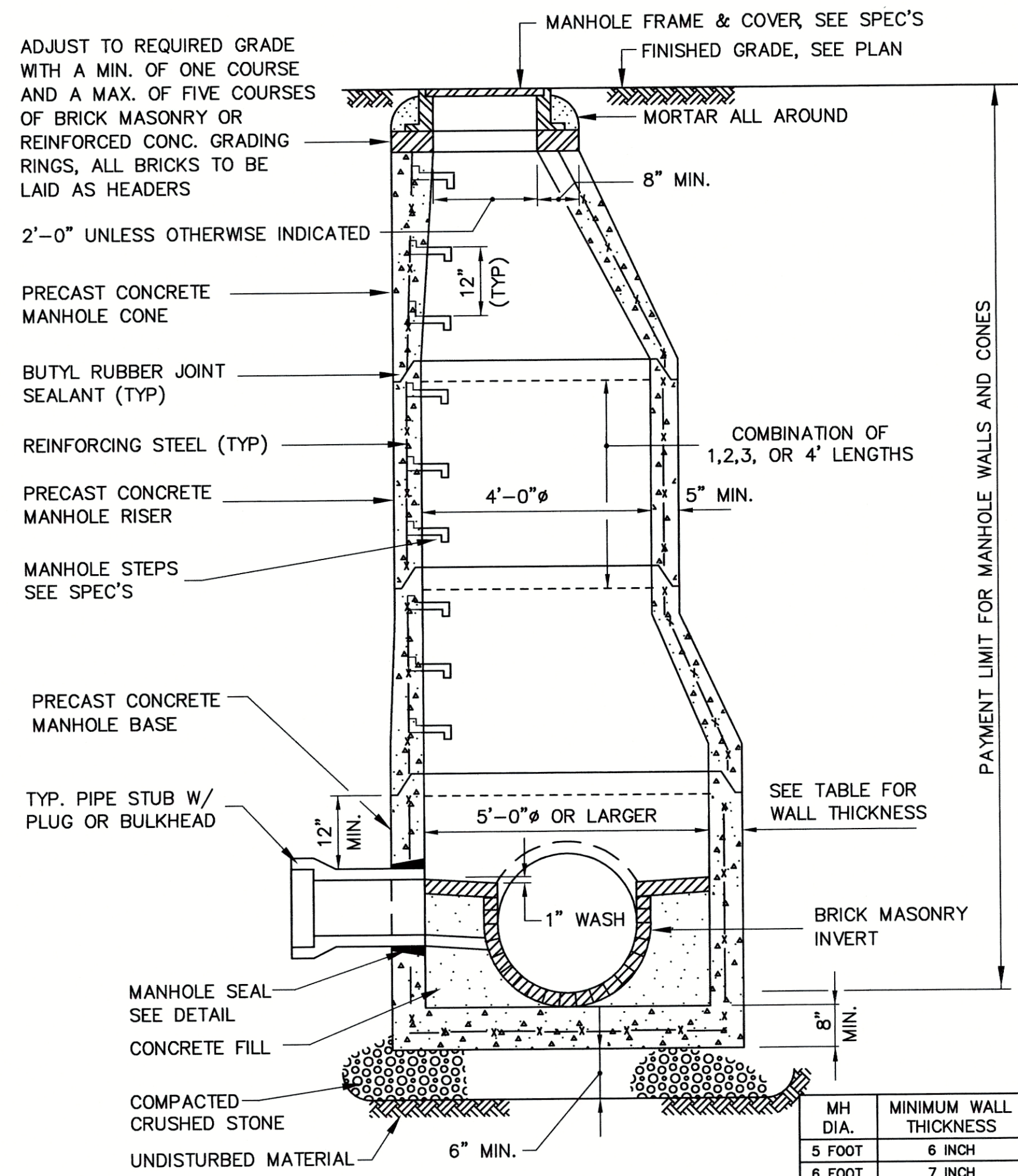
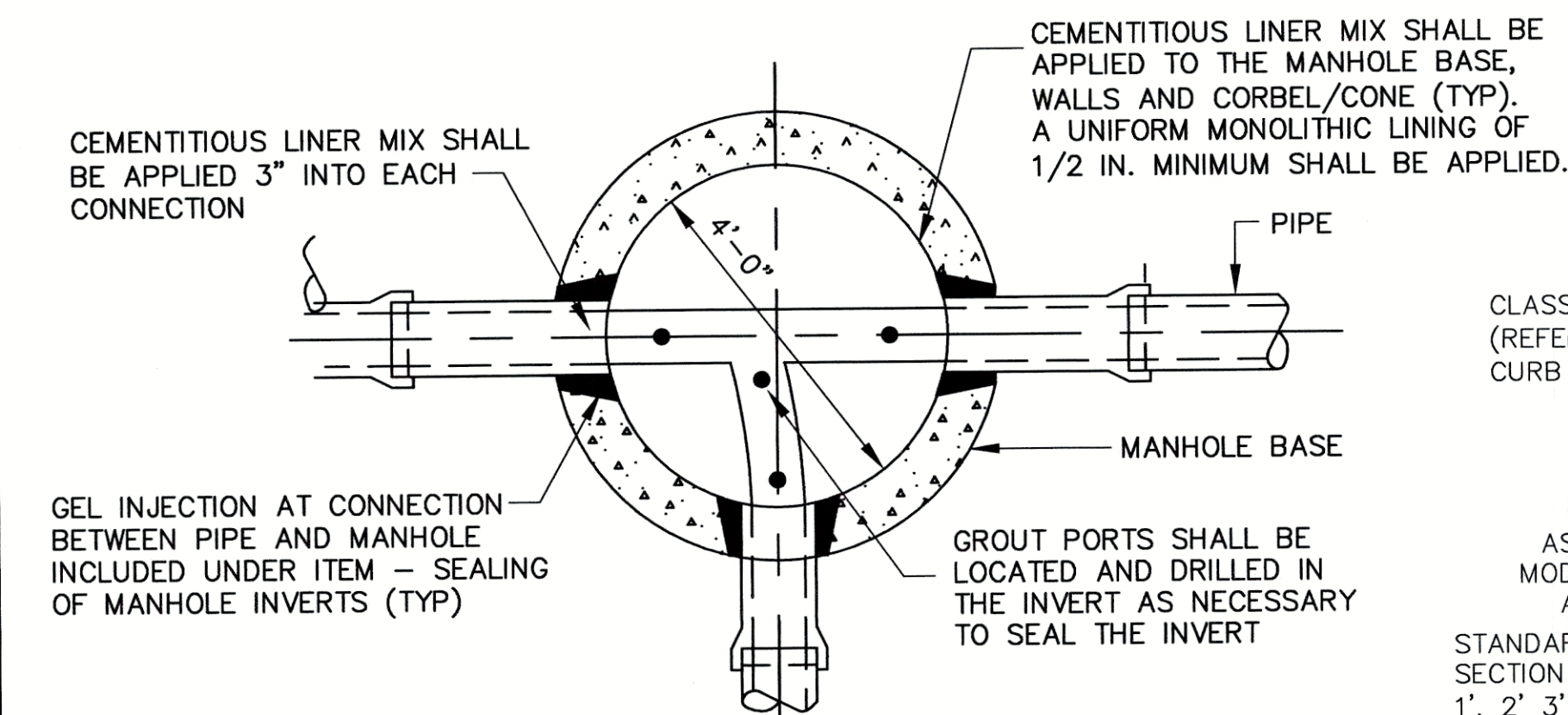
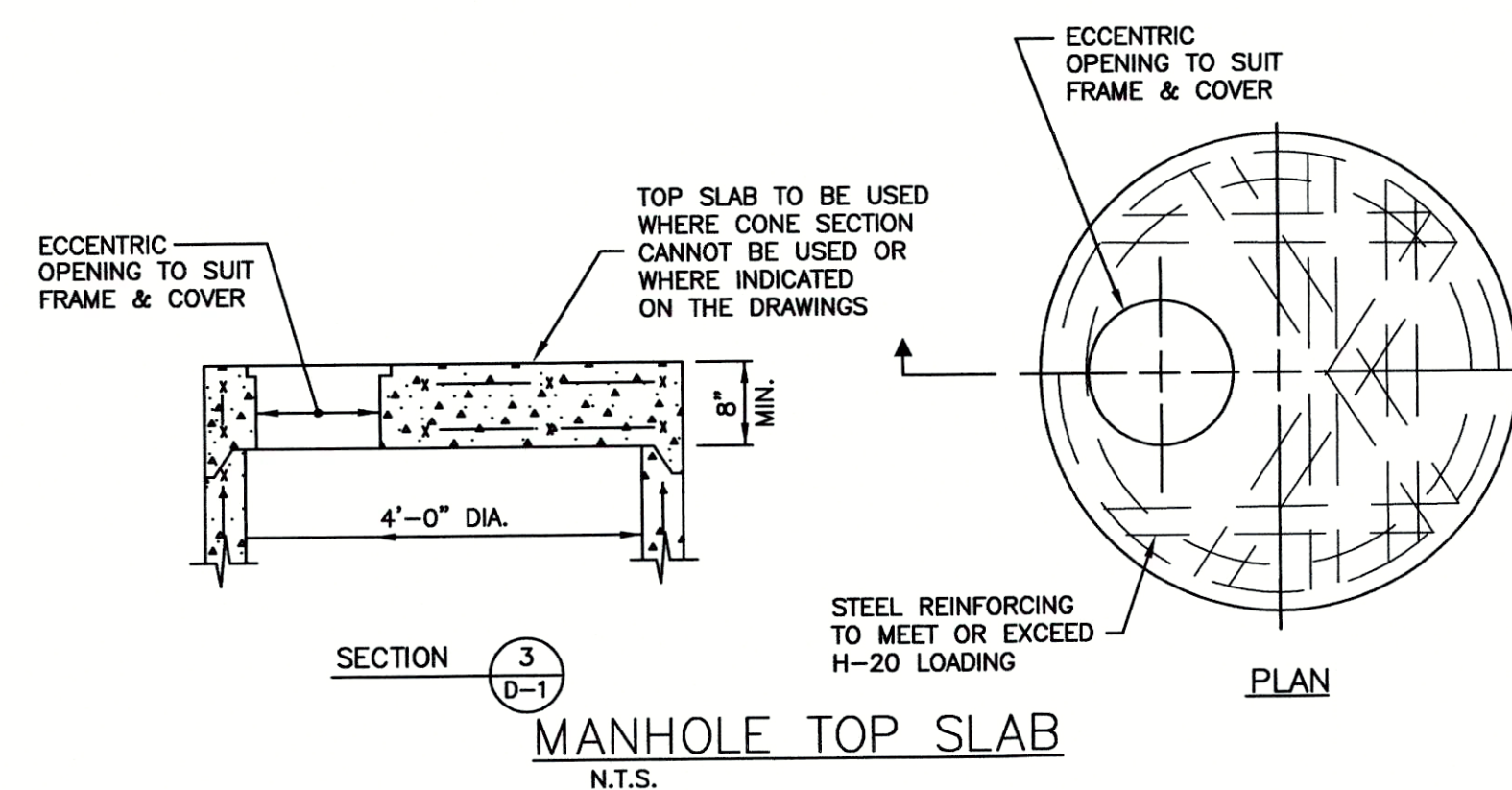




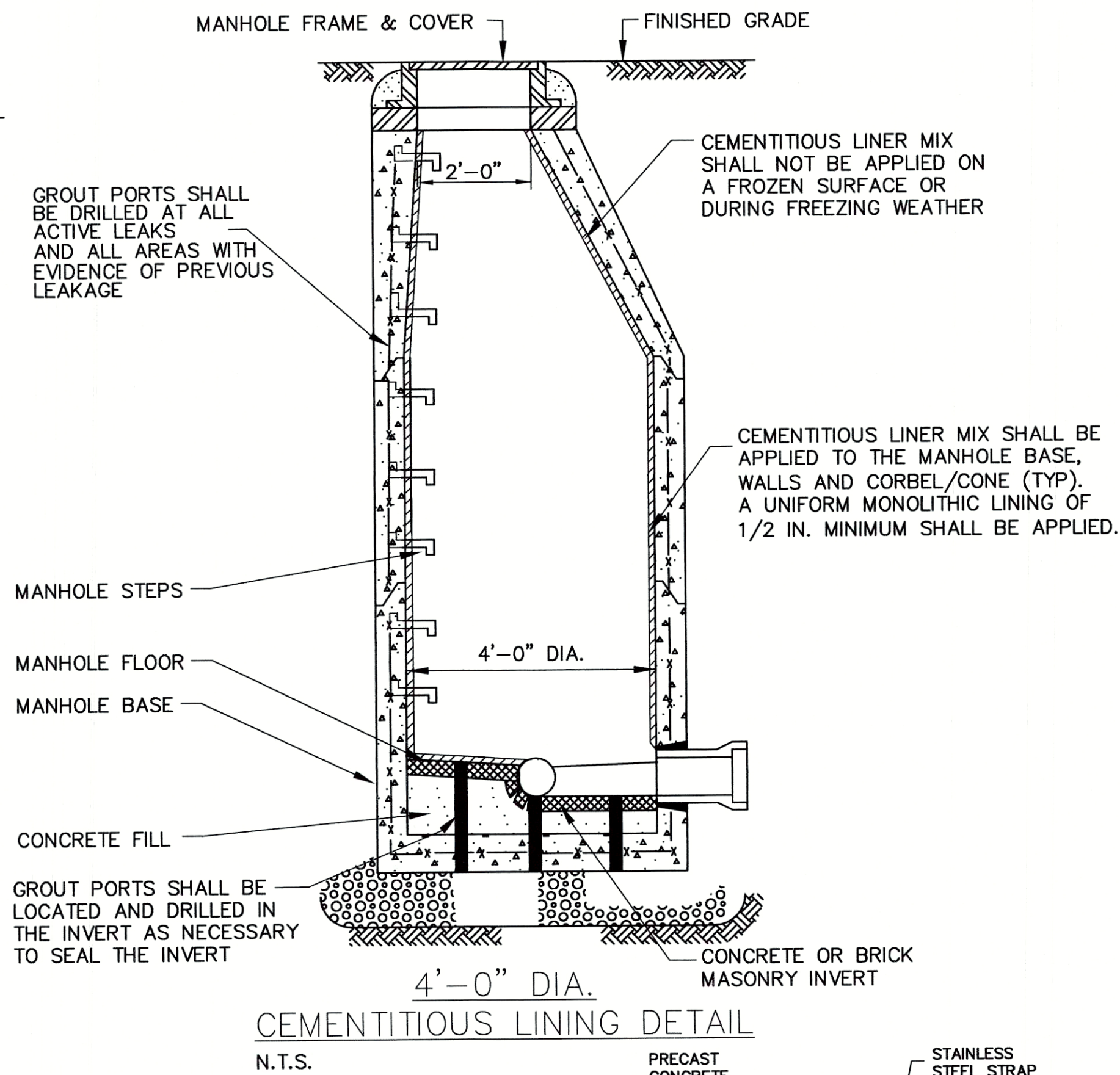
5'-0" DIA. OR LARGER
PRECAST CONCRETE MANHOLE DETAIL
N.T.S.



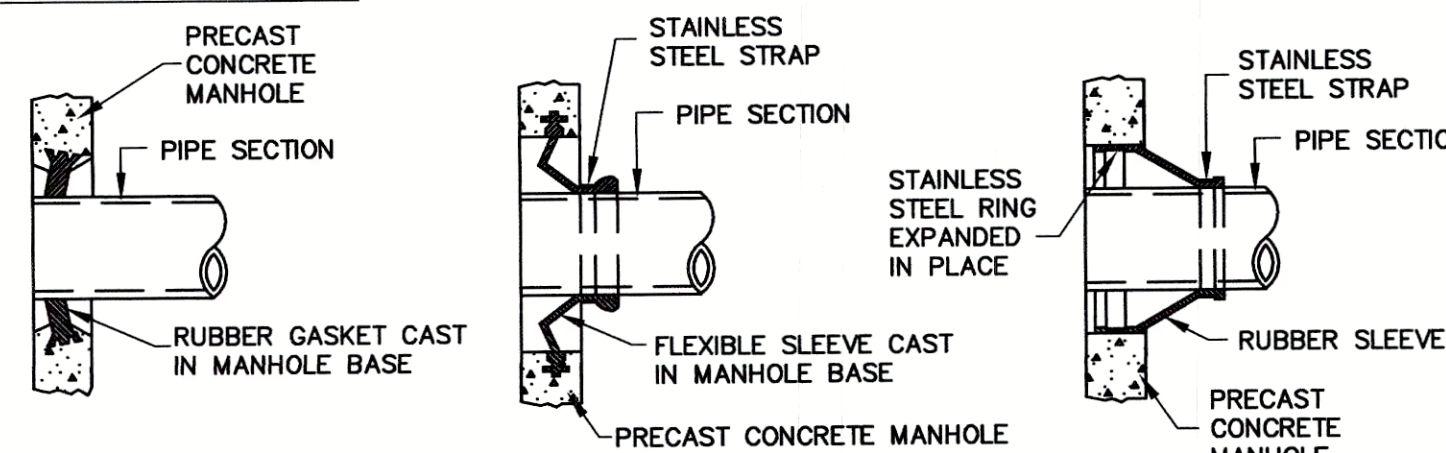
4'-0" DIA. MANHOLE SEALING PLAN
N.T.S.



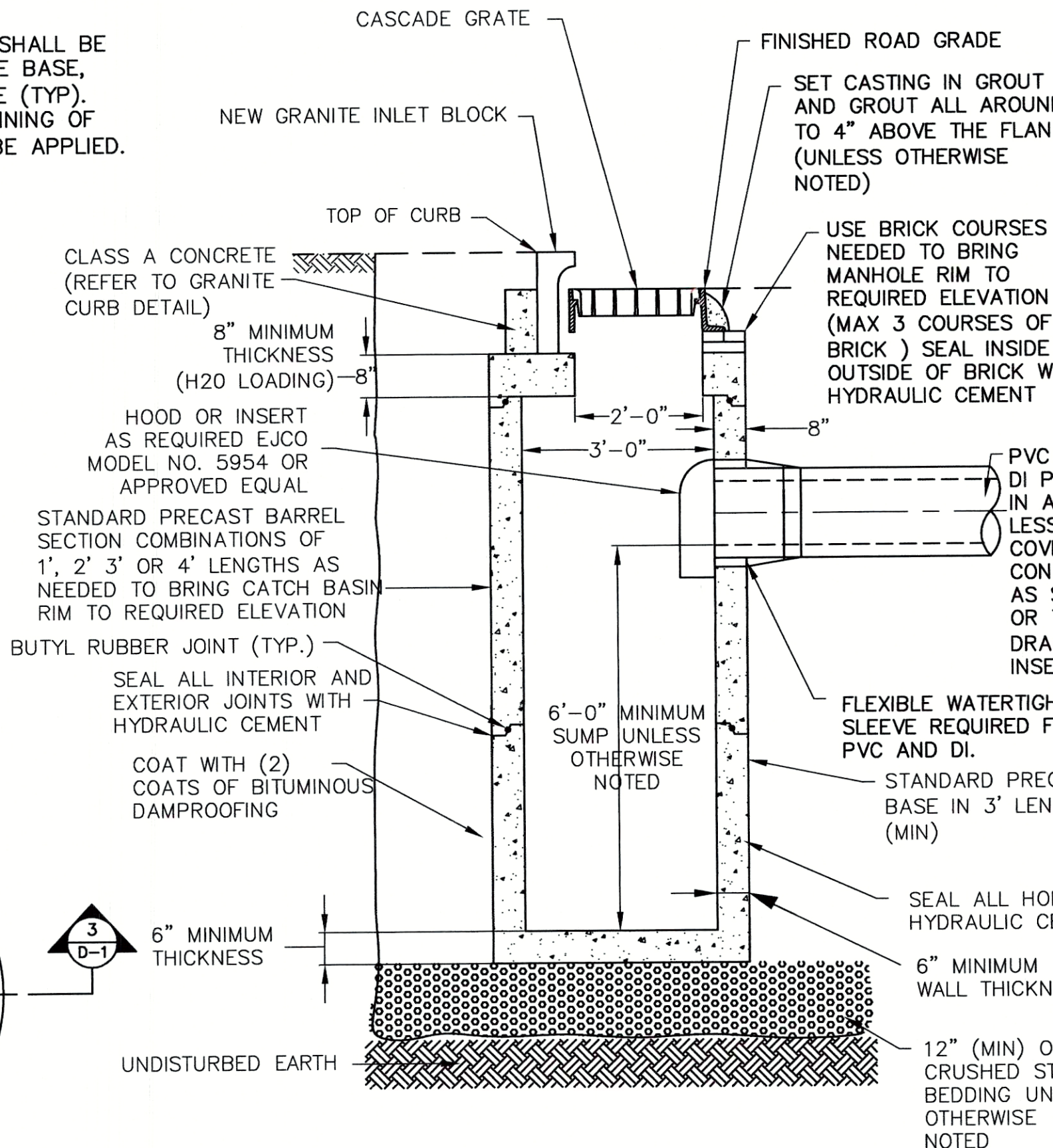
MANHOLE TOP SLAB
N.T.S.



