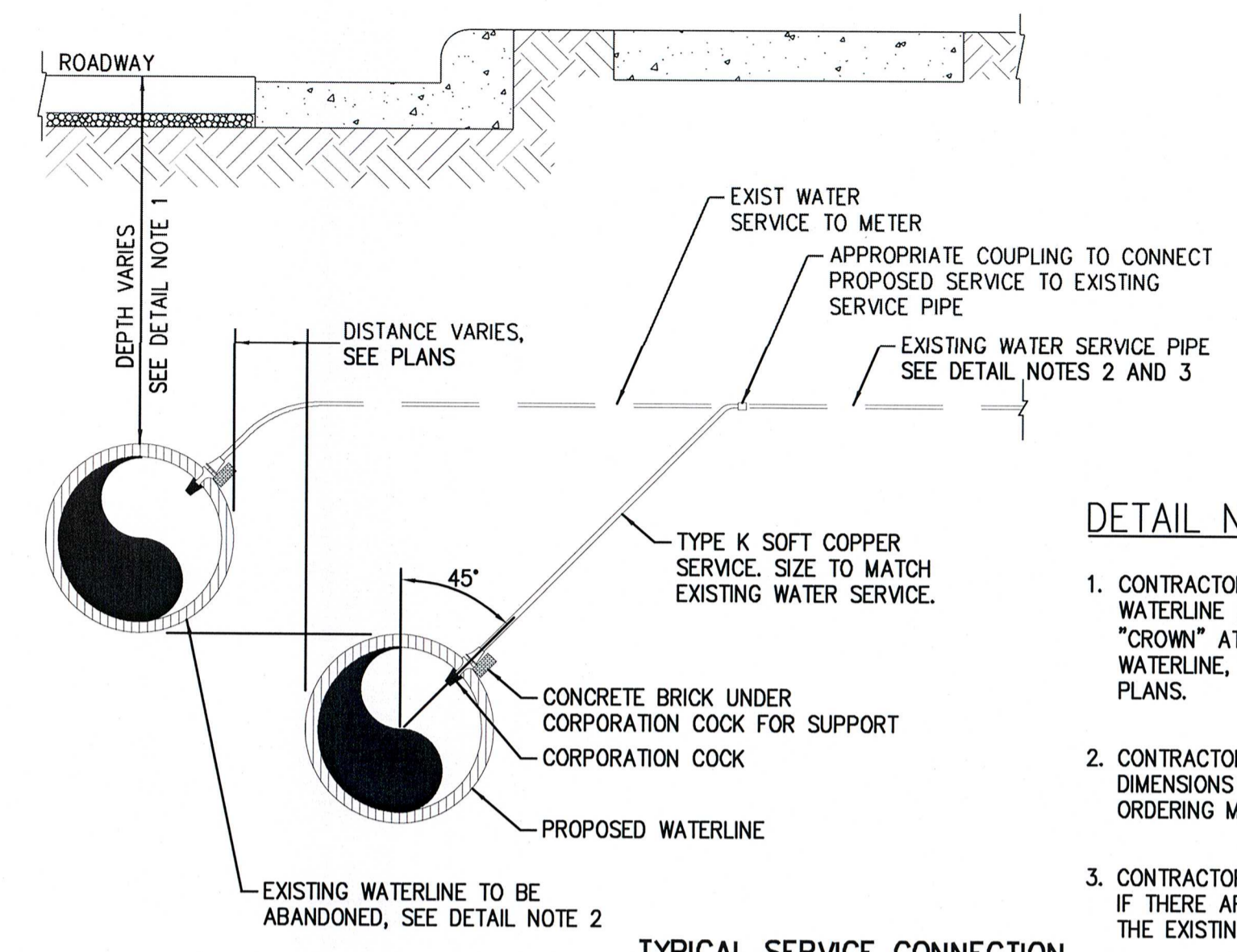
DocuSigned by: Alan Ravey

2/3/2017



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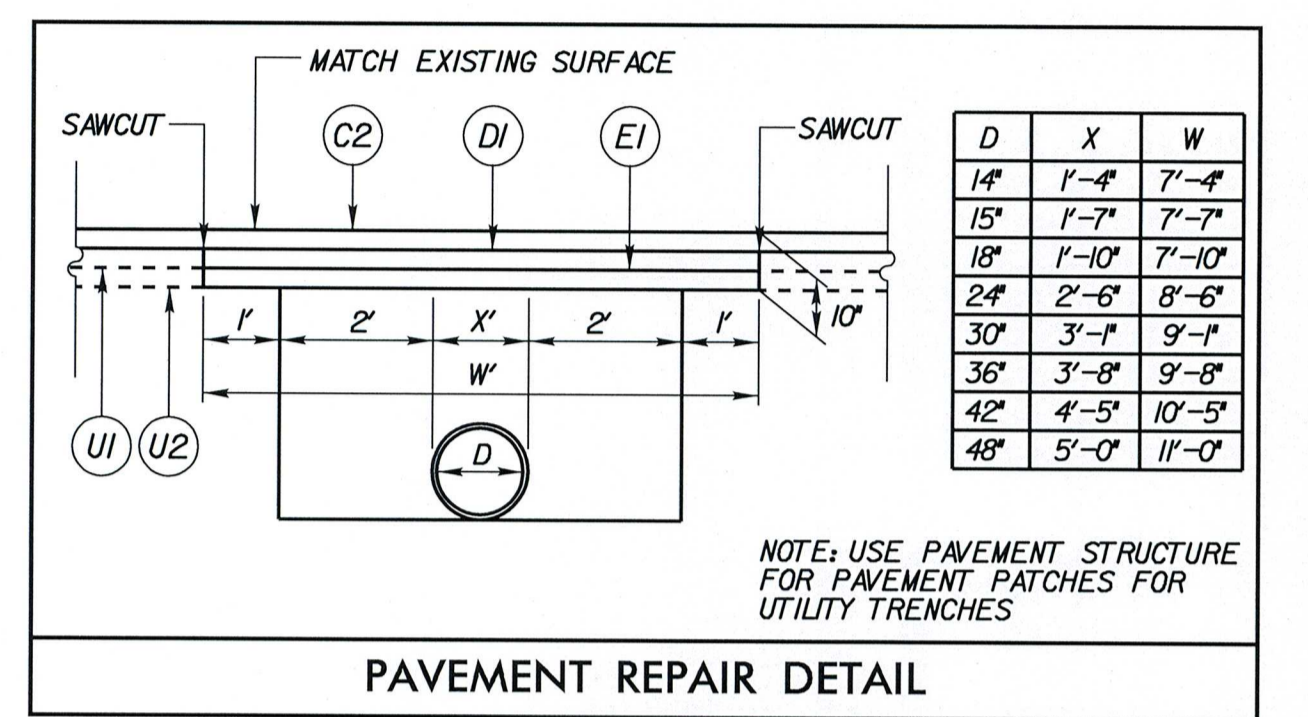
NOTE: NO ENCASUREMENT REQUIRED FOR SPACE GREATER THAN 12"



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DETAIL NOTES:

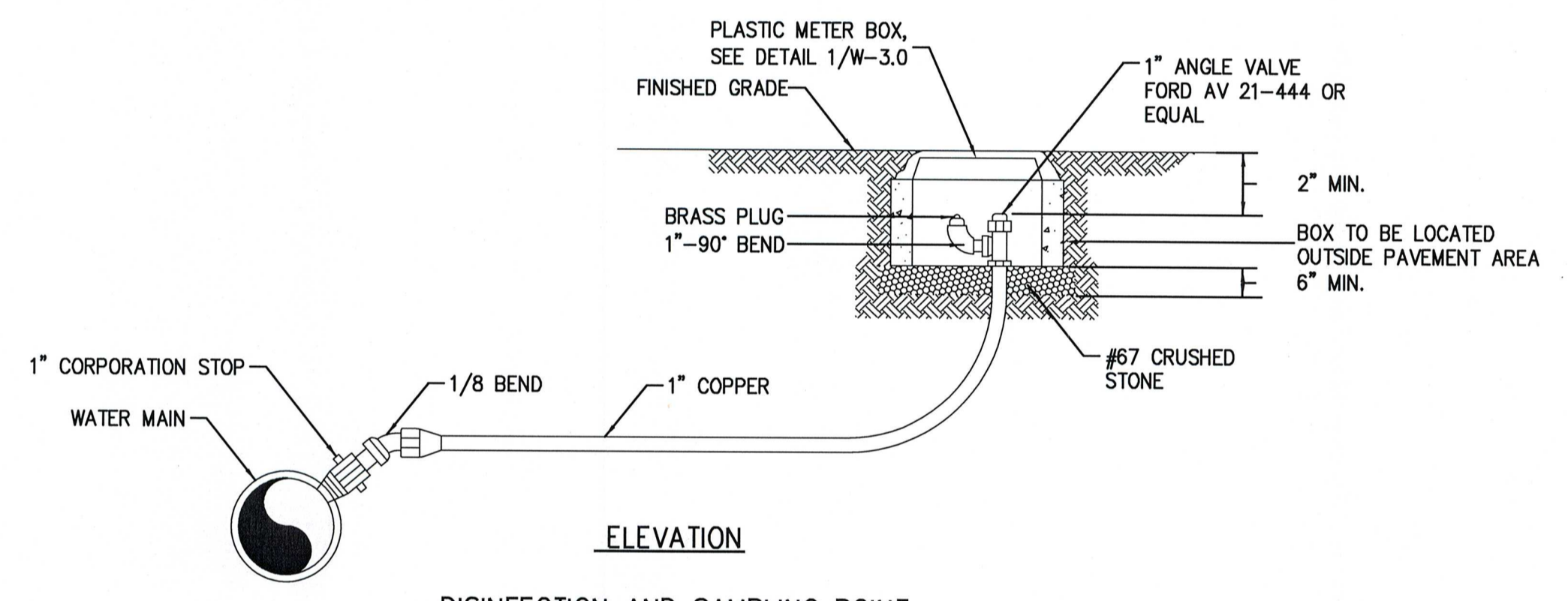
- CONTRACTOR SHALL VERIFY DEPTH OF EXISTING WATERLINE AND LOCATE PROPOSED WATERLINE "CROWN" AT THE "INVERT" OF THE EXISTING WATERLINE, UNLESS OTHERWISE SHOWN ON THE PLANS.
- CONTRACTOR SHALL VERIFY EXACT MATERIALS AND DIMENSIONS OF EXISTING WATER SERVICES PRIOR TO ORDERING MATERIALS.
- CONTRACTOR SHALL NOTIFY THE RESIDENT ENGINEER IF THERE ARE COMPLICATIONS WITH CONNECTING TO THE EXISTING WATERLINE.