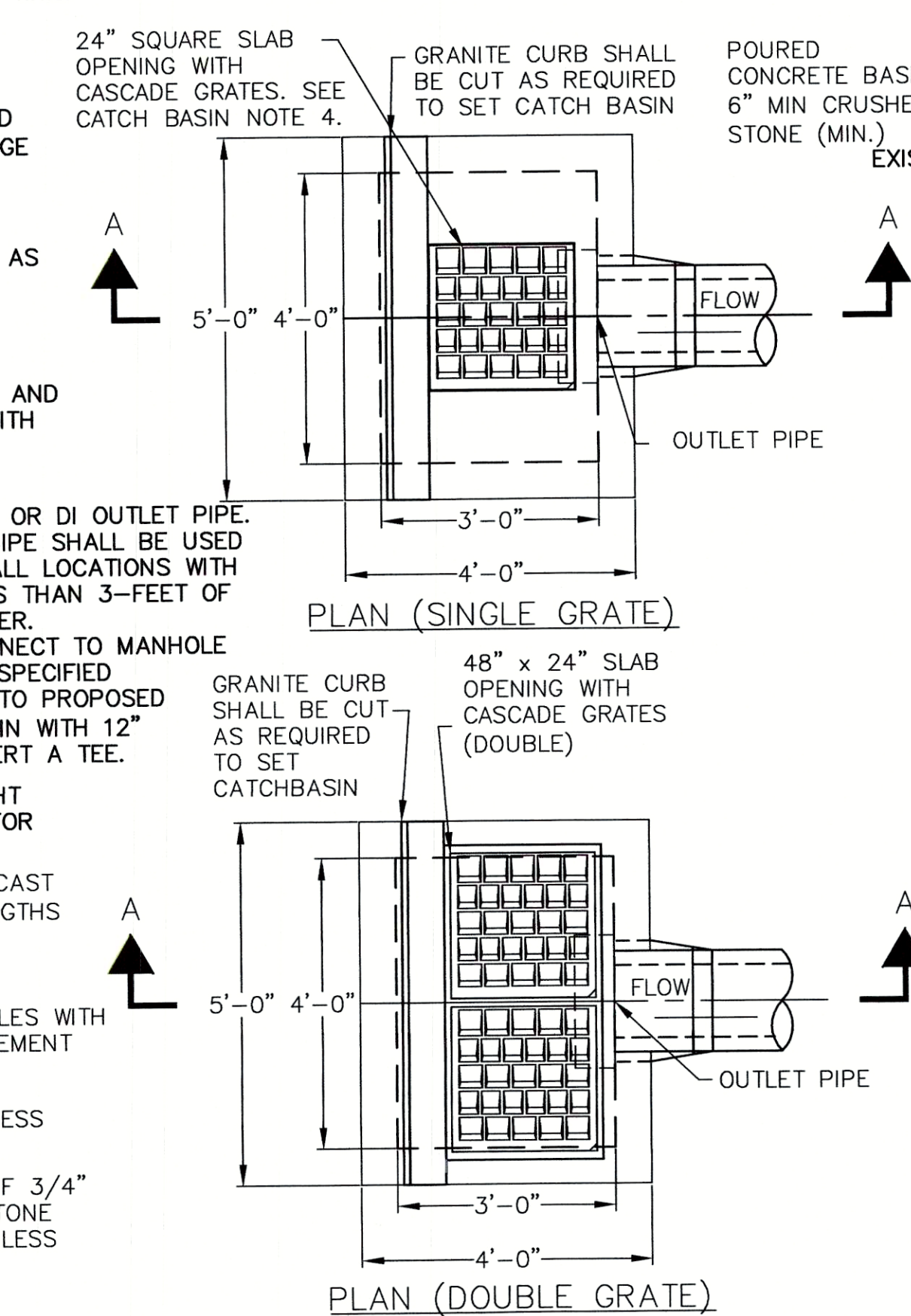
CEMENTITIOUS LINING DETAIL
N.T.S.



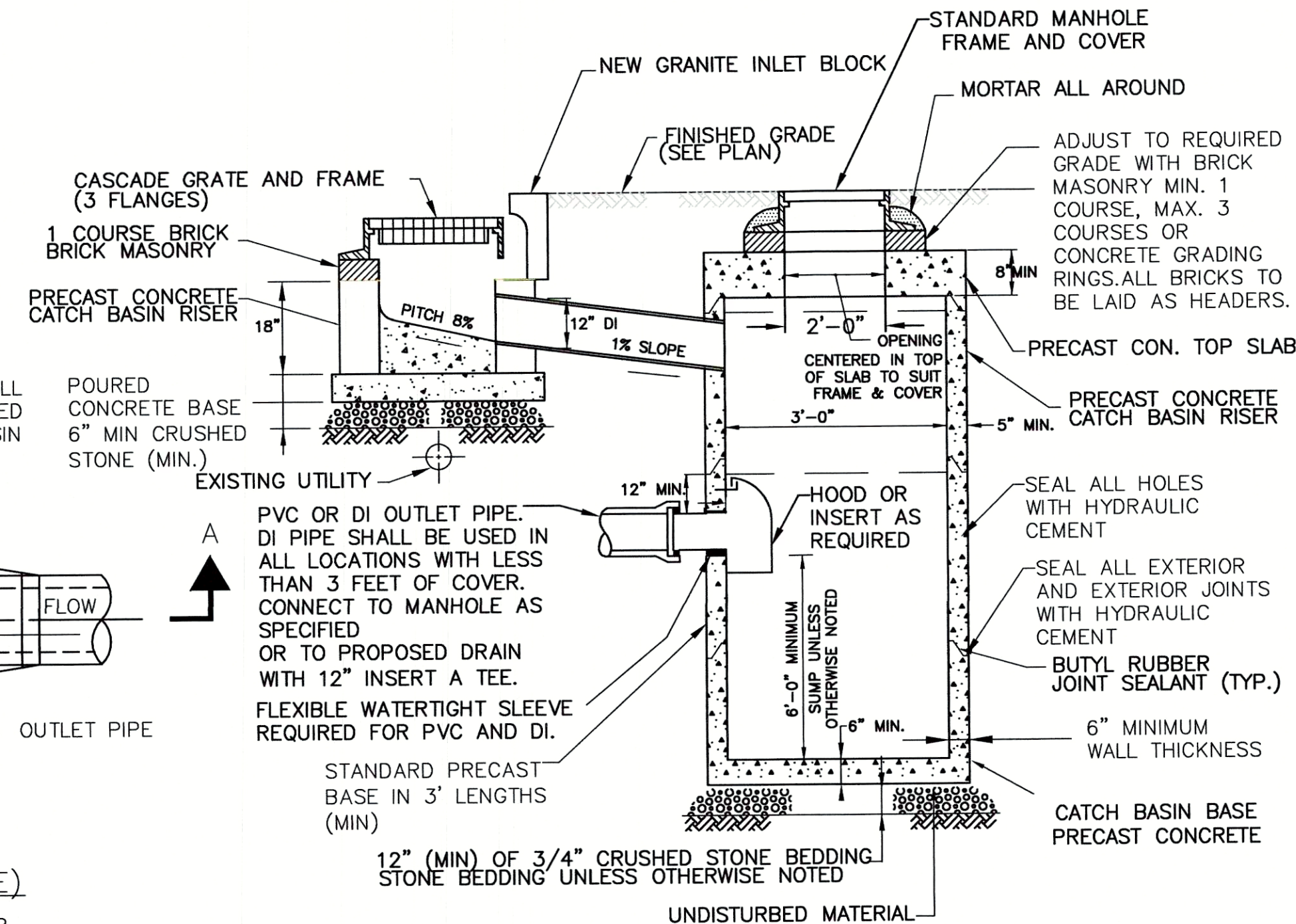
MANHOLE SEAL DETAILS
N.T.S.



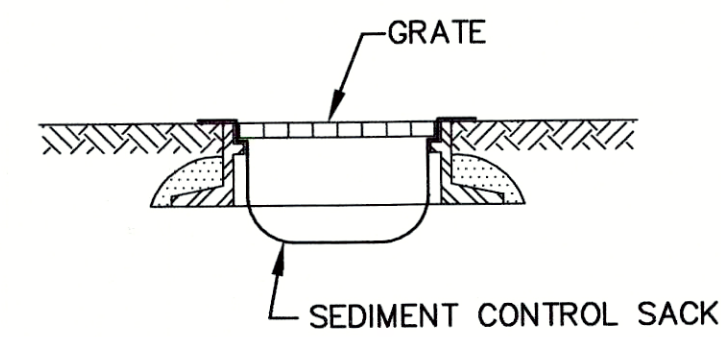
TYPE A CATCH BASIN DETAIL
N.T.S.



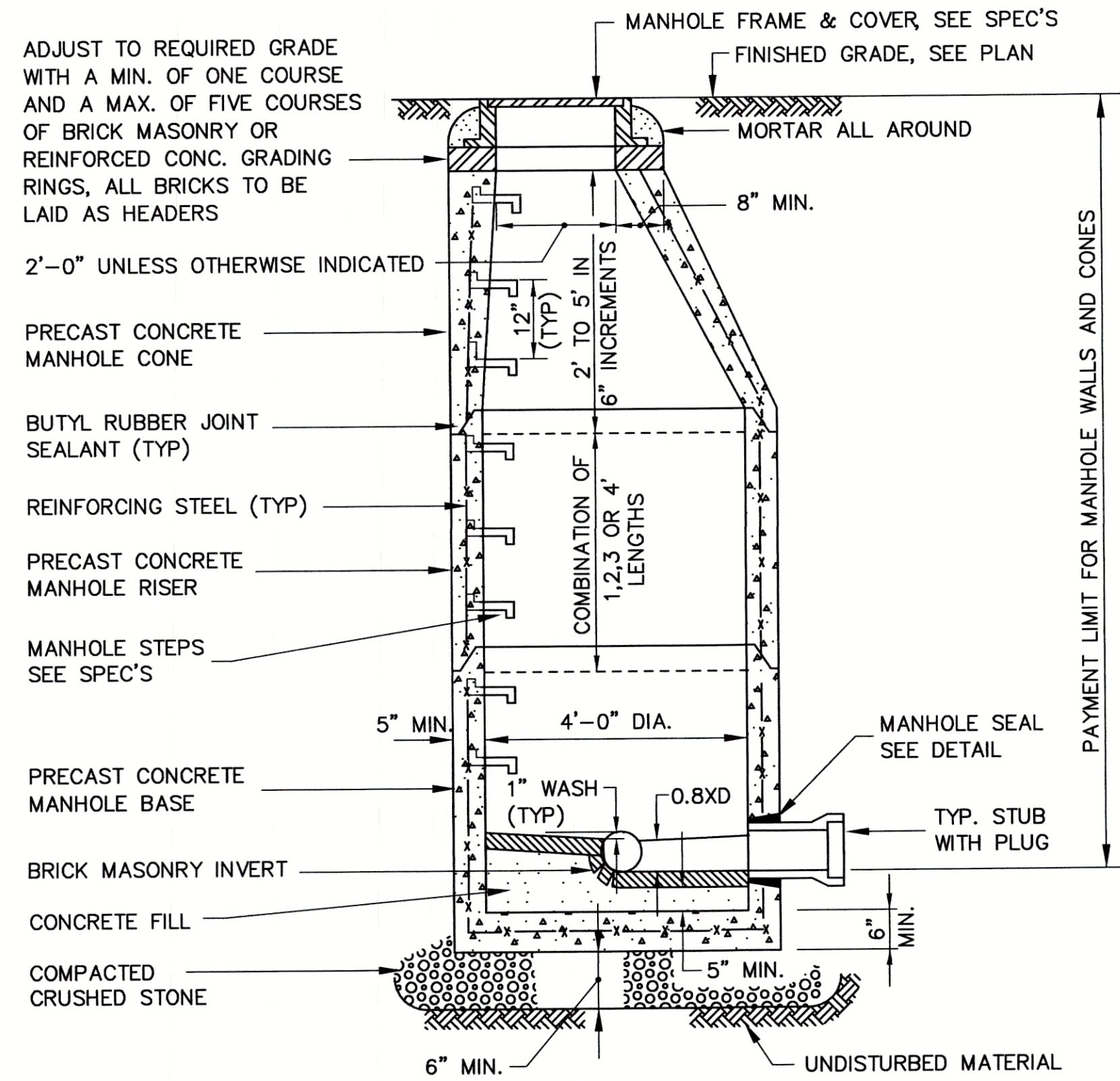
PLAN (DOUBLE GRATE)



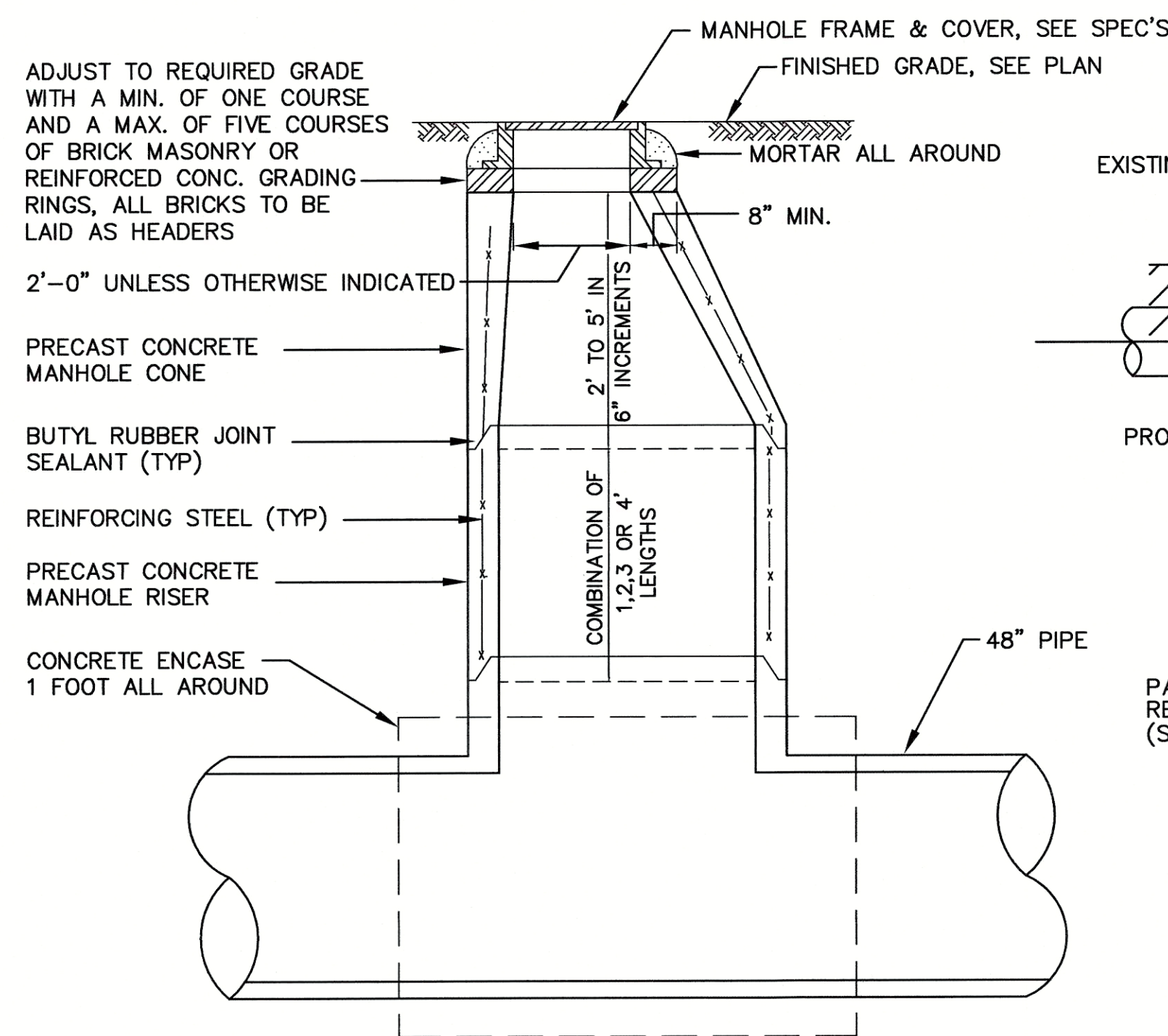
TYPE B CATCH BASIN DETAIL
N.T.S.



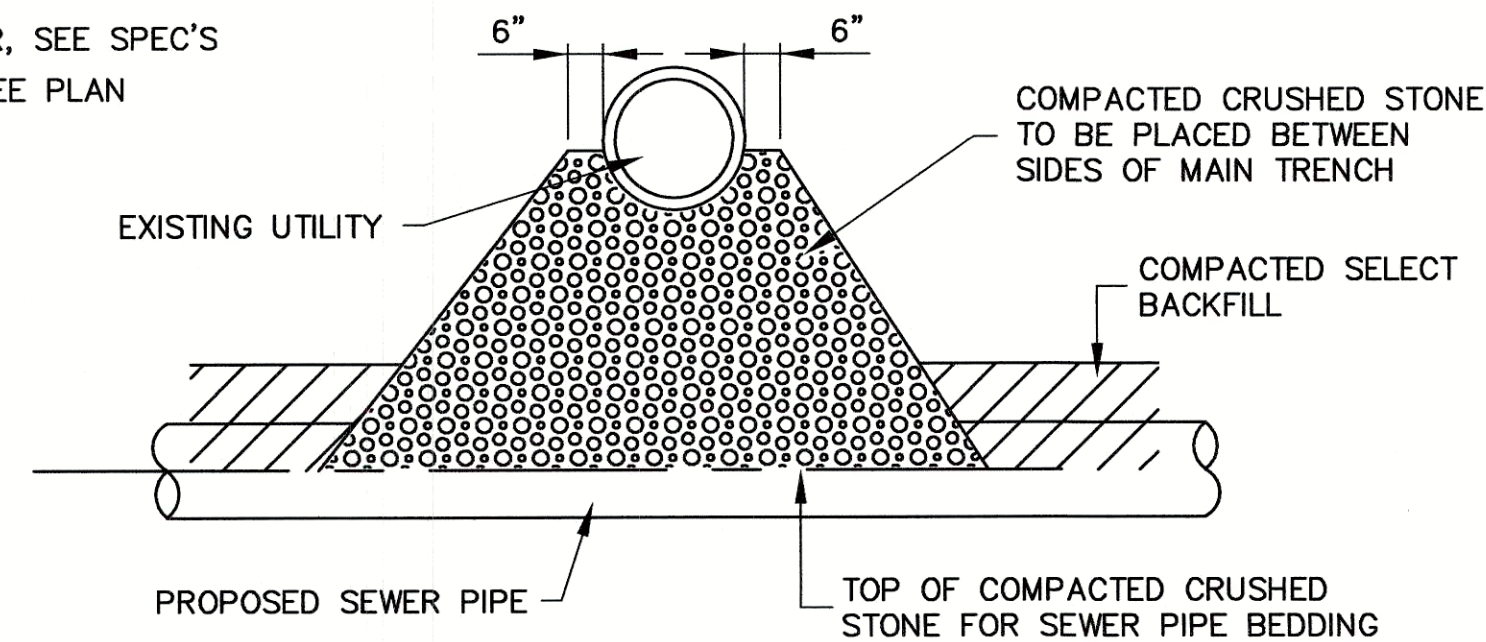
CATCH BASIN PROTECTION DETAIL
N.T.S.



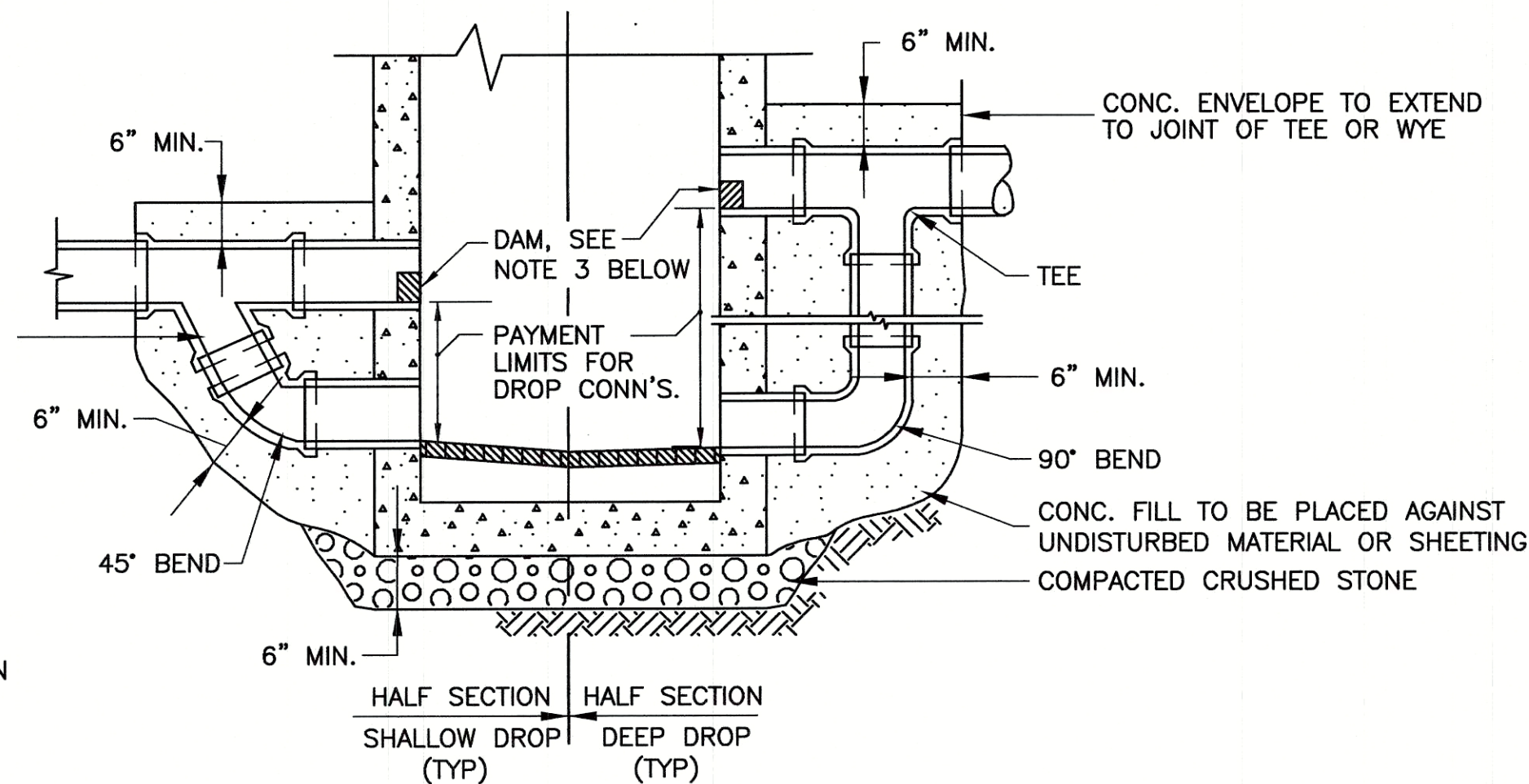
4'-0" DIA. PRECAST
CONCRETE MANHOLE DETAIL
N.T.S.



TEE MANHOLE DETAIL
N.T.S.

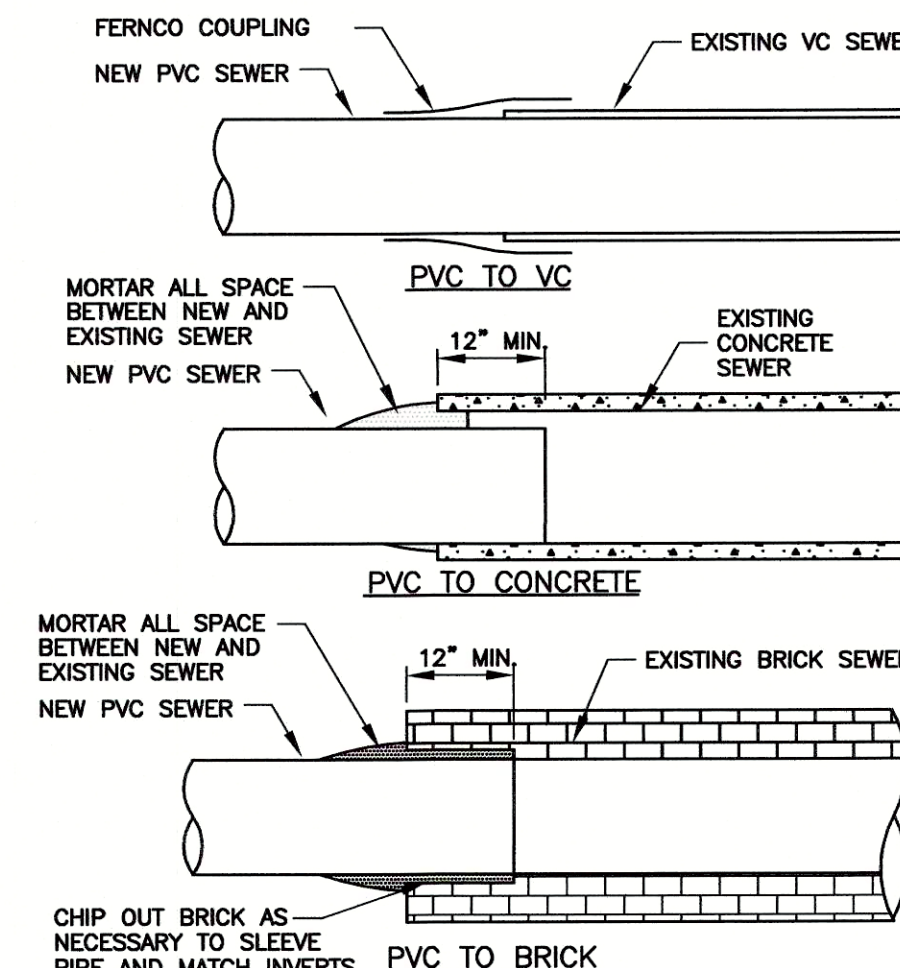


UTILITY CROSSING DETAIL
N.T.S.

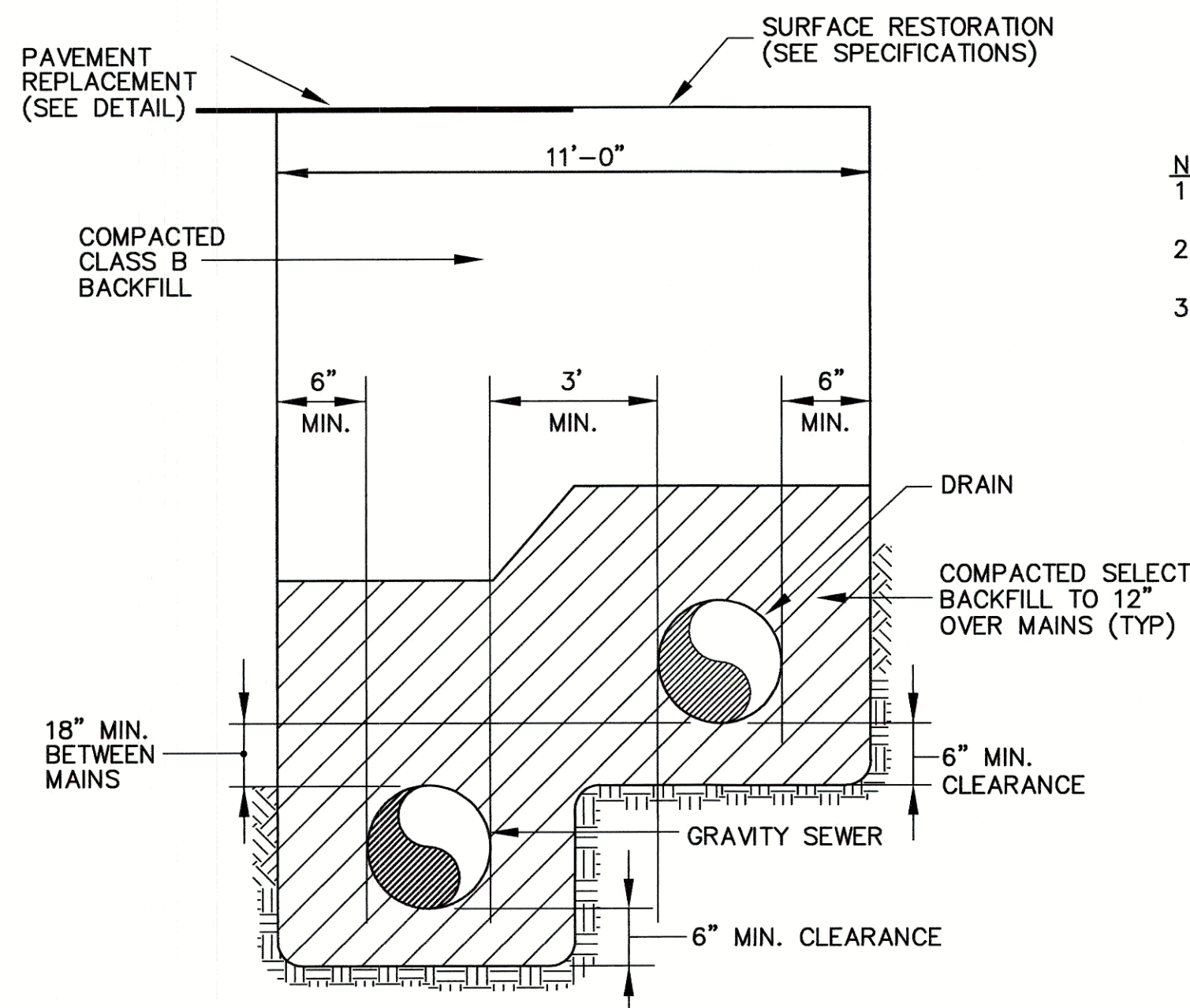


- NOTES:
1. DROP PIPE TO BE SAME DIAMETER AS SEWER DISCHARGE INTO MANHOLE UNLESS OTHERWISE SHOWN ON DRAWINGS.
2. DIMENSIONS & CONSTRUCTION OF DROP MANHOLE TO BE SIMILAR TO TYPICAL MANHOLE EXCEPT AS SHOWN.
3. FOR PVC PIPE, EPOXY HALF PLUG TO PIPE. FOR DI, VC AND RC PIPE, MORTAR AND BRICK IN PIPE.

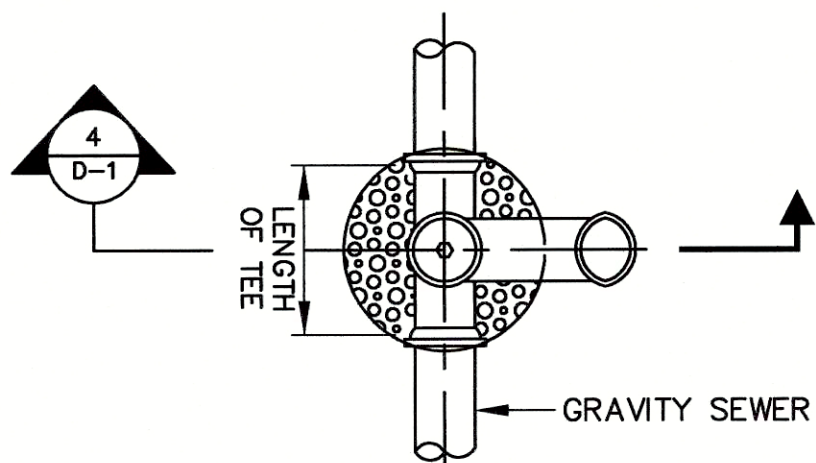
DROP CONNECTION DETAIL
N.T.S.



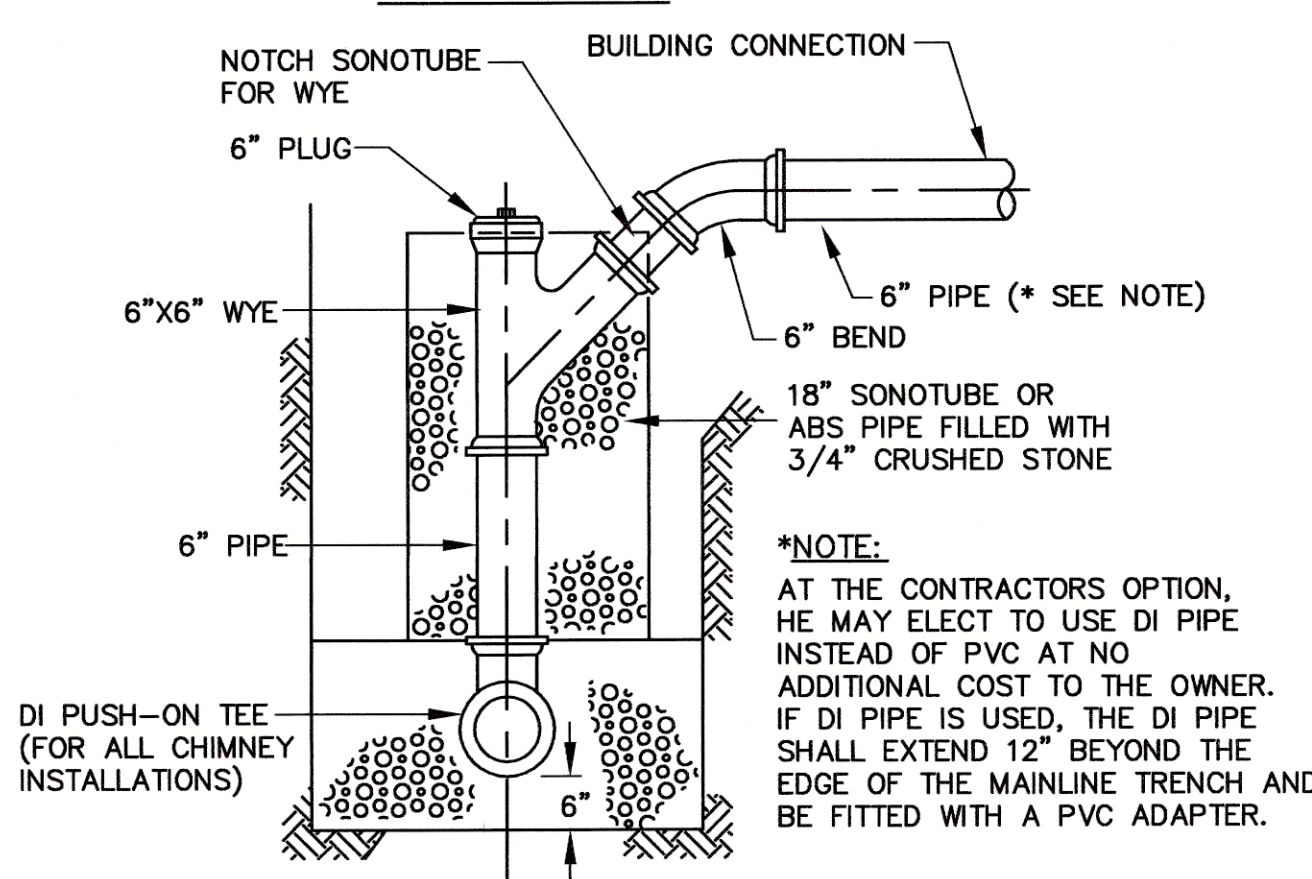
MANHOLE LATERAL CONNECTION DETAILS
N.T.S.



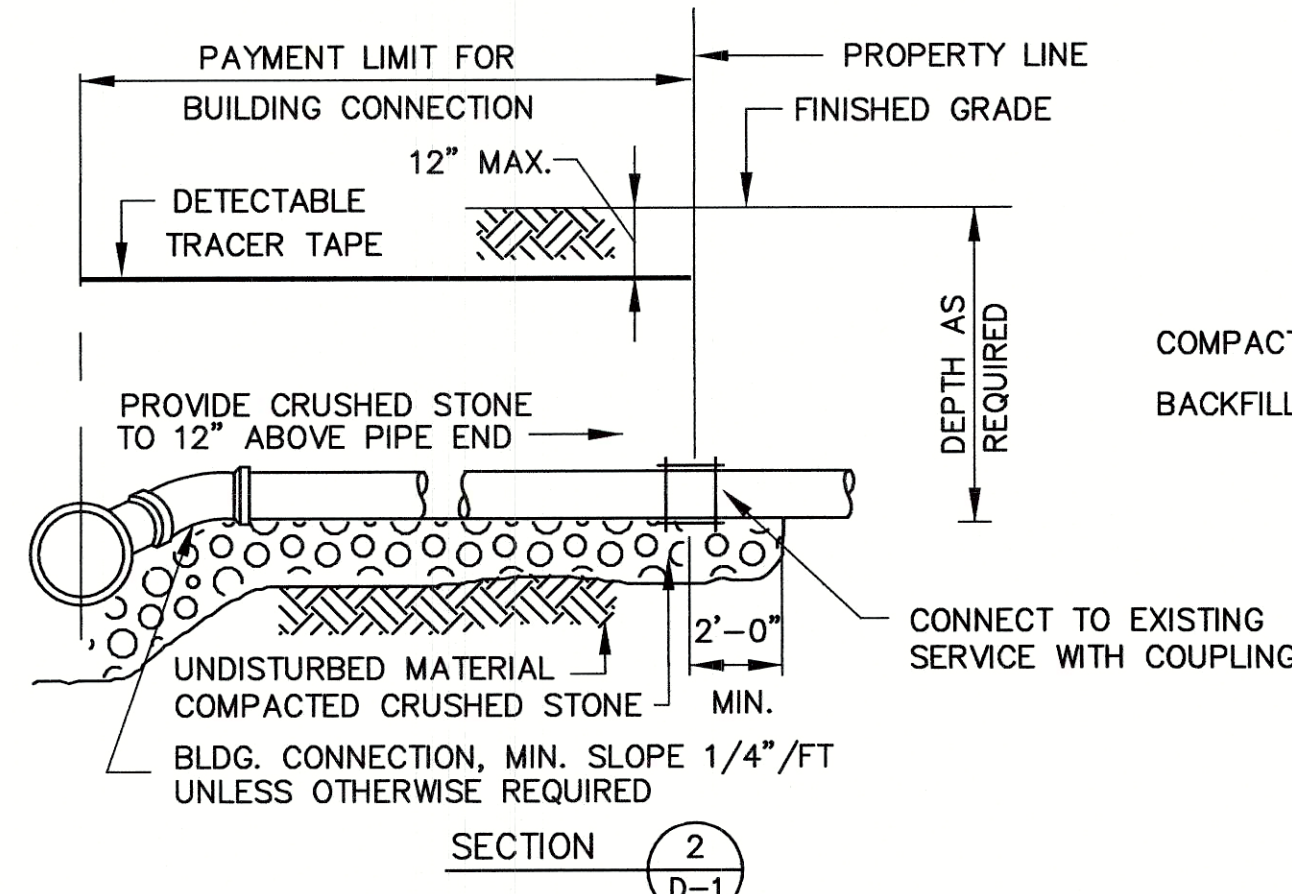
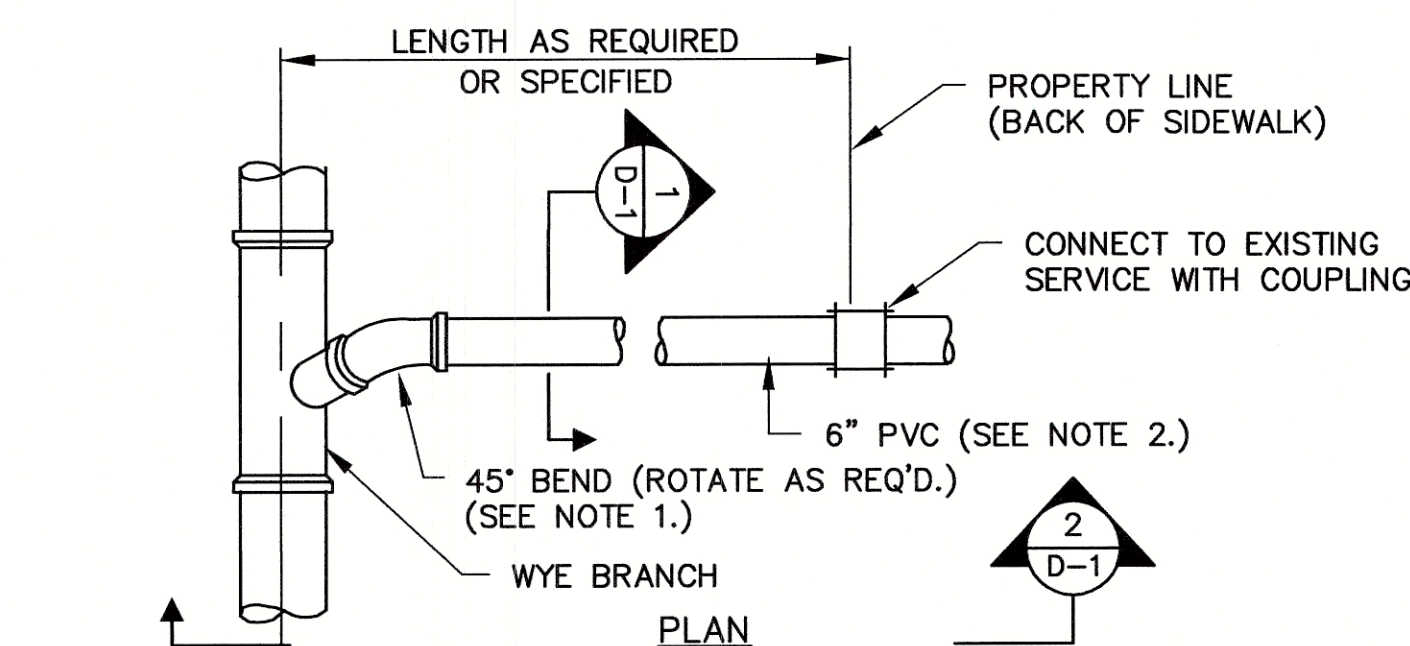
GRAVITY SEWER & DRAIN IN SAME TRENCH DETAIL
N.T.S.



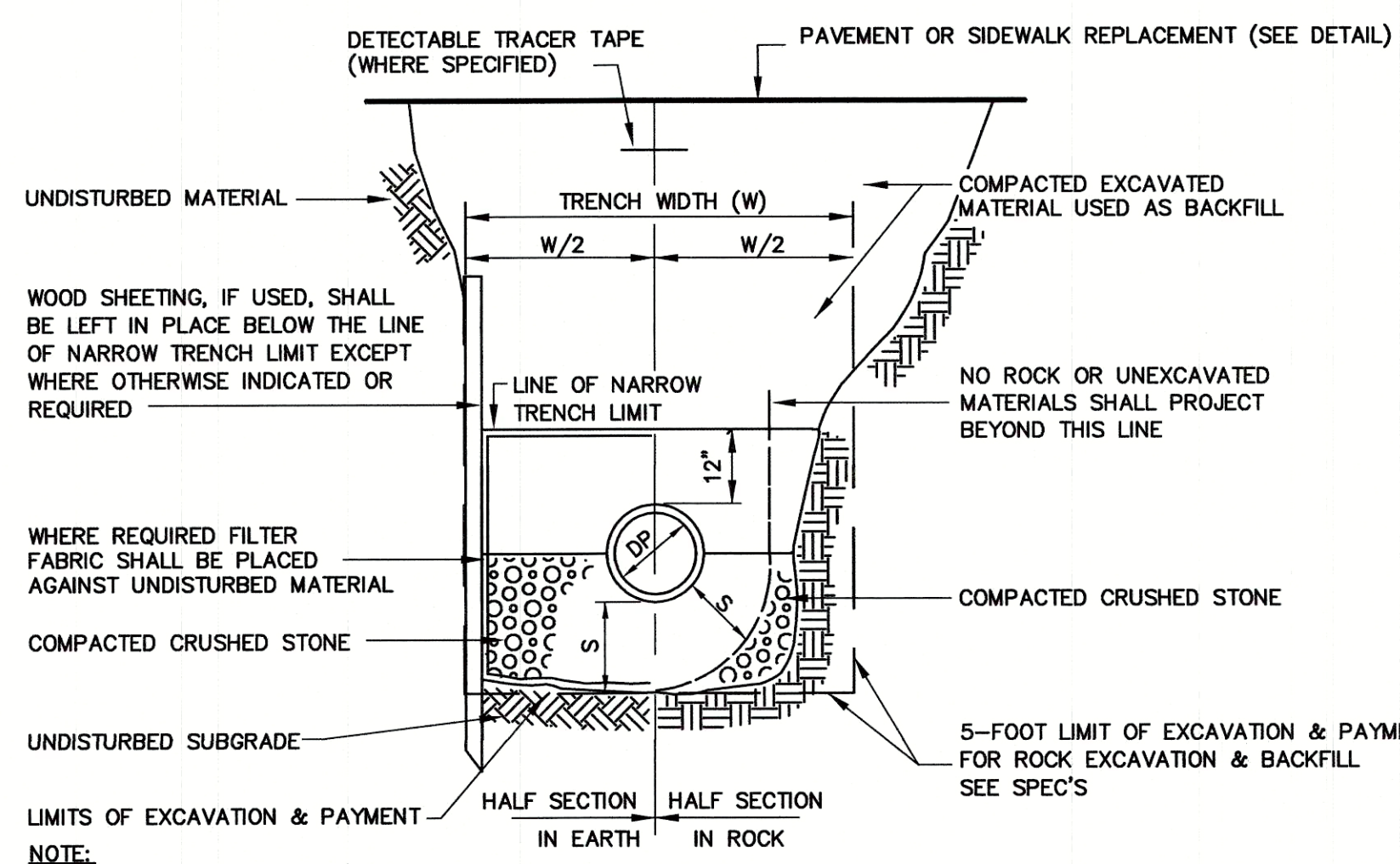
PLAN VIEW



SECTION 4
D-1
CHIMNEY DETAIL FOR SEWER
N.T.S.