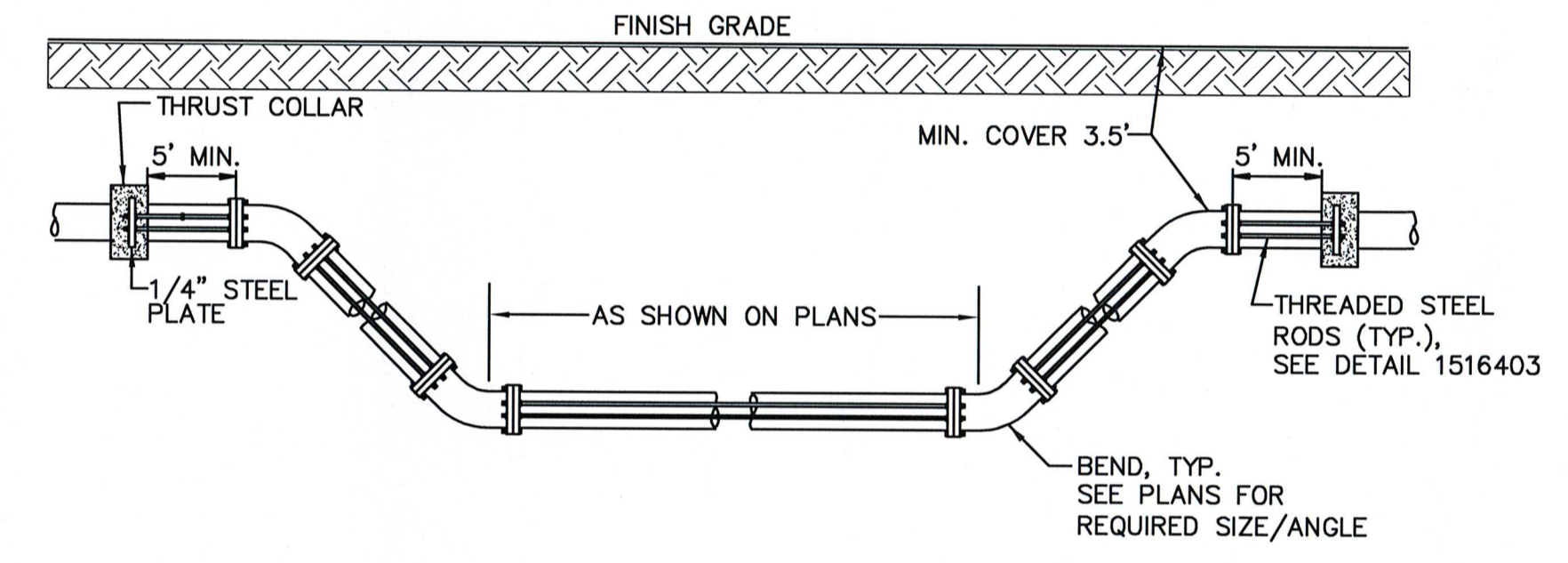
PAVEMENT SCHEDULE

C2	PROPOSED APPROX. 3" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
DI	PROPOSED APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YARD.
EI	PROPOSED APPROX. 5.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YARD.
UI	EXISTING ASPHALT PAVEMENT
U2	EXISTING CONCRETE PAVEMENT

- NOTES:
- PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE NOTED
  - SAWCUT AND REMOVE EXIST ASPHALT PAVEMENT AND CONCRETE PAVEMENT TO PROVIDE 1' MINIMUM WIDTH OF FULL DEPTH PAVEMENT
  - PROVIDE FULL DEPTH PAVEMENT ACCORDING TO PAVEMENT REPAIR DETAIL ON SHEET UC-4A FOR UTILITY INSTALLATION. SEE PLANS FOR LOCATIONS OF UTILITY CROSSINGS.