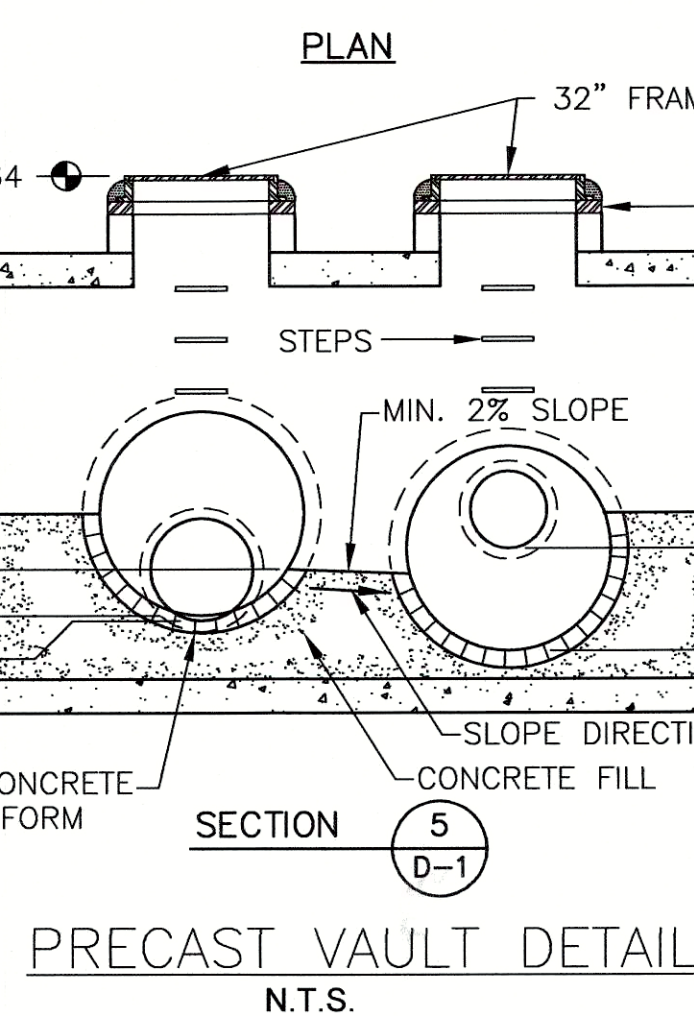
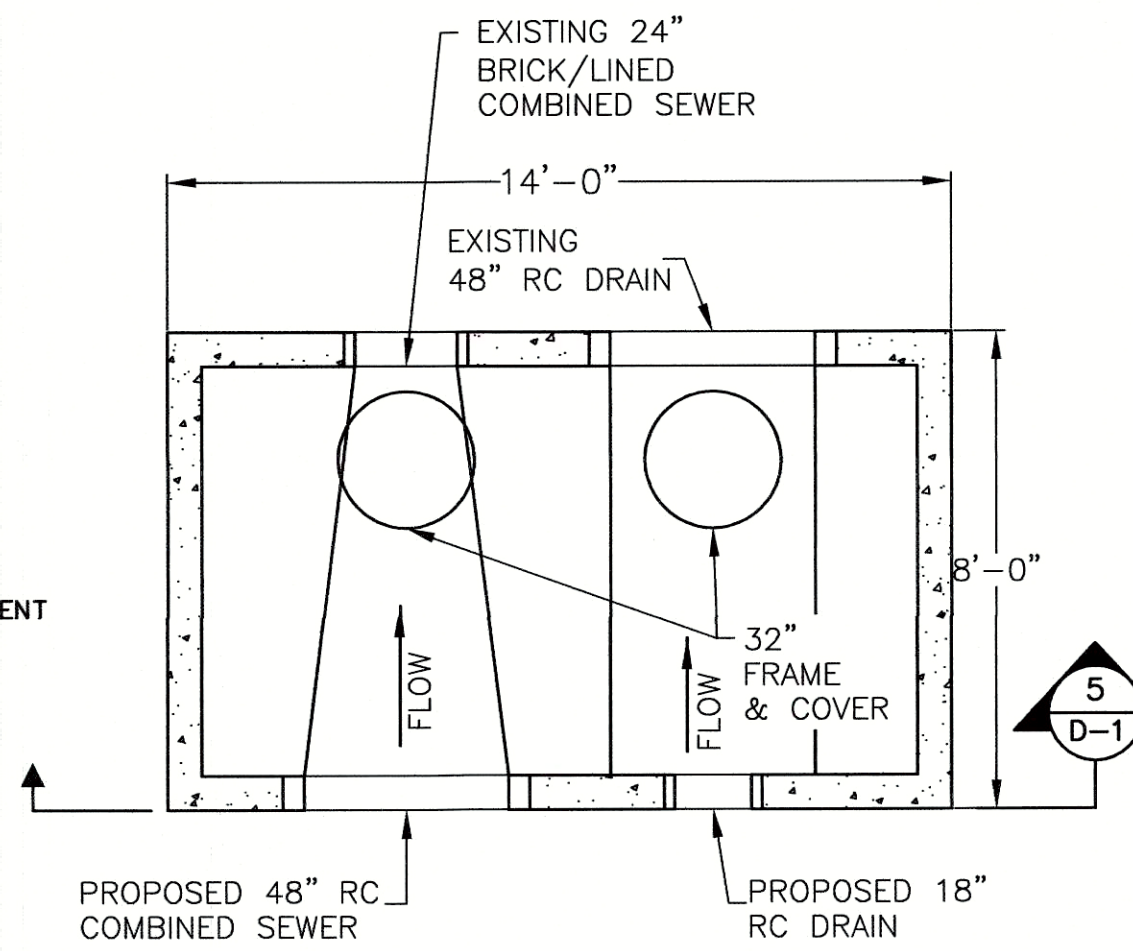
TYPICAL BUILDING CONNECTION DETAIL
N.T.S.



TRENCH DETAIL
N.T.S.

DEPTH TO INVERT	DIAMETER OF PIPE (DP)	MAXIMUM TRENCH WIDTH BELOW LINE OF NARROW TRENCH LIMIT (SHEETED OR UNSHEETED) (W)	MINIMUM CLEARANCE (S)
0-12'	TO 18"	5'	6"
0-12'	21"-24"	5'	7-1/2"
0-12'	27"-36"	6'	9"
0-12'	42"-48"	7'	9"
OVER 12'	TO 18"	7'	6"
OVER 12'	21"-24"	7'	7-1/2"
OVER 12'	27"-36"	8'	9"
OVER 12'	42"-48"	9'	9"

TABLE A

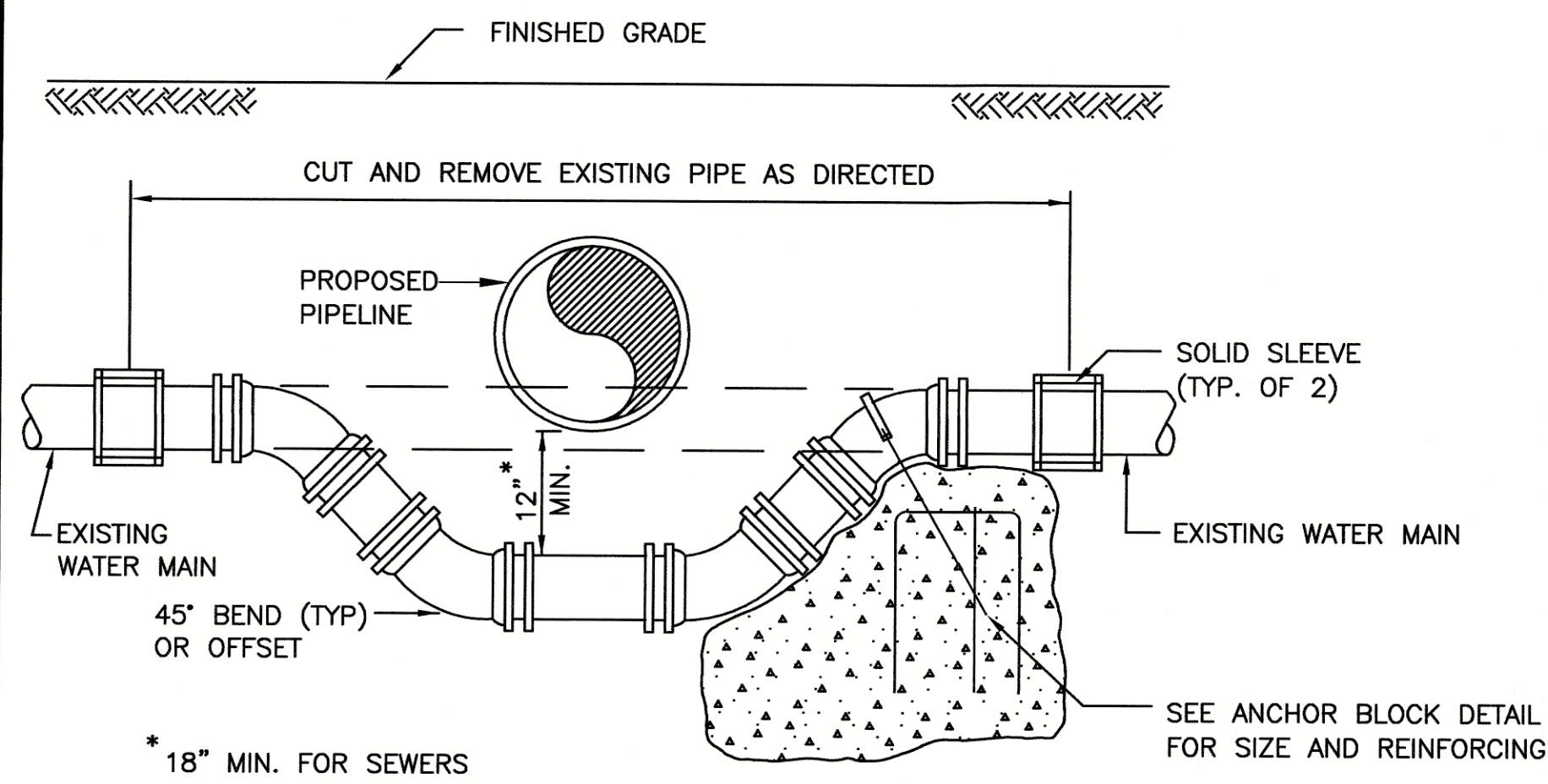


PRECAST VAULT DETAIL
N.T.S.

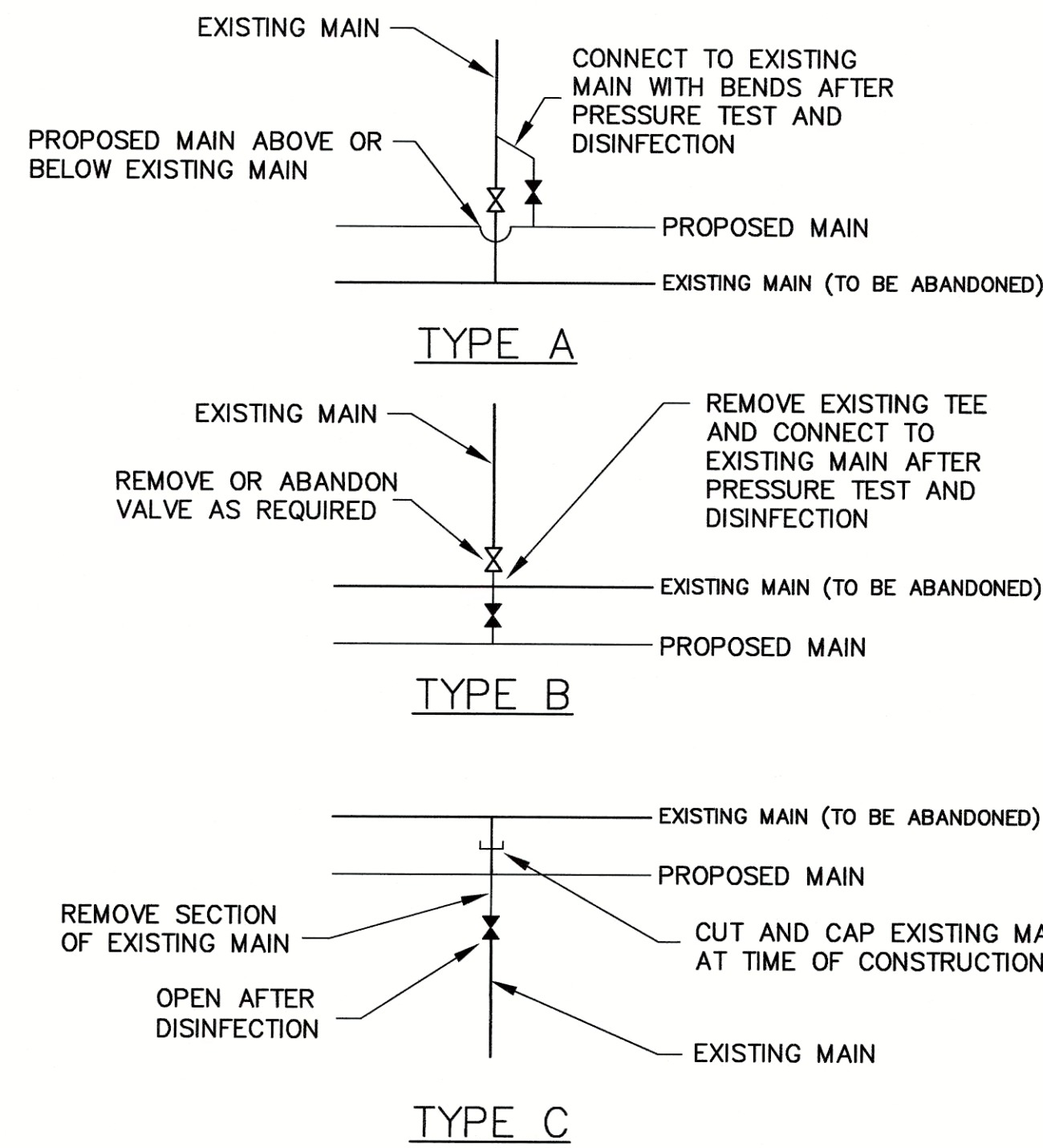
No.	Date	Dr. By	App. By	Description	D	E	V	O	R	P	App. By	Date



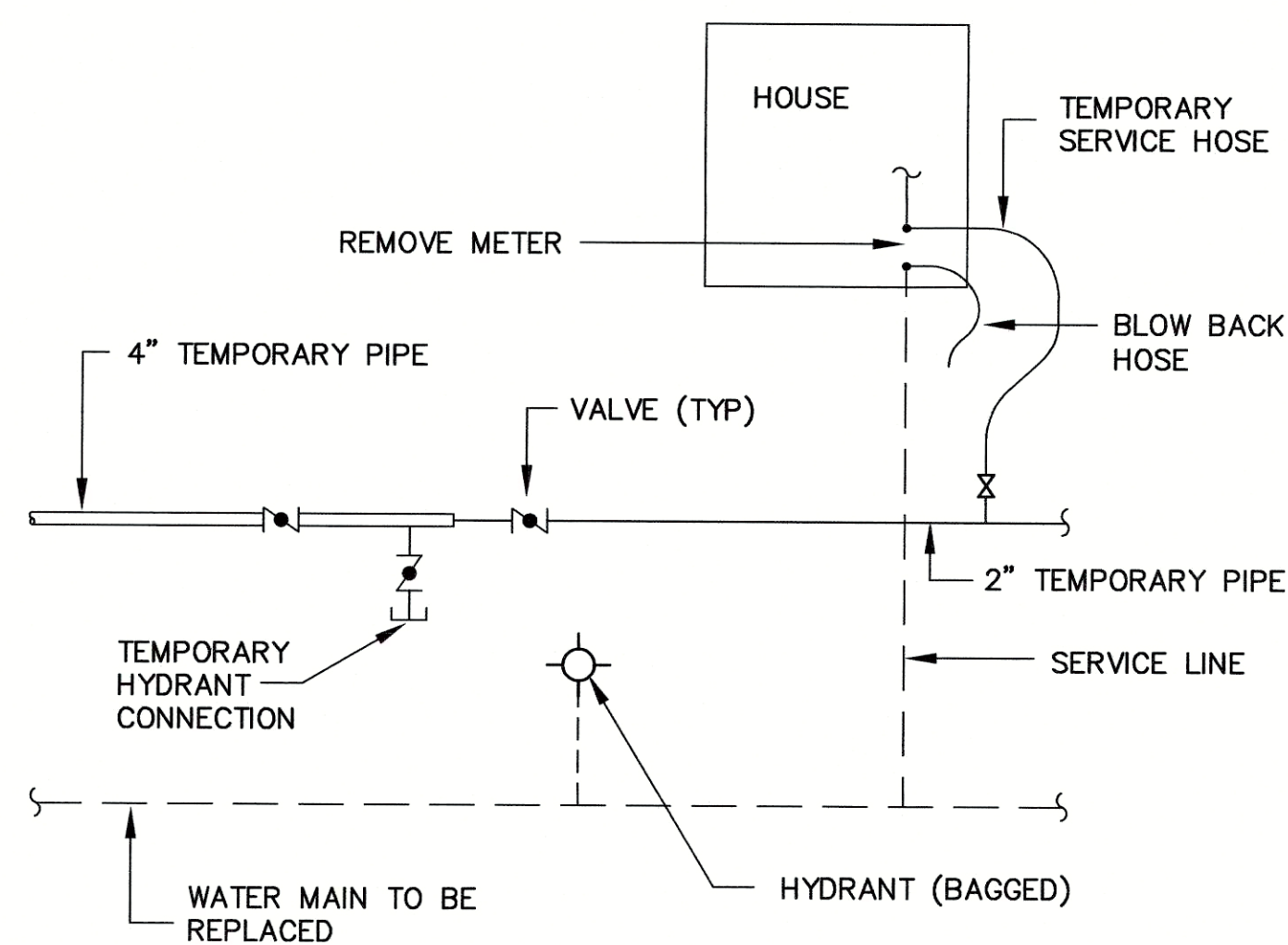
CITY OF SOMERVILLE, MASSACHUSETTS
DEPARTMENT OF PUBLIC WORKS
CEDAR STREET SEWER SEPARATION PROJECT



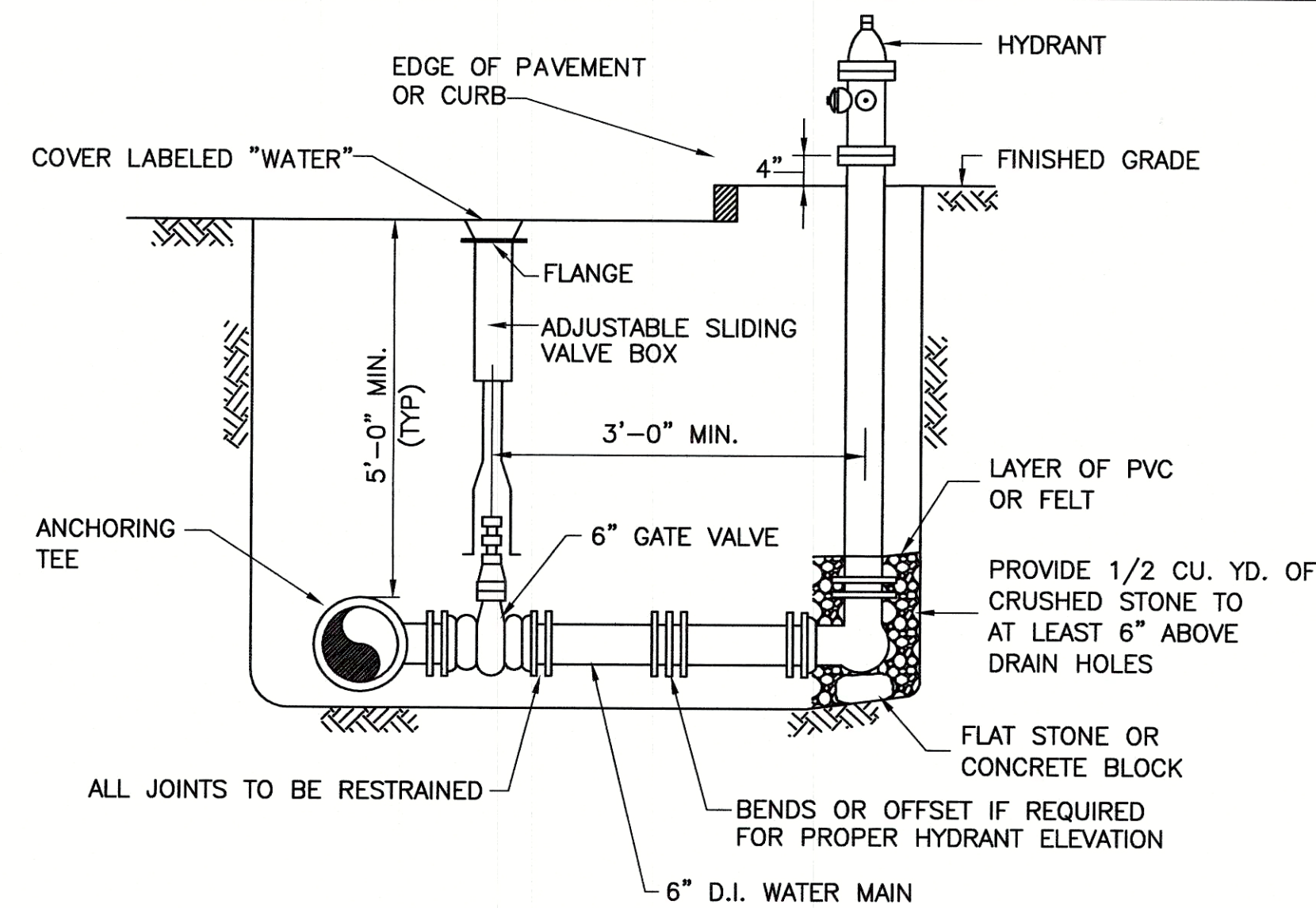
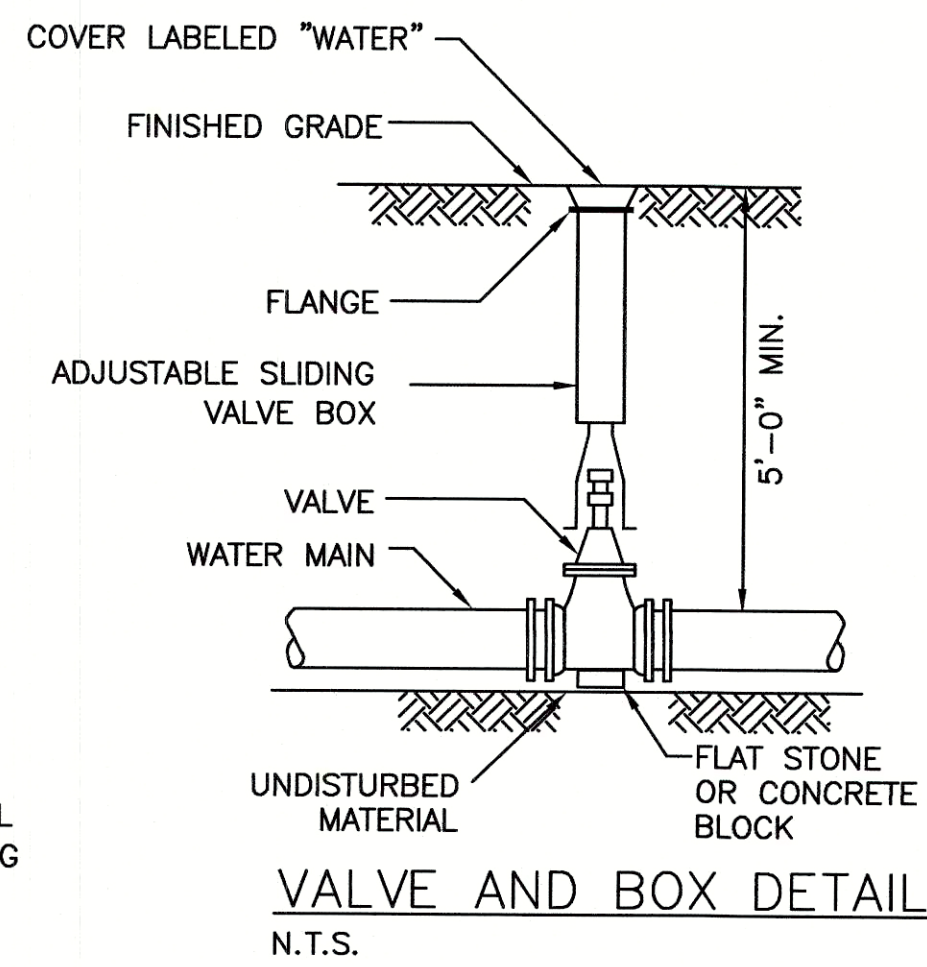
EXISTING WATER MAIN RELOCATION DETAIL
N.T.S.



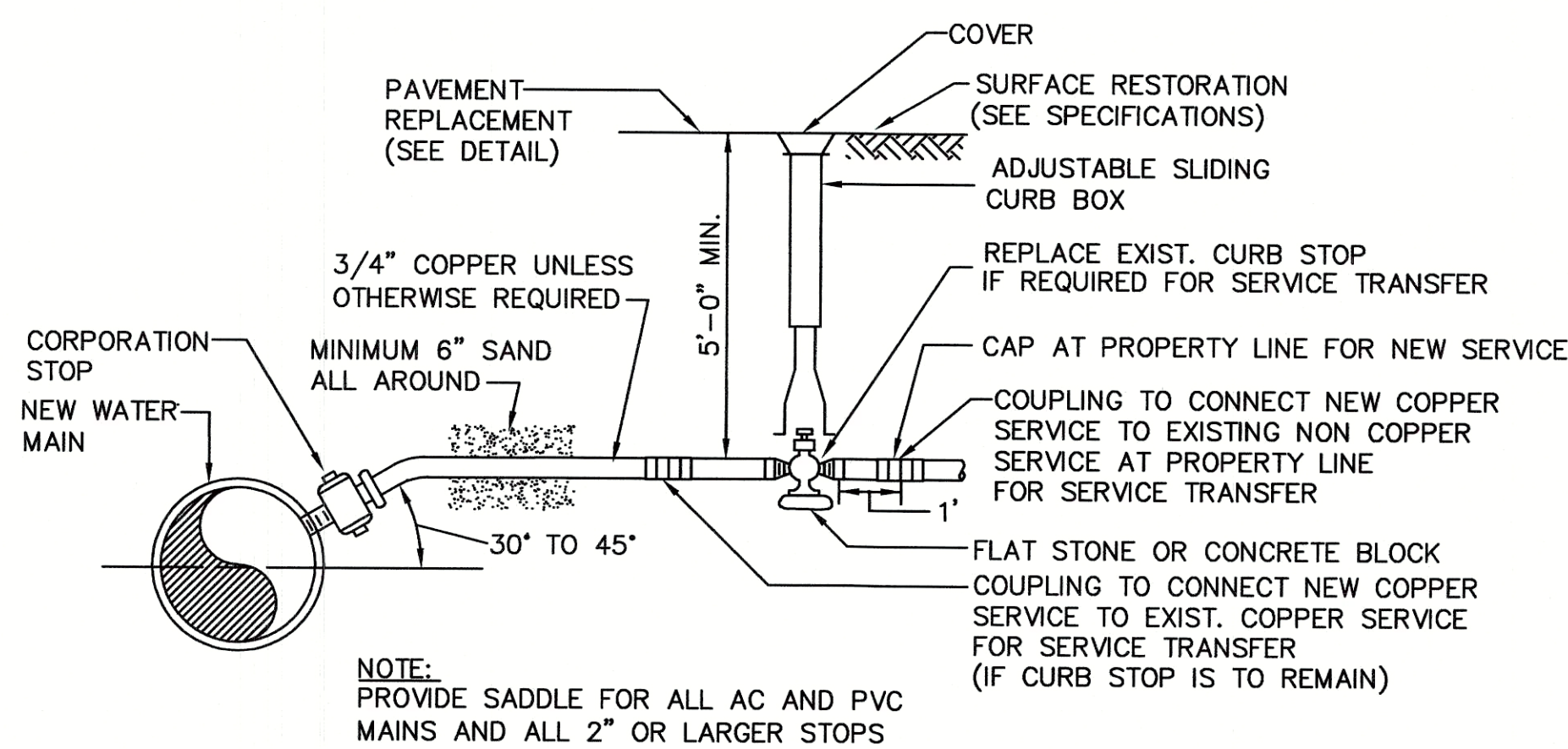
WATER MAIN CONNECTION DETAILS
N.T.S.



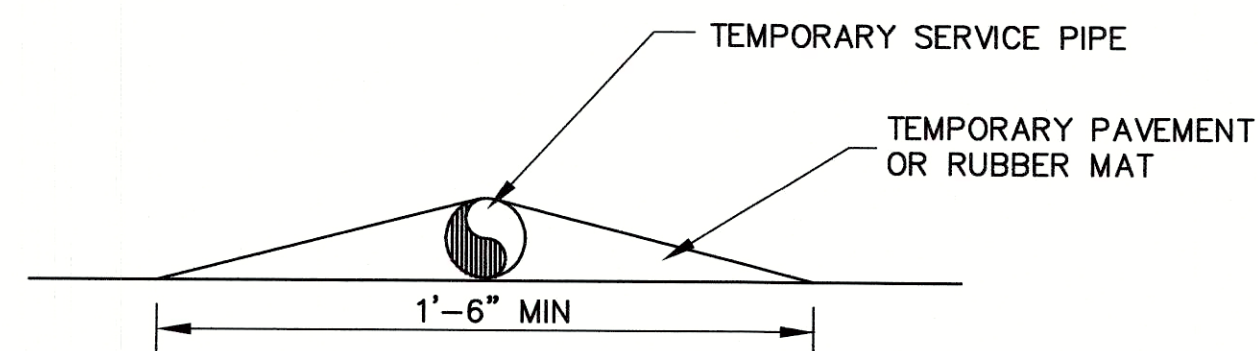
TEMPORARY SERVICE PIPE DETAIL
N.T.S.



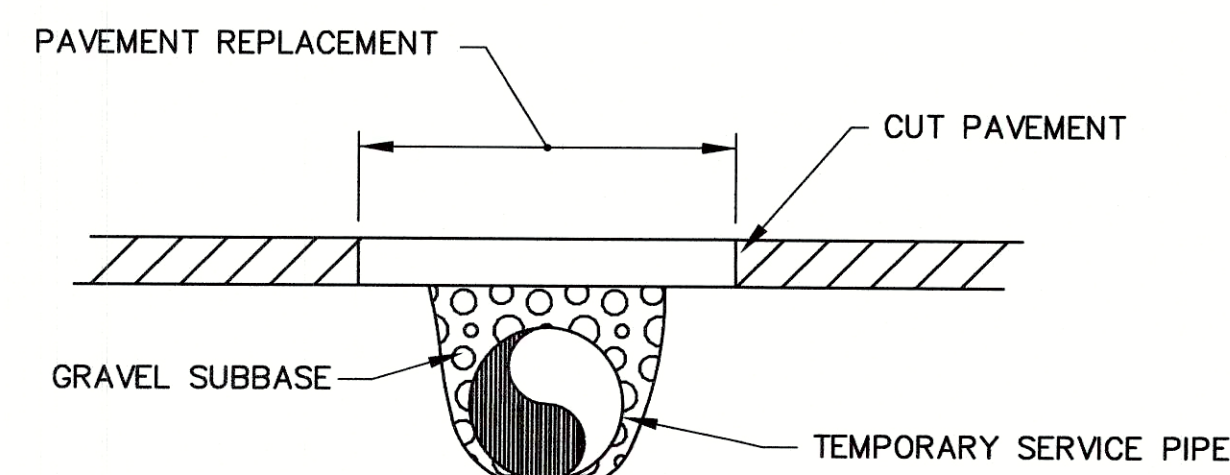
HYDRANT AND VALVE DETAIL
N.T.S.



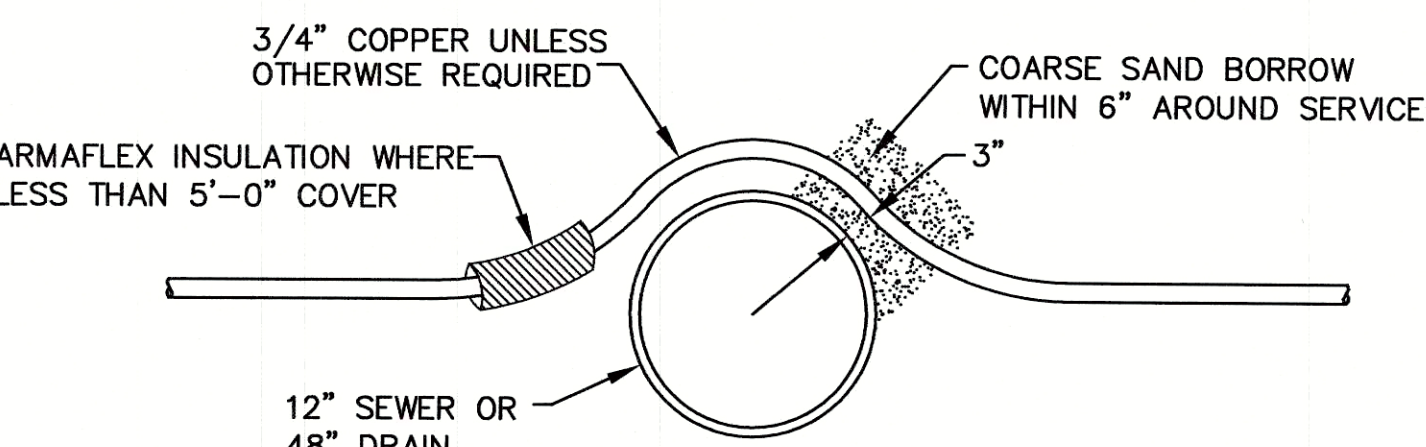
WATER SERVICE DETAIL
N.T.S.



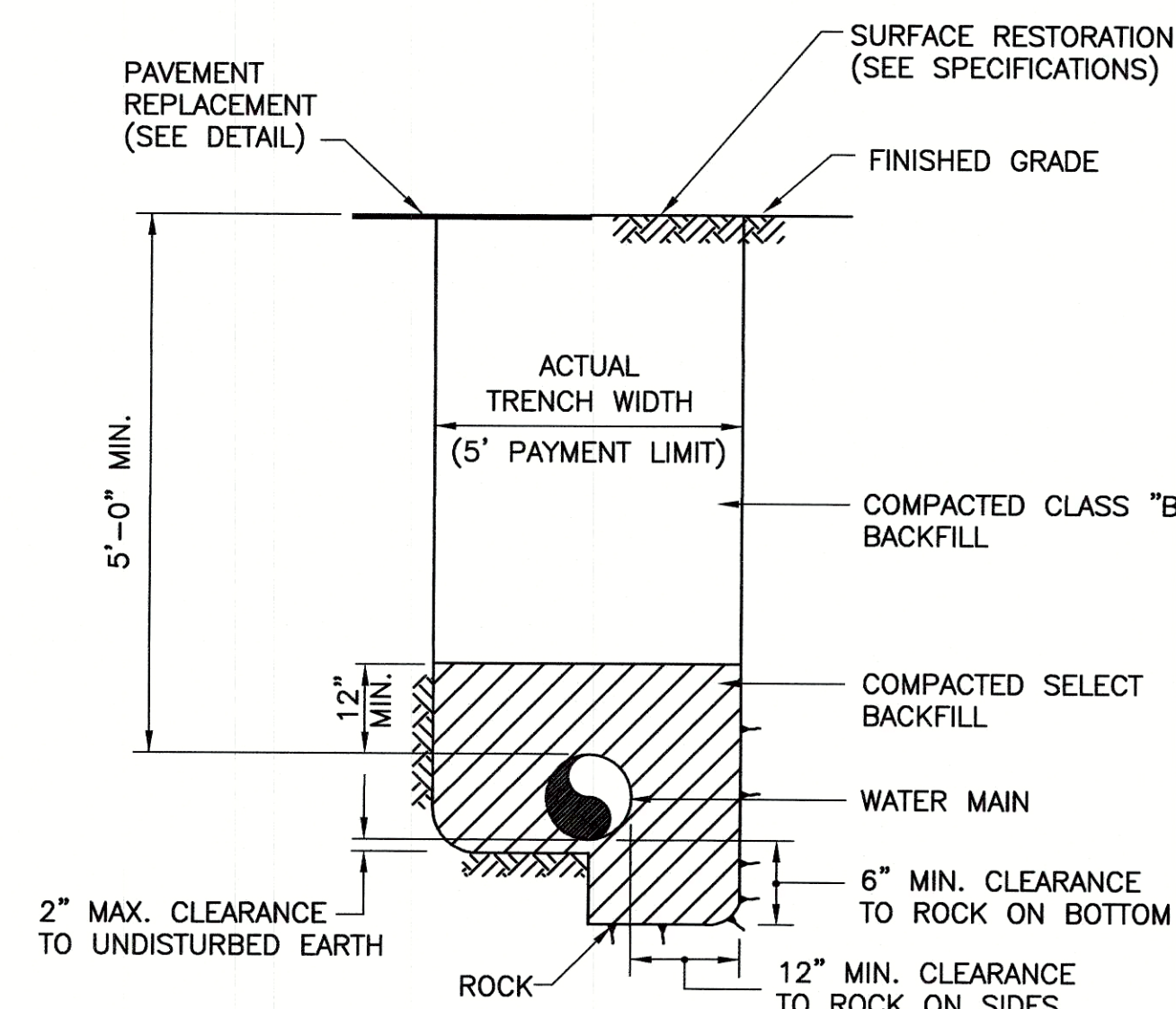
2" TEMPORARY SERVICE PIPE DRIVEWAY CROSSING DETAIL
N.T.S.



TEMPORARY SERVICE PIPE ROADWAY CROSSING DETAIL
N.T.S.



WATER SERVICE OVER SEWER/DRAIN DETAIL
N.T.S.



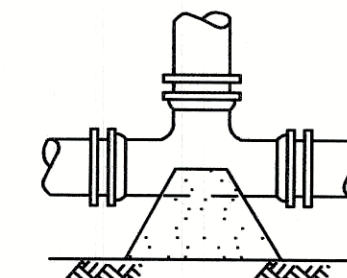
WATER MAIN TRENCH DETAIL
N.T.S.

TABLE 1 — DUCTILE IRON PIPE

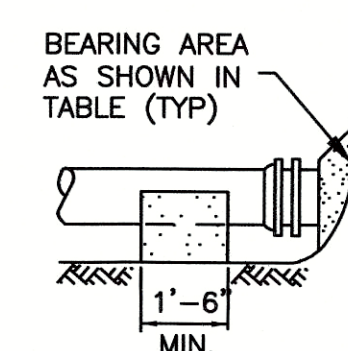
REQUIRED LENGTH OF RESTRAINED JOINTS FROM FITTINGS (FEET)

PIPE SIZE	90° BEND	45° BEND OR WYE BRANCH	22 1/2° BEND	11 1/4° BEND	PLUG, CAP OR IN-LINE VALVE	TEE (BRANCH)
6"	25 (30.5)	10.5 (12.5)	5 (6)	2.5 (3)	43 (64)	34 (51)
8"	33 (40)	13.5 (16.5)	6.5 (8)	3 (4)	55 (82)	47 (70)
10"	40 (48.5)	16.5 (20)	8 (9.5)	4 (5)	67 (100)	58 (87)
12"	47 (56.5)	19.5 (23.5)	9.5 (11.5)	4.5 (5.5)	79 (118)	70 (105)
16"	59.5 (72)	24.5 (30)	12 (14.5)	6 (7)	101 (152)	92 (139)
20"	72 (86.5)	30 (36)	14.5 (17)	7 (8.5)	123 (184)	114 (171)
24"	84 (100)	35 (41)	16.5 (20)	8 (10)	144 (216)	134 (202)
30"	100 (120)	41 (50)	20 (24)	10 (12)	174 (261)	165 (247)

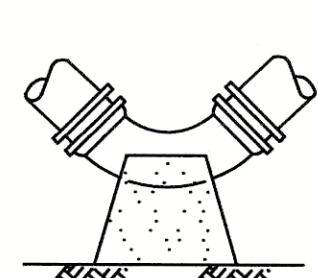
- NOTES:
- RESTRAINED LENGTHS LISTED IN PARENTHESES ARE FOR PIPE WRAPPED IN POLYETHYLENE. THE OTHER ASSOCIATED LENGTHS ARE FOR PLAIN UNWRAPPED DUCTILE IRON PIPE.
 - THE CONTRACTOR SHALL USE THIS TABLE IN CONJUNCTION WITH THE APPROPRIATE PIPE SPECIFICATION SECTION.



TEE DETAIL
(PLAN VIEW)



CAP DETAIL
(PLUG SIMILAR)
(SECTION VIEW)



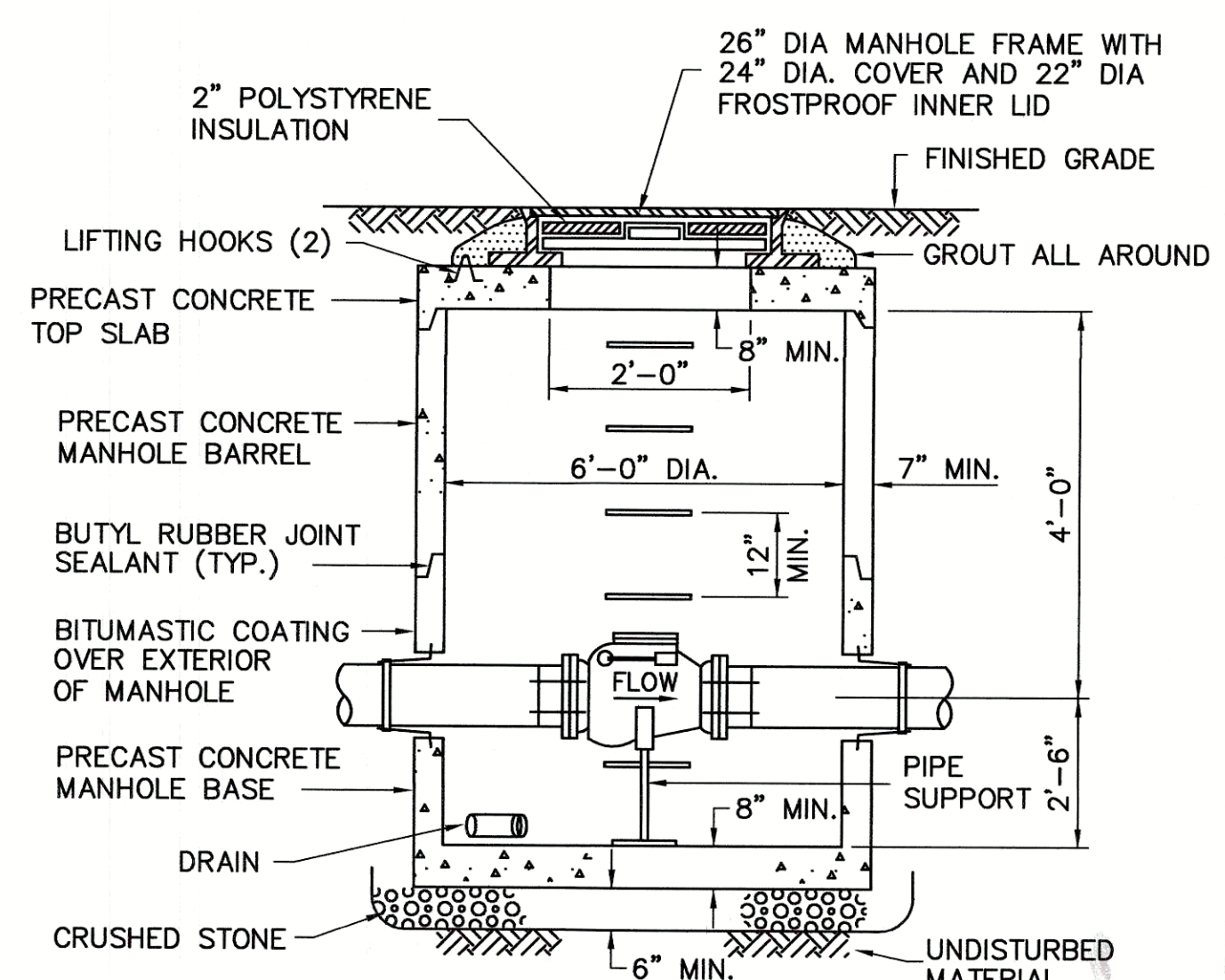
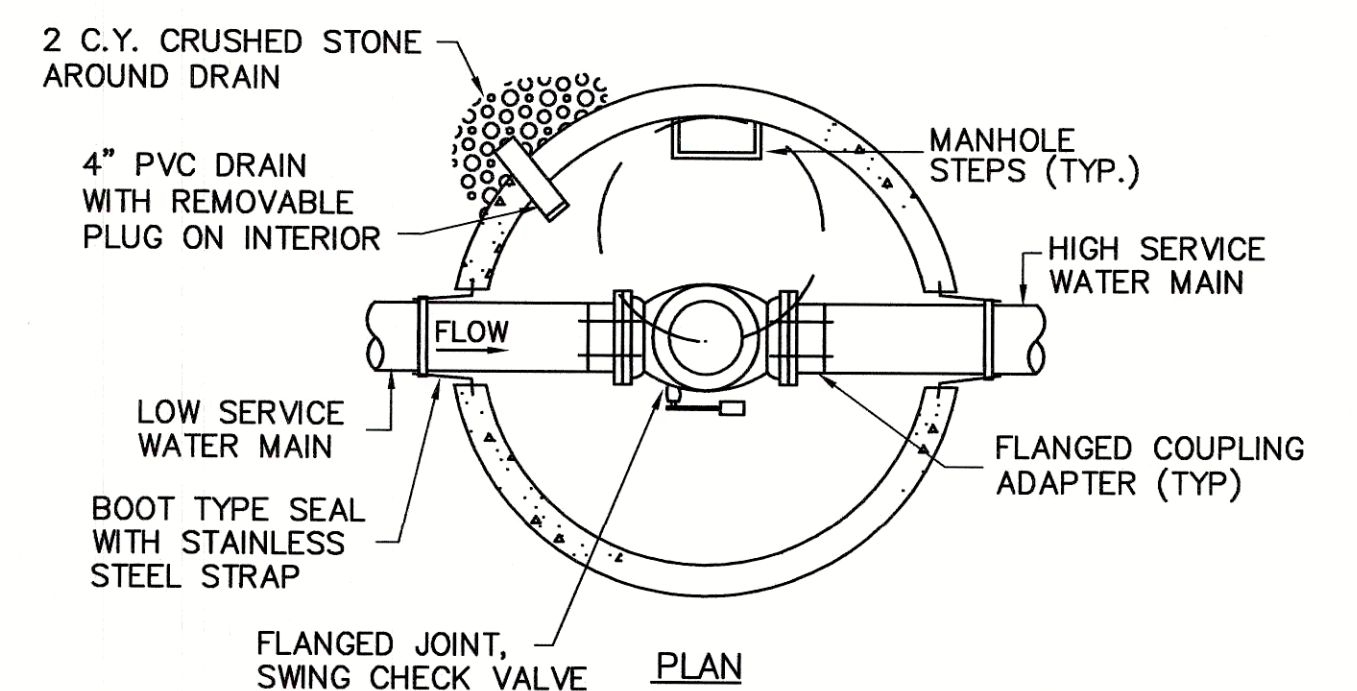
BEND DETAIL
(PLAN VIEW)

TABLE OF CONCRETE THRUST RESTRAINT MINIMUM BEARING AREAS IN SQUARE FEET AGAINST UNDISTURBED MATERIAL FOR WATER MAIN FITTINGS

SIZE OF MAIN	90° BENDS, TEES, CAPS AND PLUGS	45° BENDS AND WYES	22-1/2° BENDS	11-1/4° BENDS
6", 8"	5	4	2	2
10", 12"	12	9	5	2

- NOTES:
- CONCRETE THRUST RESTRAINT SHALL ONLY BE USED WHERE OTHER MEANS OF RESTRAINT ARE NOT FEASIBLE.
 - CONTRACTOR SHALL USE CARE TO AVOID PLACEMENT OF CONCRETE ON THE FITTING JOINTS

CONCRETE THRUST RESTRAINT FOR FITTINGS
N.T.S.