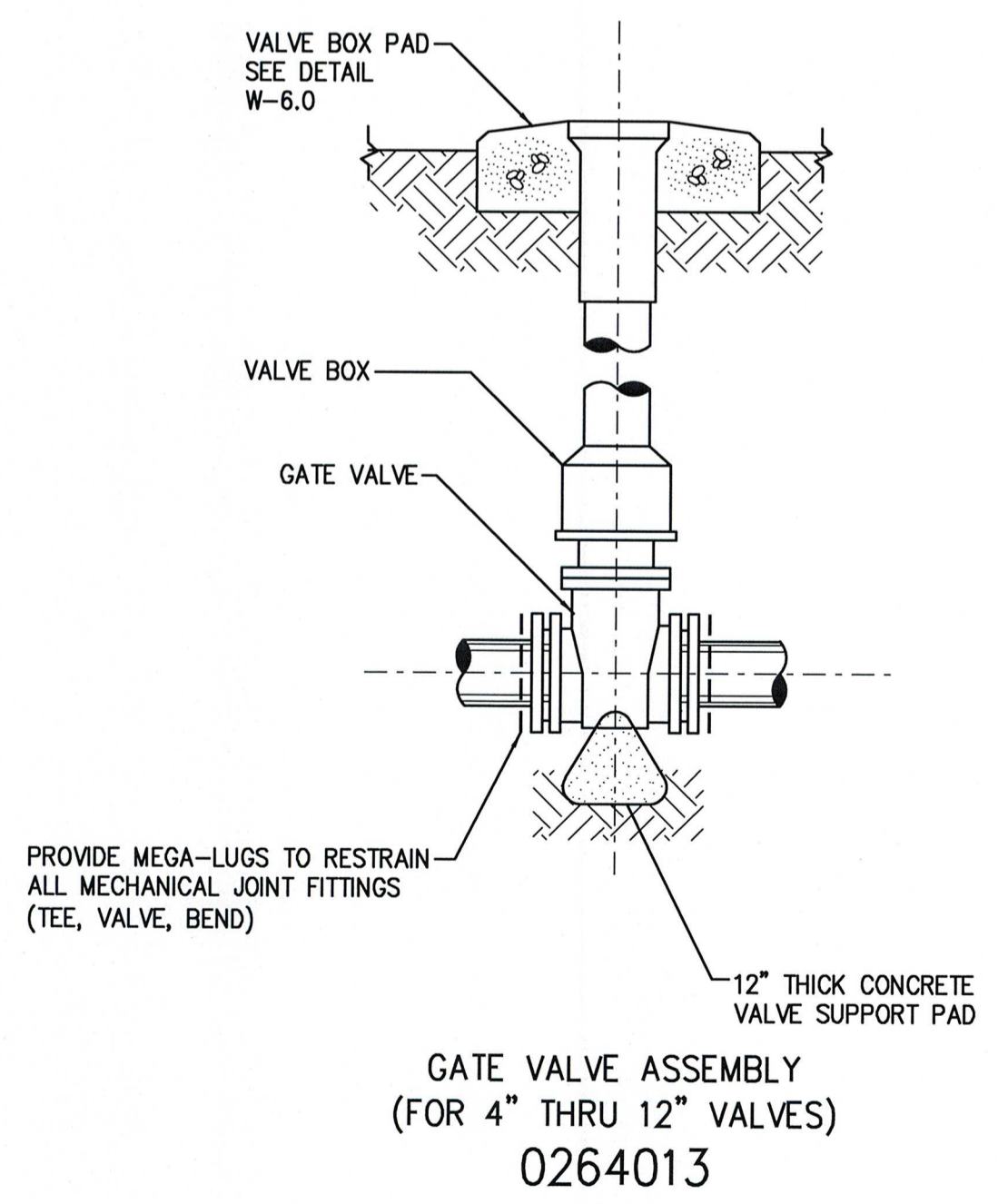


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- NOTES:
- ONCE INSTALLED AND TIGHT, THE STEEL RODS AND BOLTS SHALL BE COATED WITH 2 COATS OF BITUMINOUS BASE PAINT.
  - CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT BENDS.
  - MEGALUGS OR RESTRAINED JOINT PIPE AND FITTINGS ARE ALLOWED IN LIEU OF RODDING.
  - CONCRETE ENCASED MEGALUGS MAY BE USED IN LIEU OF THRUST COLLARS.
  - ALL PIPE AND FITTINGS BETWEEN THRUST COLLARS SHALL BE RODDED.



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THREADED ROD SCHEDULE

DESIGN PRESSURE (DIMENSIONS IN INCHES)

PIPE SIZE	50 PSI		100 PSI		150 PSI		200 PSI		250 PSI		300 PSI		350 PSI	
	BOLTS NO-DIA	TAB THK	BOLTS NO-DIA	TAB THK	BOLTS NO-DIA	TAB THK	BOLTS NO-DIA	TAB THK	BOLTS NO-DIA	TAB THK	BOLTS NO-DIA	TAB THK	BOLTS NO-DIA	TAB THK
4.6	2-3/4	1	2-3/4	1	2-3/4	1	2-3/4	1	2-3/4	1	2-3/4	1	2-3/4	1
8	2-3/4	1 1/4	2-3/4	1 1/4	2-3/4	1 1/4	2-3/4	1 1/4	2-3/4	1 1/4	4-3/4	1 1/4	4-3/4	1 1/4