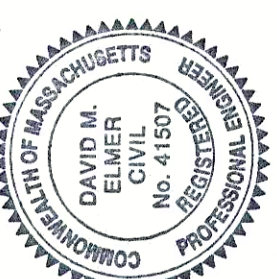


CHECK VALVE MANHOLE DETAIL
N.T.S.

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No.	Date	Dr. By	Ck. By	App. By	Description
1	12/16/15				D
2					E
3					V
4					O
5					R
6					P
7					A

REGISTERED PROFESSIONAL ENGINEER



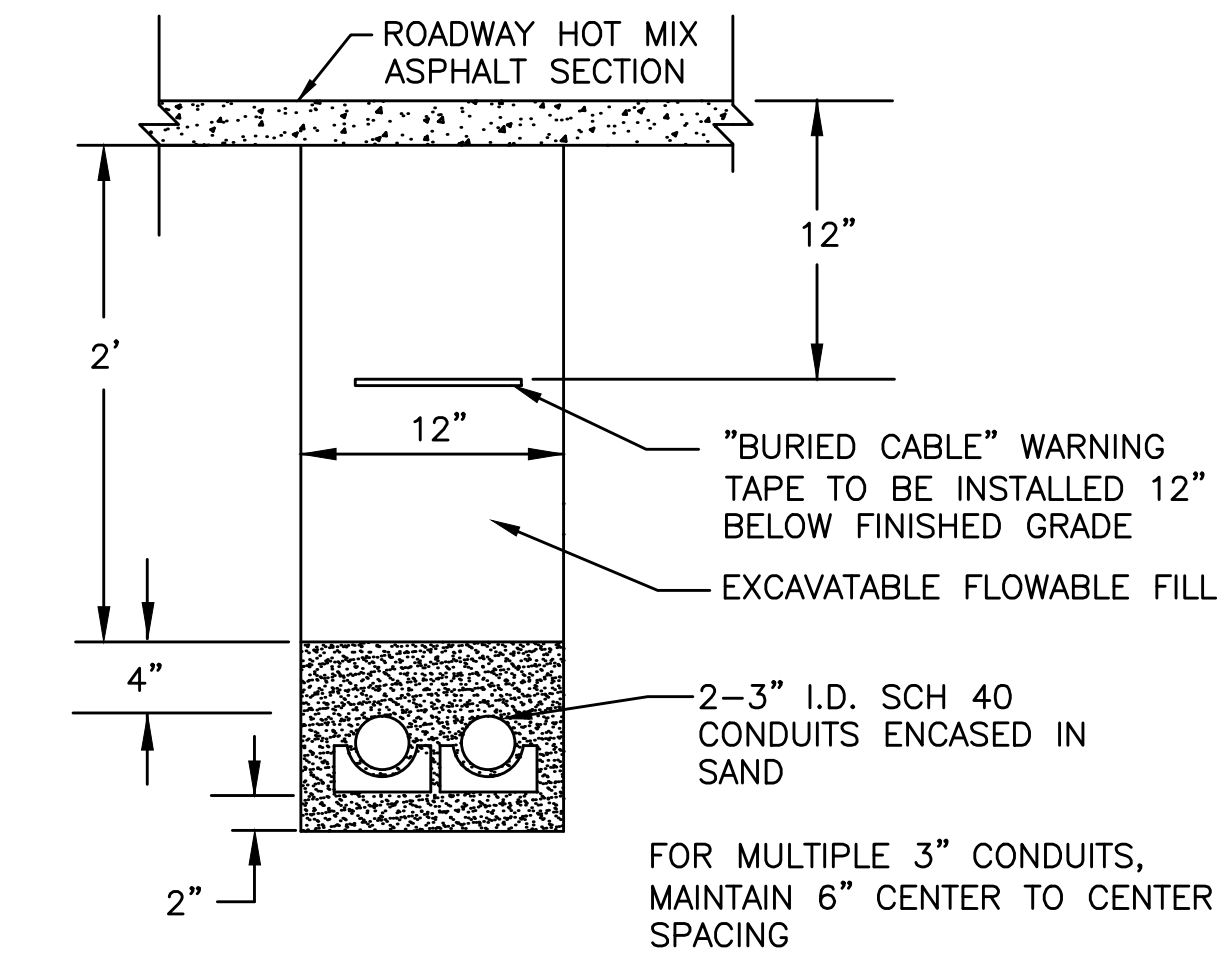
CITY OF SOMERVILLE, MASSACHUSETTS
DEPARTMENT OF PUBLIC WORKS
CEDAR STREET SEWER SEPARATION PROJECT

DETAILS

CONTRACT	SCALE	AS NOTED	DR. BY	DSN. BY	CHK. BY	APP. BY
21-306.36			RKP	PRG	DME	DME

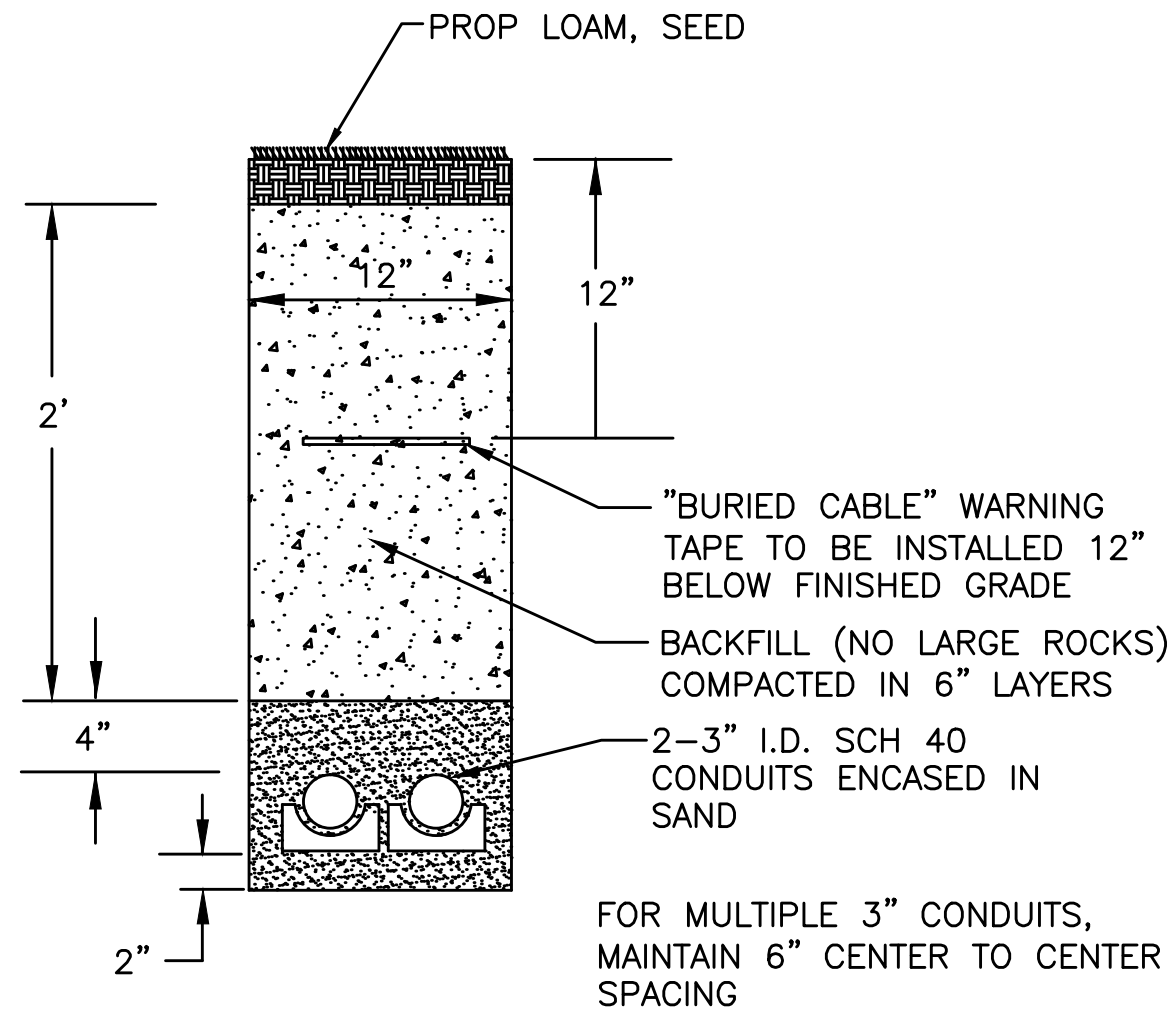
CADD NO. 214-62

D-5



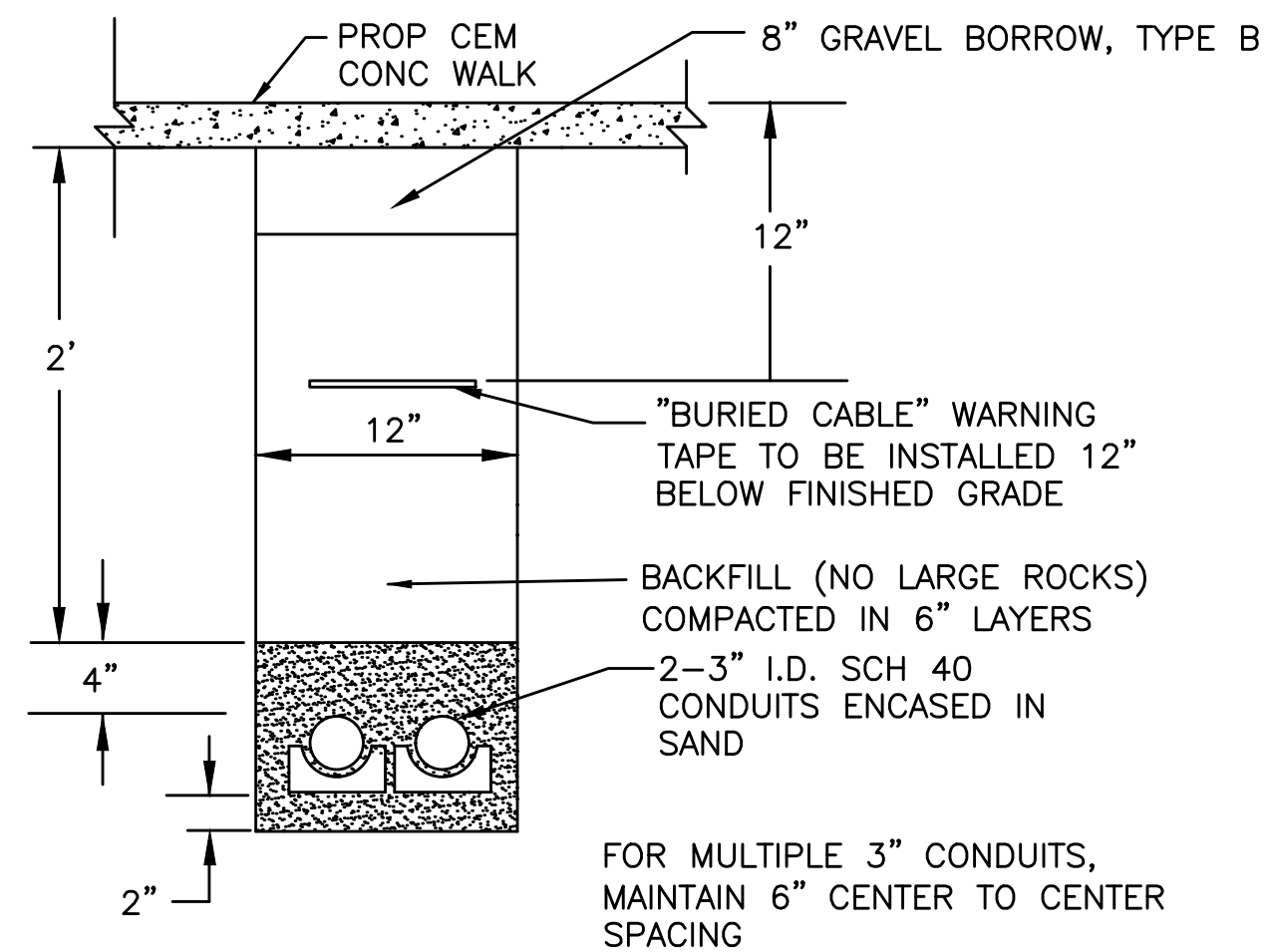
UTILITY TRENCH IN ROADWAY DETAIL

N.T.S.



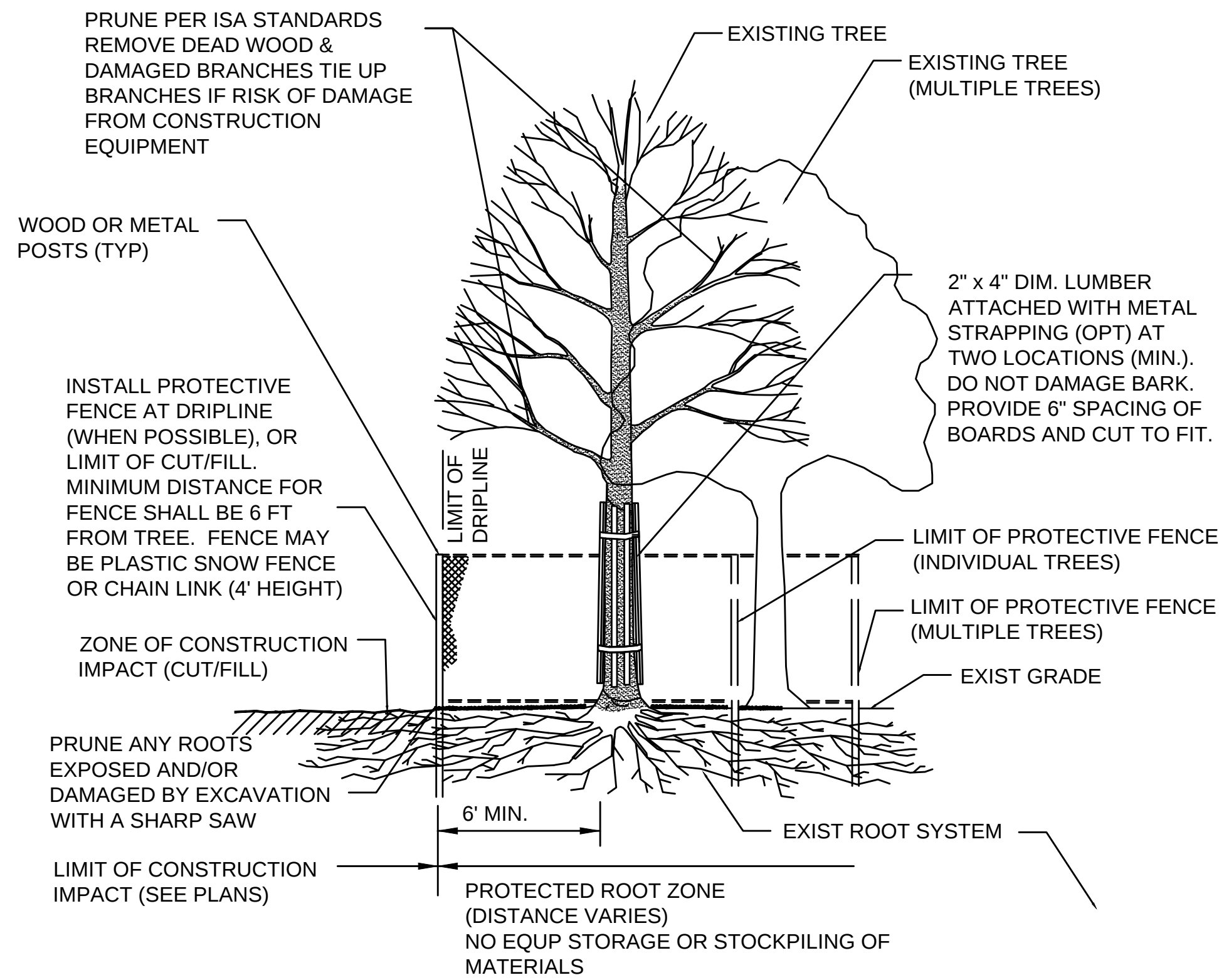
UTILITY TRENCH IN GRASS DETAIL

N.T.S.



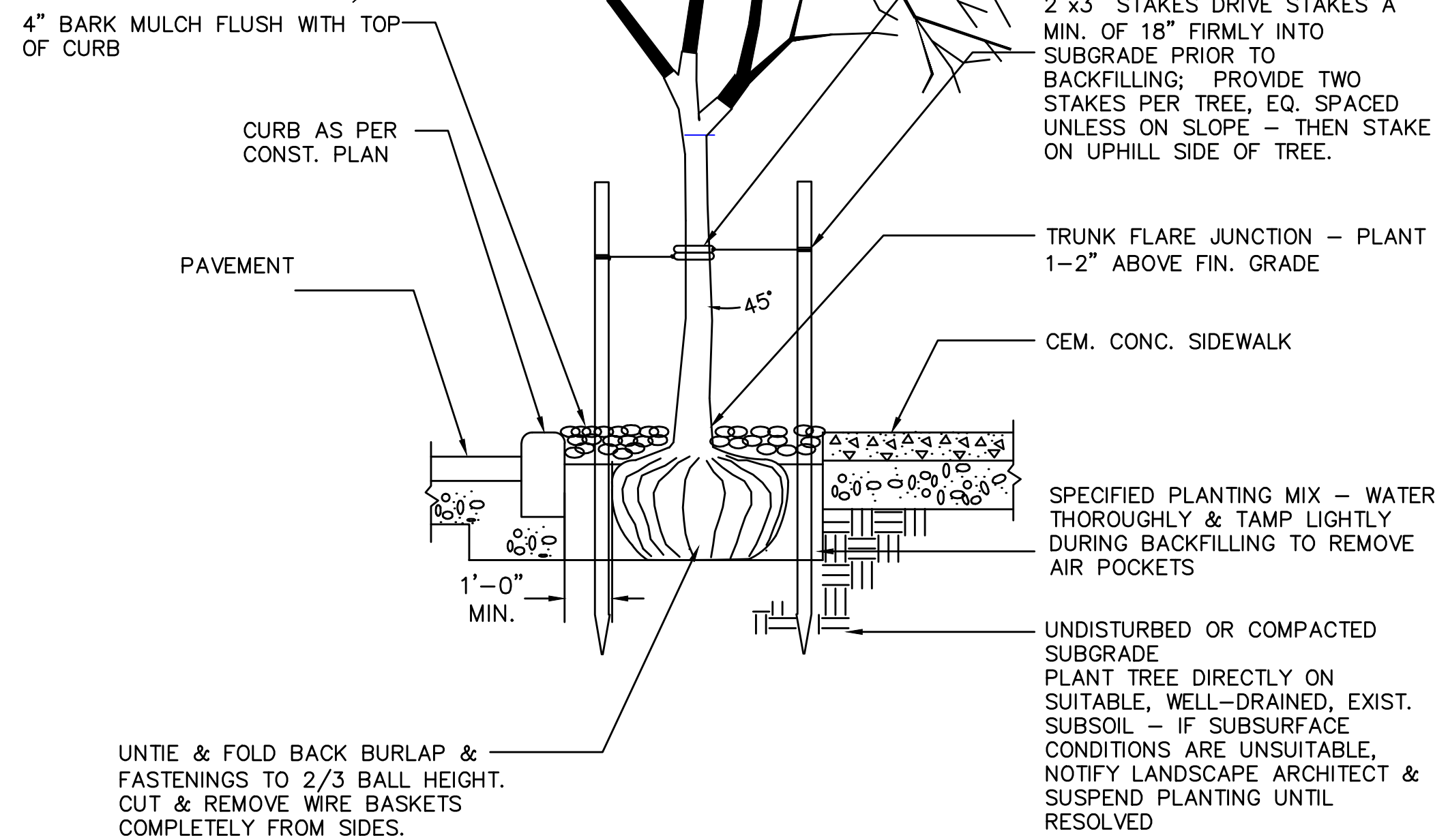
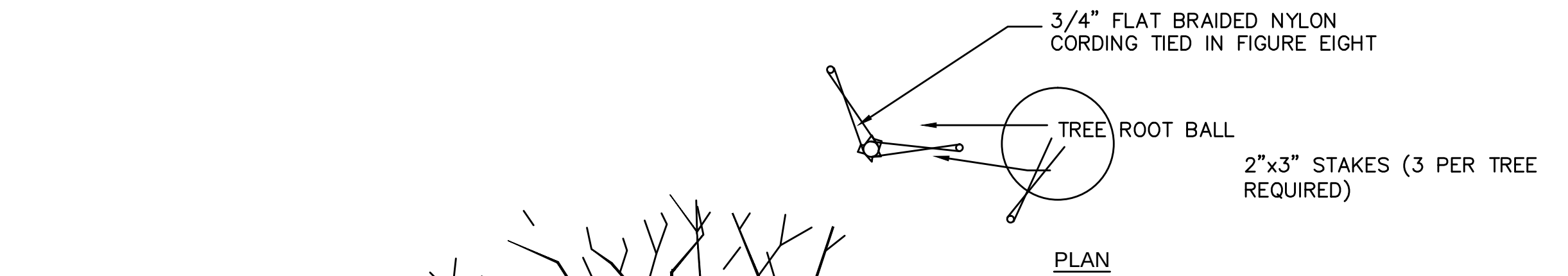
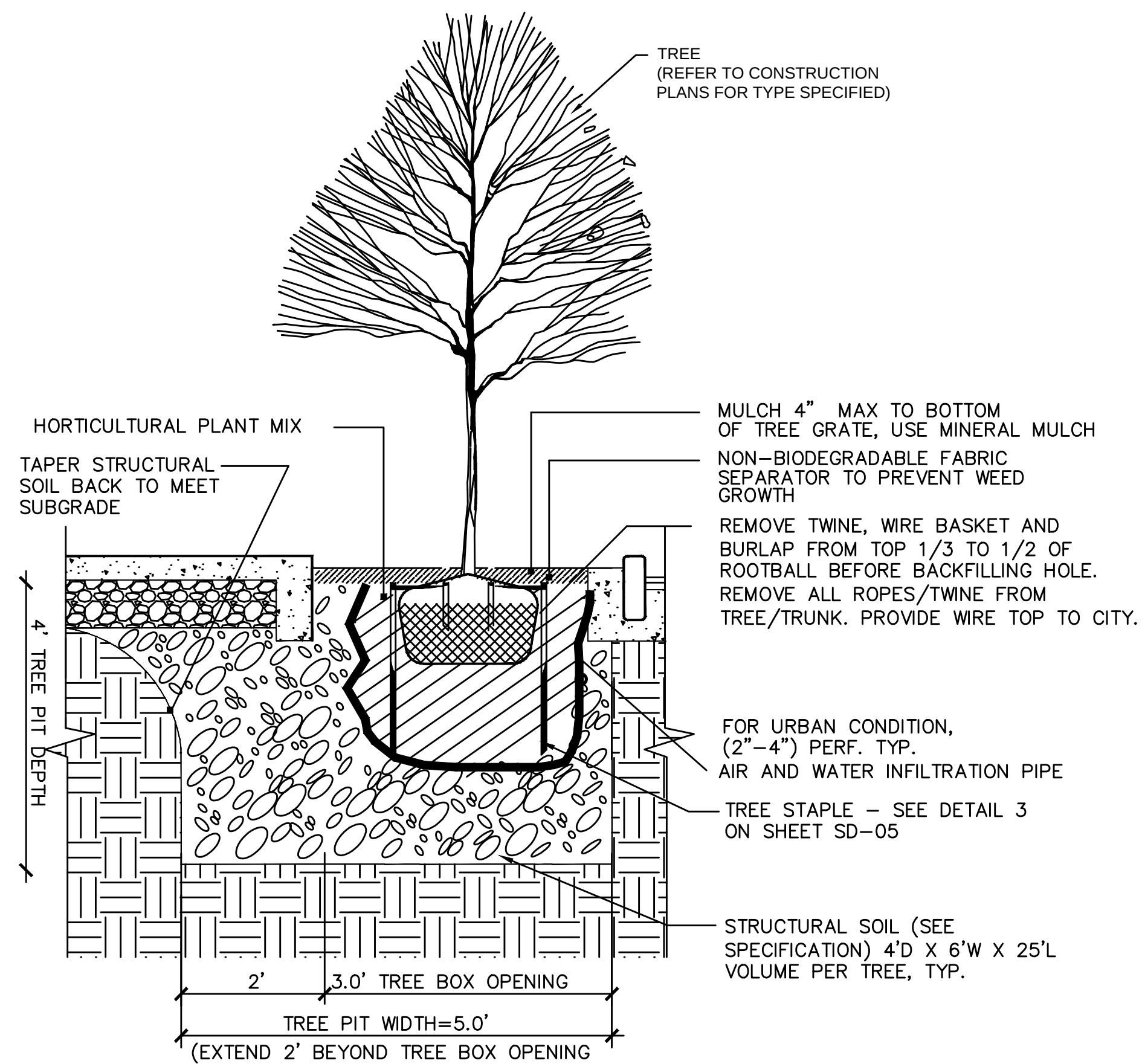
UTILITY TRENCH IN WALK DETAIL

N.T.S.



EXISTING TREE PROTECTION

N.T.S.



CONDITION A
PLANTING IN PAVED AREAS

CONDITION B
PLANTING IN LAWN AREAS OR
PLANTING BEDS

TREE STAKING & PLANTING - 2 CONDITIONS

N.T.S.

PLANTING SCHEDULE

KEY	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONDITION	BLOOM TIME	EXPOSURE	COMMENTS
TREES								
ARK	5	Acer Rubrum 'Karpick'	Karpick Red Maple	3.5" Caliper	B&B, dense growth	March	Full Sun/ Part Shade	

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DATE

12-10-15

REGISTERED PROFESSIONAL ENGINEER

LAURENCE E. KARPICK, JR.

NO. 33708

COMMONWEALTH OF MASSACHUSETTS

LAURENCE E. KARPICK, JR.

NO. 33708

REGISTERED PROFESSIONAL ENGINEER

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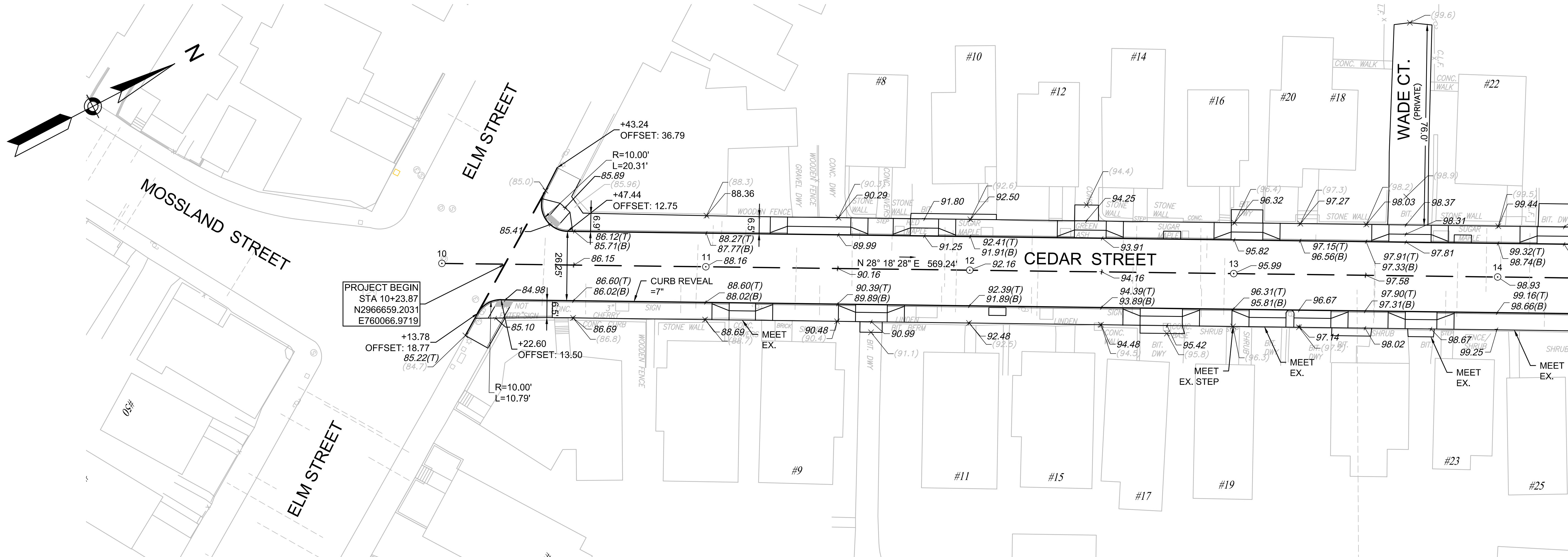
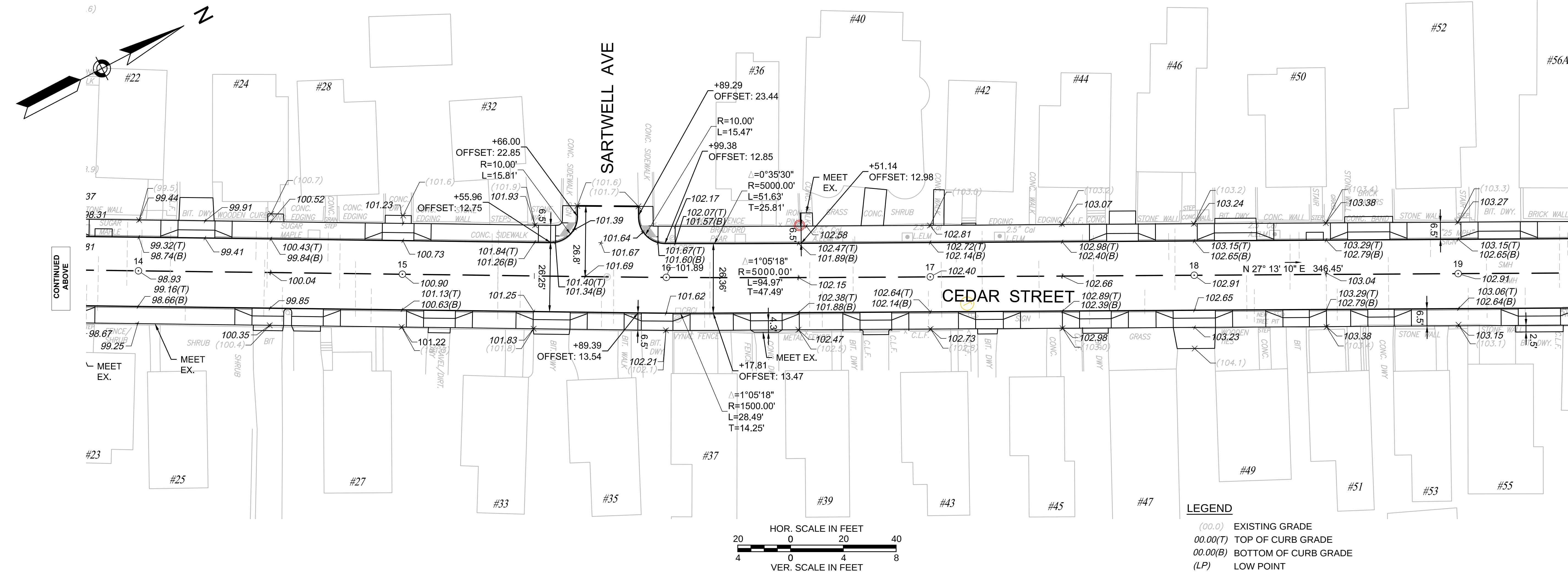
REGISTERED PROFESSIONAL ENGINEER

LAURENCE E. KARPICK, JR.

NO. 33708

REGISTERED PROFESSIONAL ENGINEER

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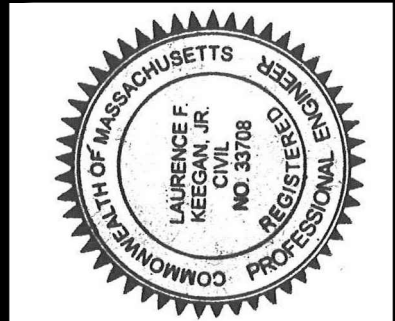


G-1

SHEET 24 OF 33

CITY OF SOMERVILLE, MASSACHUSETTS
DEPARTMENT OF PUBLIC WORKS
CEDAR STREET SEWER SEPARATION PROJECT
CURB TIE AND GRADING PLAN

CADD NO. SCALE: AS NOTED CONTRACT: 2130636 JOB NO. DR BY: RKP CHK BY: RKP APP BY: LFK



Lawrence F. Keegan, Jr.
REGISTERED PROFESSIONAL ENGINEER

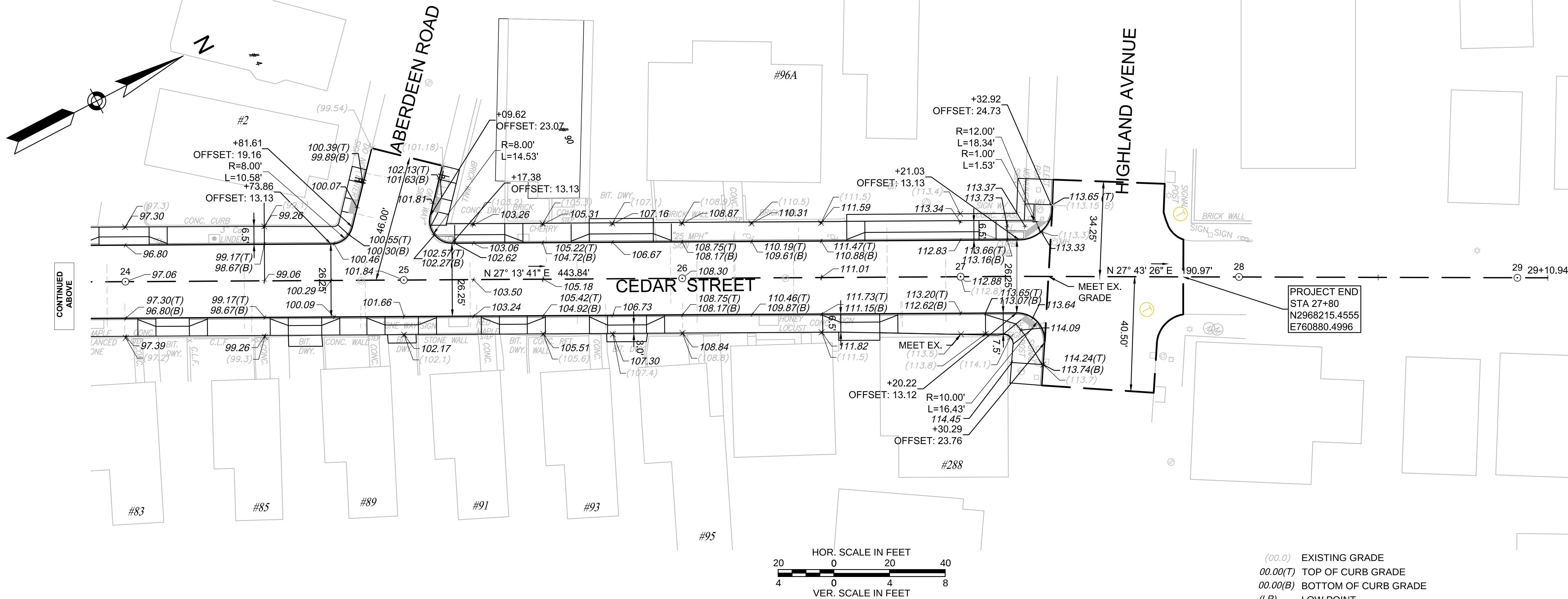
DATE 12-10-15

No.	Date	Dr. By	Ck. By	App. By	Description			
		A	P	P	R	O	V	E

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Z:\Shared-Projects\Somerville\2130635 - Cedar Street Sewer Separation\CAD Design\Roadway\33.24_Curb Tie and Grading Plan.dwg



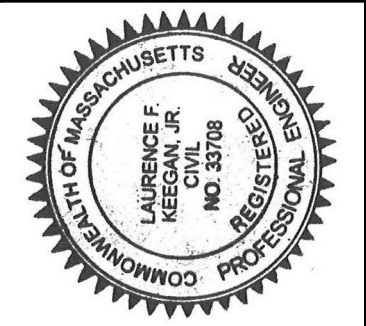
(00.0) EXISTING GRADE
(00.0(T) TOP OF CURB GRADE
(00.0(B) BOTTOM OF CURB GRADE
(LP) LOW POINT

G-2

SHEET 25 OF 33

CITY OF SOMERVILLE, MASSACHUSETTS
DEPARTMENT OF PUBLIC WORKS
CEDAR STREET SEWER SEPARATION PROJECT
CURB TIE AND GRADING PLAN

CADD NO. SCALE: AS NOTED CONTRACT: 2130636 JOB NO. 2130636 DR BY RKP CHK BY RKP APP BY LFK

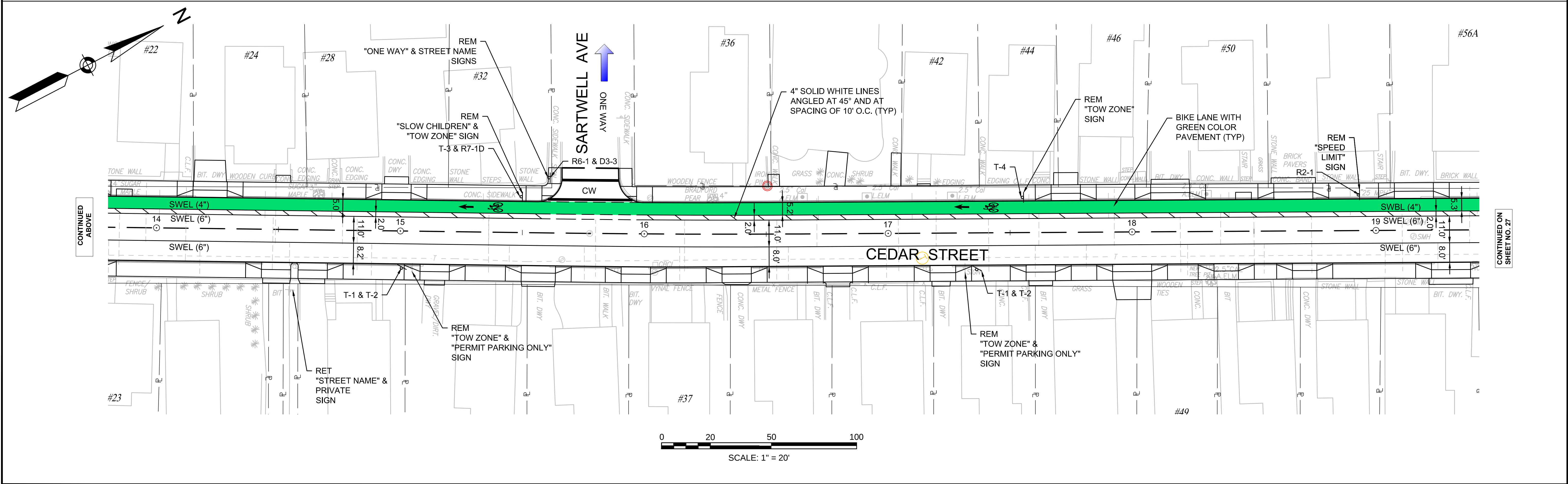
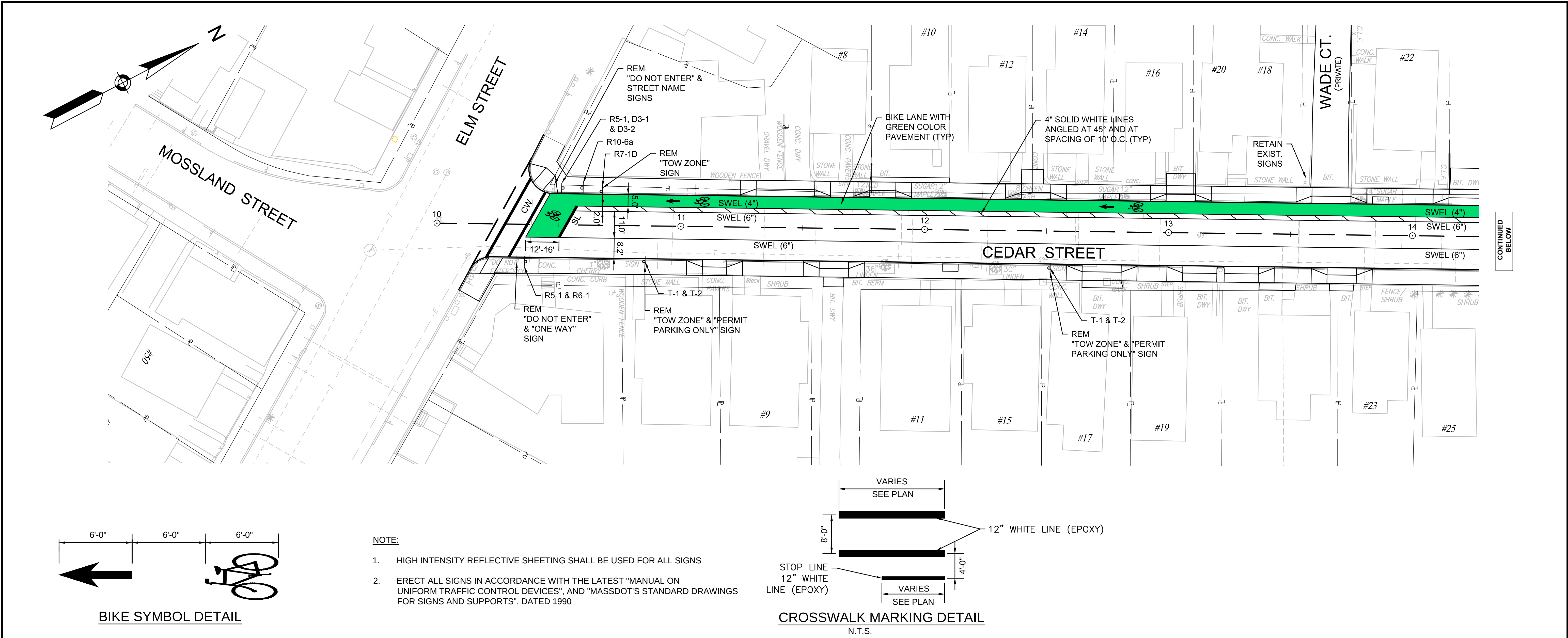