10	2-3/4	1 1/4	2-3/4	1 1/4	2-3/4	1 1/4	4-3/4	1 1/4	4-3/4	1 1/4	4-3/4	1 1/4	4-3/4	1 1/4
12	2-3/4	1 1/4	2-3/4	1 1/4	4-3/4	1 1/4	4-3/4	1 1/4	4-3/4	1 1/4	6-3/4	1 1/4	6-3/4	1 1/4
14	2-3/4	1 1/2	4-3/4	1 1/2	4-3/4	1 1/2	4-3/4	1 1/2	4-3/4	1 1/2	4-3/4	1 1/2	4-3/4	1 1/2
16	2-3/4	1 1/2	4-3/4	1 1/2	6-3/4	1 1/2	4-3/4	1 1/2	4-3/4	1 1/2	4-3/4	1 1/2	4-3/4	1 1/2
18	2-3/4	1 3/4	4-3/4	1 3/4	6-3/4	1 3/4	4-3/4	1 3/4	6-3/4	1 3/4	6-3/4	1 3/4	6-3/4	1 3/4
20	4-3/4	1 3/4	4-3/4	1 3/4	4-3/4	1 3/4	4-3/4	1 3/4	4-3/4	1 3/4	6-3/4	1 3/4	6-3/4	1 3/4
24	4-3/4	2	4-3/4	2	6-3/4	2	6-3/4	2	6-3/4	2	10-3/4	2	10-3/4	2
30	4-1	2 1/4	4-1	2 1/4	4-1	2 1/4	6-1	2 1/4	6-1	2 1/4	10-1	2 1/4	10-1	2 1/4
36	4-1	2 1/2	4-1	2 1/2	6-1	2 1/2	6-1	2 1/2	6-1	2 1/2	10-1	2 1/2	12-1	2 1/2
42	4-1 1/4	2 3/4	4-1 1/4	2 3/4	6-1 1/4	2 3/4	8-1 1/4	2 3/4	10-1 1/4	2 3/4	12-1 1/4	2 3/4	12-1 1/4	2 3/4
48	6-1 1/4	2 3/4	4-1 3/4	2 3/4	8-1 1/4	2 3/4	8-1 1/4	2 3/4	12-1 1/4	2 3/4	12-1 1/4	2 3/4	14-1 1/4	2 3/4
54	6-1 1/4	3	6-1 1/4	3	8-1 1/4	3	12-1 1/4	3	14-1 1/4	3	16-1 1/4	3	18-1 1/4	3