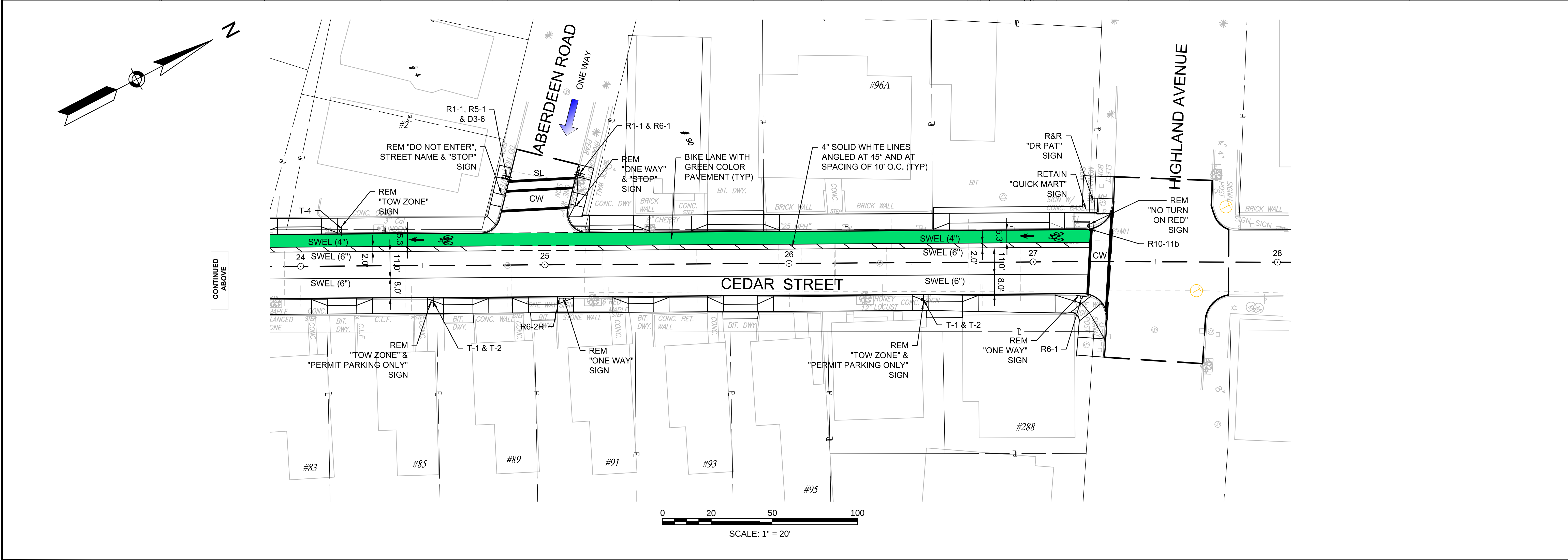
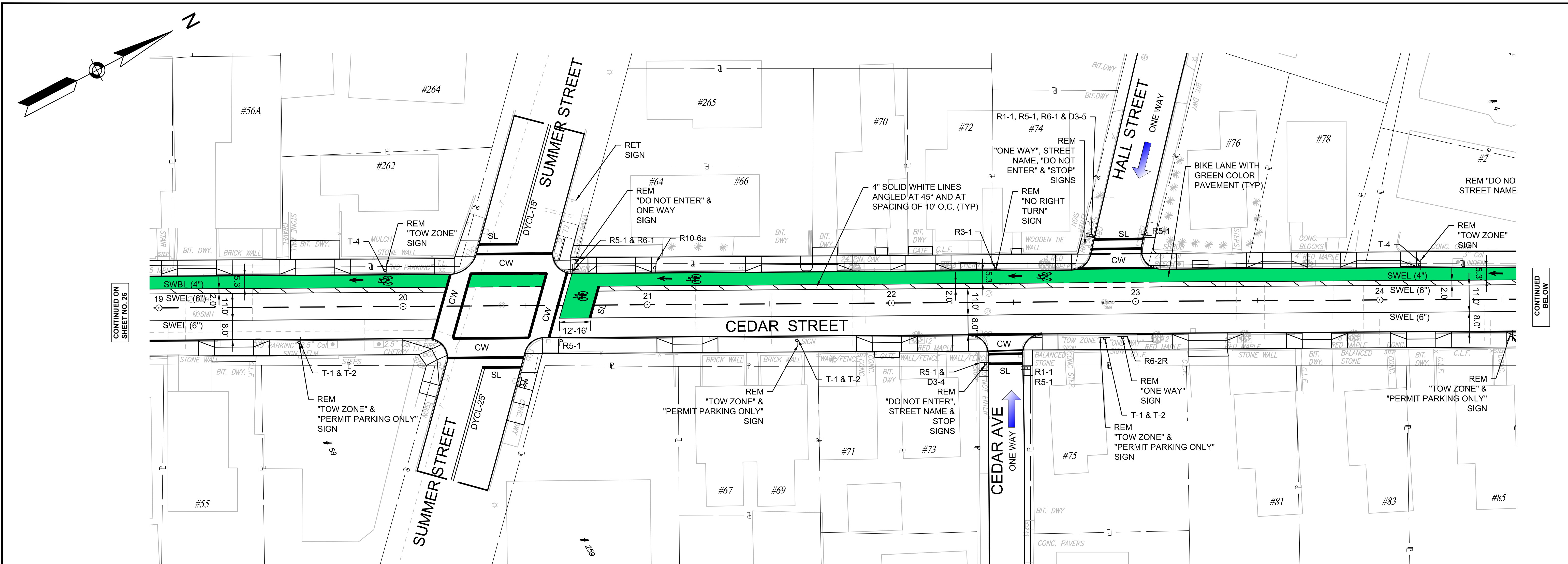
REGISTERED PROFESSIONAL ENGINEER
Lawrence F. Keegan, Jr.
DATE 12-10-15

No.	Date	Dr. By	Ck. By	App. By	Description
		A	P	R	O
					V
					E
					D

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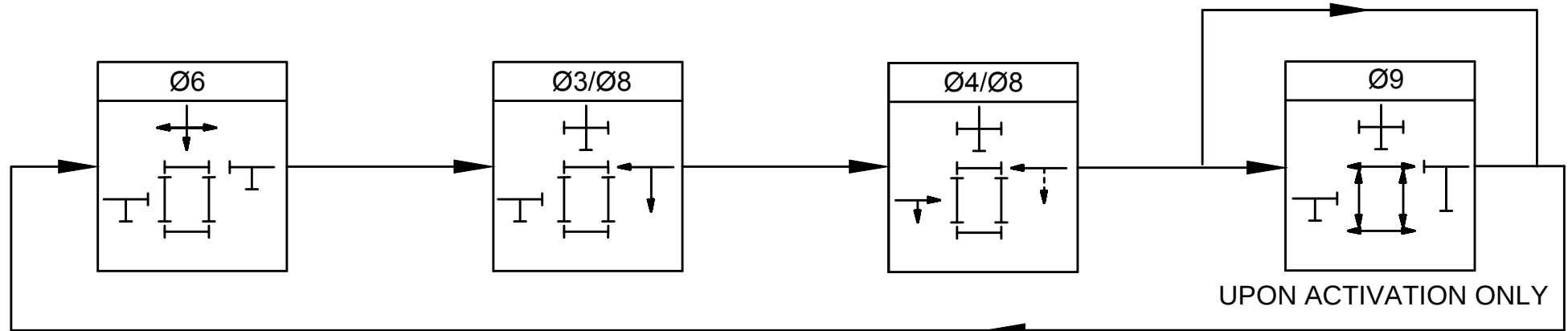




 PERMISSIVE TURN  PROTECTED TURN		$\phi 3$ 	$\phi 4$ 	$\phi 6$ 	$\phi 8$ 	$\phi 9$ 	$\phi 6$ 	$\phi 4$ 	$\phi 8$ 
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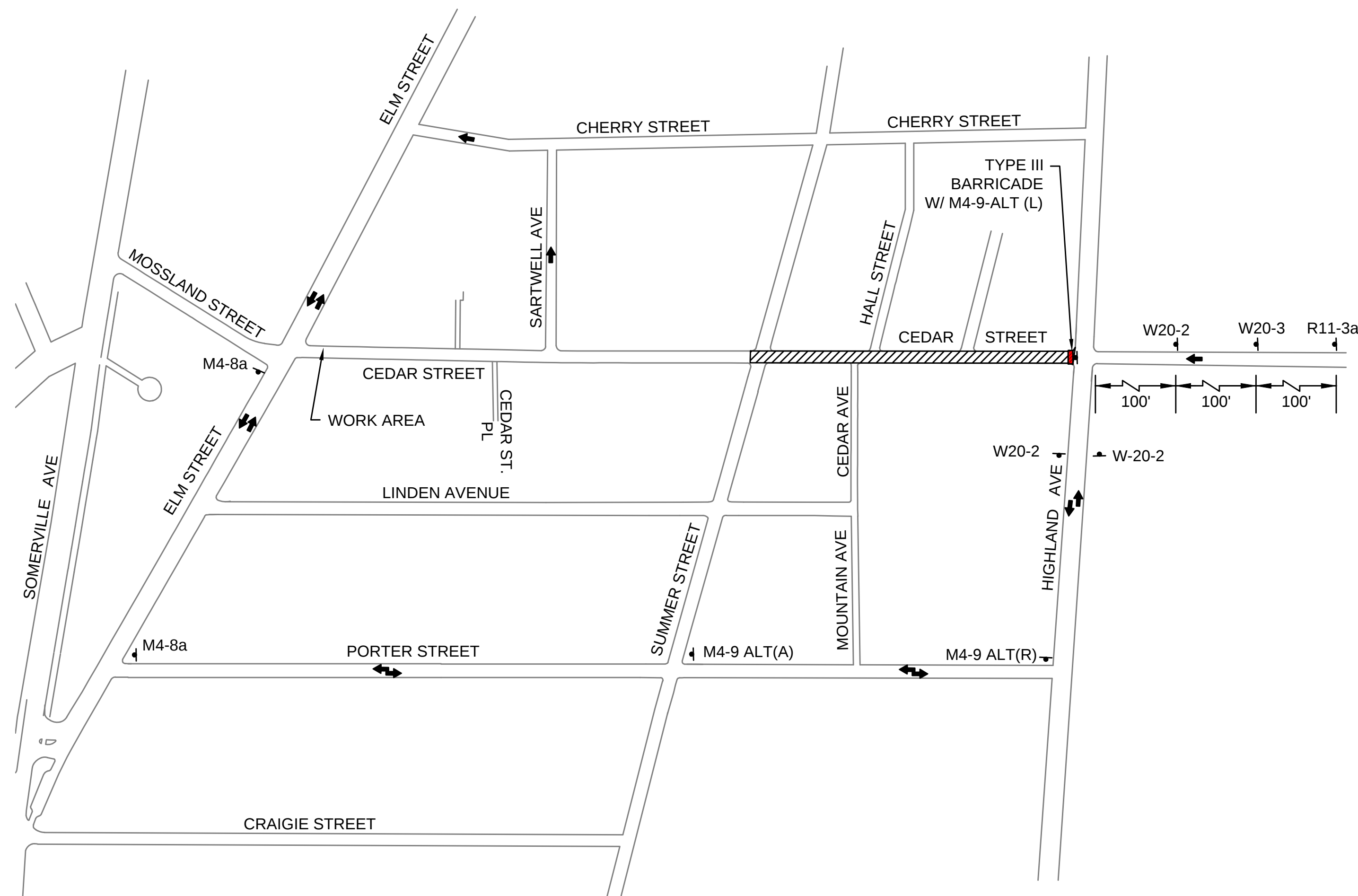
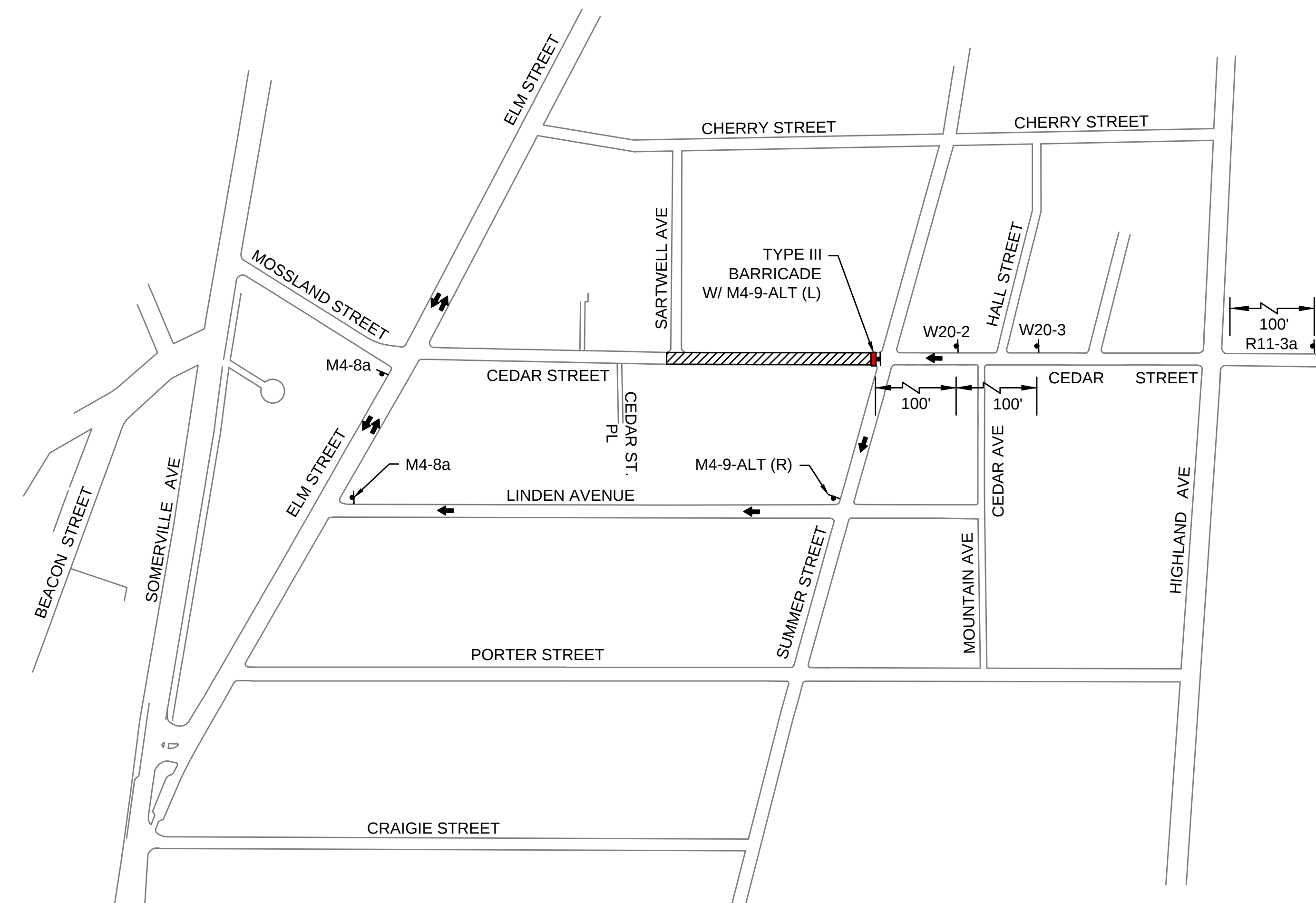
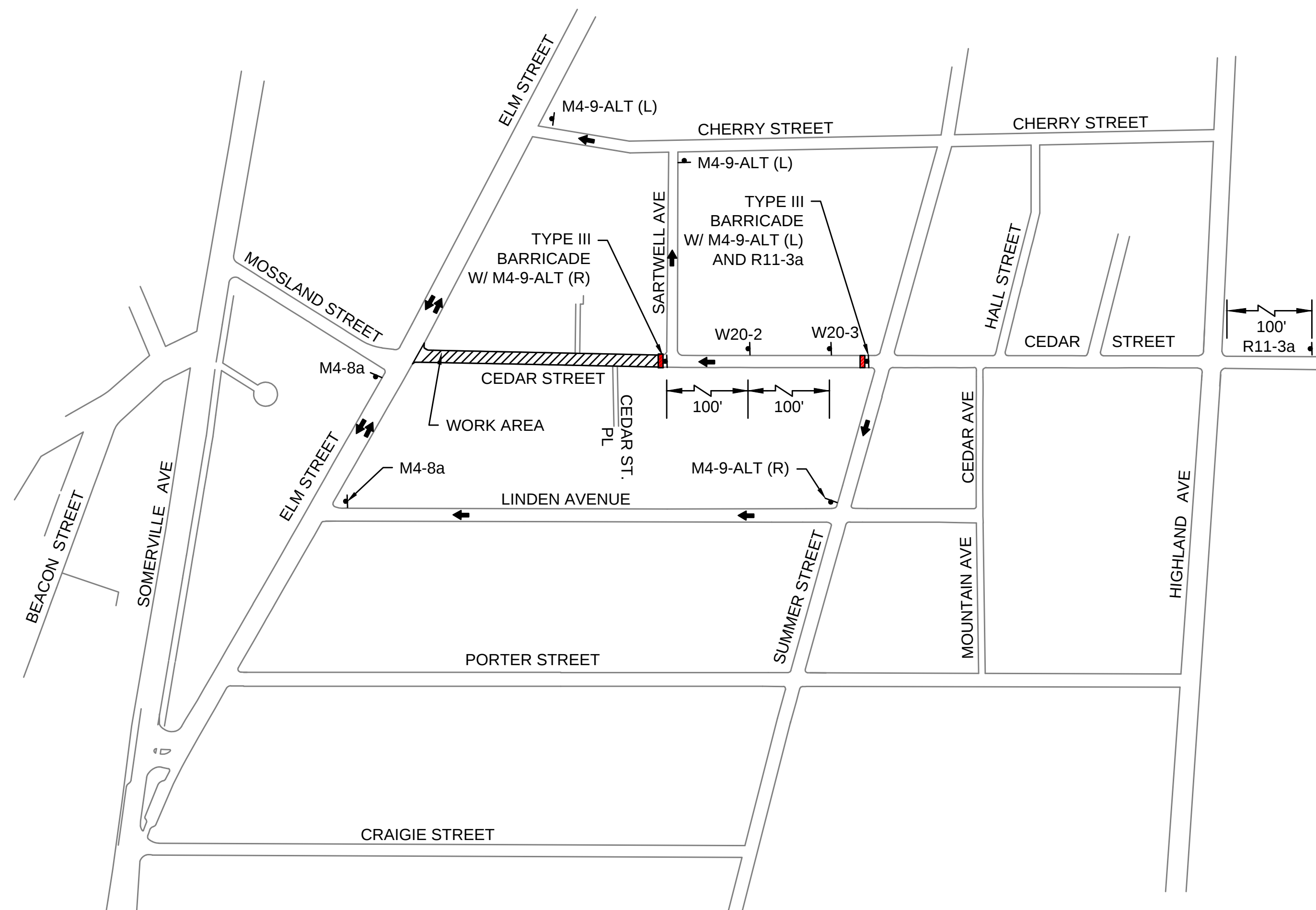


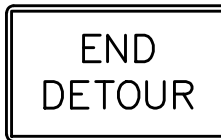
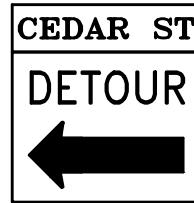
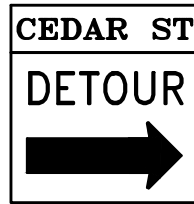
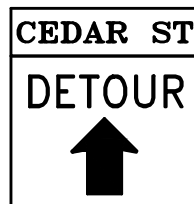
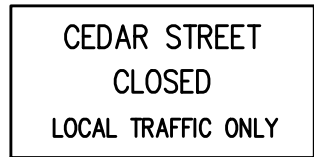
TRAFFIC SIGNALS CONSTRUCTION LIST OF MAJOR ITEMS	
QUAN.	DESCRIPTION
1	T.S. CONTROLLER TYPE 8DW ON BASE MOUNTED 8-PHASE CABINET & FOUNDATION
2	SIGNAL HEAD, 1-WAY - 4 SECTION - 12" LENS
4	SIGNAL HEAD, 1-WAY-3 SECTION-12" LENS
9	12"x12" PULL BOX
1	SERVICE CONNECTION - UNDERGROUND
1	PREEMPTION CONFIRMATION STROBE (CLEAR)
1	4-CHANNEL PHASE SELECTOR
1	SYSTEM CHASSIS (CARD RACK)
3	OPTICAL PREEMPTION RECEIVER
6	8' PEDESTAL POLES, BASE & FOUNDATION
8	PEDESTRIAN SIGNAL HEADS
8	APS PED PUSH BUTTONS-PLACED PARALLEL TO DIRECTION OF FLOW
IN ADDITION, ALL MISC. EQUIPMENT, CABLE AND INCIDENTALS NECESSARY TO PROVIDE A COMPLETE OPERATING TRAFFIC CONTROL SIGNAL	



EMERGENCY VEHICLE PREEMPTION	
EB - REC#1	4
WB - REC#2	8
SB - REC#3	6

1. MINIMUM CLEARANCE TIME SHALL BE 3 SECONDS OR AS DIRECTED BY MASSDOT AND THE LOCAL FIRE DEPARTMENT.
2. WHERE IDENTIFIED ON THE PLANS, THE PROPOSED LOCATIONS OF THE OPTICAL DETECTOR UNITS AND CONFIRMATION BEACONS ARE PERCEIVED BEST BUT NOT FINAL. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ENSURE OPTIMUM PLACEMENT IN COOPERATION WITH THE LOCAL FIRE DEPARTMENT. THE OPTICAL DETECTOR UNITS SHALL HAVE AN UNOBSTRUCTED LINE-OF-SIGHT VIEW ALONG THE ROUTE OF APPROACHING PRIORITY VEHICLE.



IDENTIFICATION NUMBER	SIZE OF SIGN		TEXT	NOTES
	WIDTH	HEIGHT		
M4-8a	24"	18"		
M4-9-ALT (L)	30"	48"		
M4-9-ALT (R)	30"	48"		
M4-9-ALT (A)	30"	48"		
W20-1	48"	48"		
W20-2	36"	36"		
W20-3	48"	48"		
R11-3a	60"	30"		

LEGEND:

- | | | | |
|---|---|---|---------------------------------------|
|  | REFLECTORIZED PLASTIC DRUM
OR 36" CONE |  | WORK ZONE |
| P/F | POLICE/FLAGGER DETAIL |  | DIRECTION OF TRAFFIC |
|  | TYPE III BARRICADE |  | MEDIAN BARRIER |
|  | ARROW BOARD |  | MEDIAN BARRIER WITH
WARNING LIGHTS |
| | |  | SIGN |