- THREADED RODS FOR ALL PIPE DIAMETERS, IN THE SHADED AREA SHALL BE ASTM A193 (GRADE B7).
- ALL OTHER THREADED RODS SHALL BE ASTM A36. ALL TABS SHALL BE ASTM A572 GR50.
- ASTM A193 (GRADE B7) RODS SHALL BE LABELED AND BUNDLED SEPARATELY.
- THIS SCHEDULE SHALL APPLY FOR HARNESSED FLANGED ADAPTERS, HARNESSED FLEXIBLE COUPLINGS AND ALL MECHANICAL JOINT COUPLINGS, SLEEVES ETC. THAT ARE REQUIRED TO BE HARNESSED.
- RODS THREADED AT ENDS (INCLUDING NUTS) SHALL BE EQUALLY SPACED AROUND PIPE BETWEEN ALL MECHANICAL JOINT FITTINGS (TEE, VALVES, BEND, PLUG, ETC.) OR AS OTHERWISE SHOWN ON THE CONTRACT DRAWINGS. THREADED RODS SHALL BE AS SHOWN IN THE THREADED ROD SCHEDULE. SEE NOTE 6.
- RODS, NUTS, ETC., IN CONTACT WITH SOIL SHALL BE PAINTED WITH TWO COATS COAL TAR (MIN 26 DRY MIL THICKNESS) TNEMC 46-465 HI-BUILD OR EQUAL.

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STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR FIRE HYDRANT

NOTES:

- THIS DETAIL SHOWS THE TYPICAL FINAL FIRE HYDRANT CONFIGURATION AFTER INSTALLATION OF A PROPOSED FIRE HYDRANT, RELOCATION OF AN EXISTING FIRE HYDRANT, OR RELOCATION OF A FIRE HYDRANT.
- KEEP DRAIN PORTS FREE FROM OBSTRUCTION.
- RESTRAIN ALL PIPE JOINTS AND FITTINGS. ACCEPTABLE TYPES OF RESTRAINT INCLUDE RESTRAINING GLANDS; RESTRAINED, PUSH-ON JOINTS; AND 3/4" BITUMINOUS COATED, ALL-THREAD RESTRAINING RODS. THRUST BLOCKS ARE NOT AN ACCEPTABLE TYPE OF RESTRAINT.
- FOR RELOCATED OR RECONNECTED FIRE HYDRANTS, VERIFY THE VALVE IS RESTRAINED TO THE MAIN. PROVIDE APPROPRIATE RESTRAINT.
- HYDRANT LOCATION APPLIES TO PROPOSED AND RELOCATED FIRE HYDRANTS.
- LOCATE FIRE HYDRANT WITH 3' HORIZONTAL CLEARANCE FROM ABOVE GROUND OBJECTS.
- PROVIDE A MINIMUM OF 3' COVER OVER ALL SECTIONS OF HORIZONTAL PIPE. USE FITTINGS AS NECESSARY.
- TAPPING SLEEVES MAY BE USED ON EXISTING MAINS IN LIEU OF DI TEES.
- LOCATE FIRE HYDRANT OUTSIDE OF THE VEHICLE RECOVERY AREA, ADJACENT TO THE R/W LINE, OR IN A PROTECTED AREA.

1' TO RIGHT-OF-WAY OR AS NOTED

FIRE HYDRANT

ORIENT TOWARD ROADWAY

FINISH GRADE

18"X18"X6" CONC COLLAR (IN UNPAVED AREAS ONLY)

6" VALVE AND VALVE BOX AND VALVE BOX DI TEE

6" WATER PIPE

6" WATER PIPE

4" X 8" X 16" PRECAST CONC. BLOCKING

7 CU. FT. CLEAN #57 STONE

8" MIN. 4" MAX.

1" MIN.

1' TO RIGHT-OF-WAY OR AS NOTED

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR FIRE HYDRANT

SHEET 1 OF 1 1515.02

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