

TRANSPORTATION IMPROVEMENT PROJECT

PLAN AND PROFILE OF
PARKER STREET

IN THE CITY
NEWBURYPORT
ESSEX COUNTY

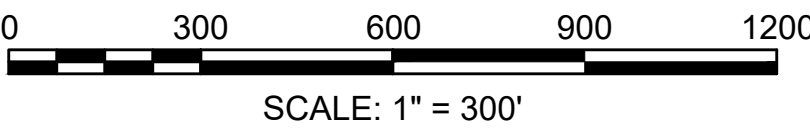
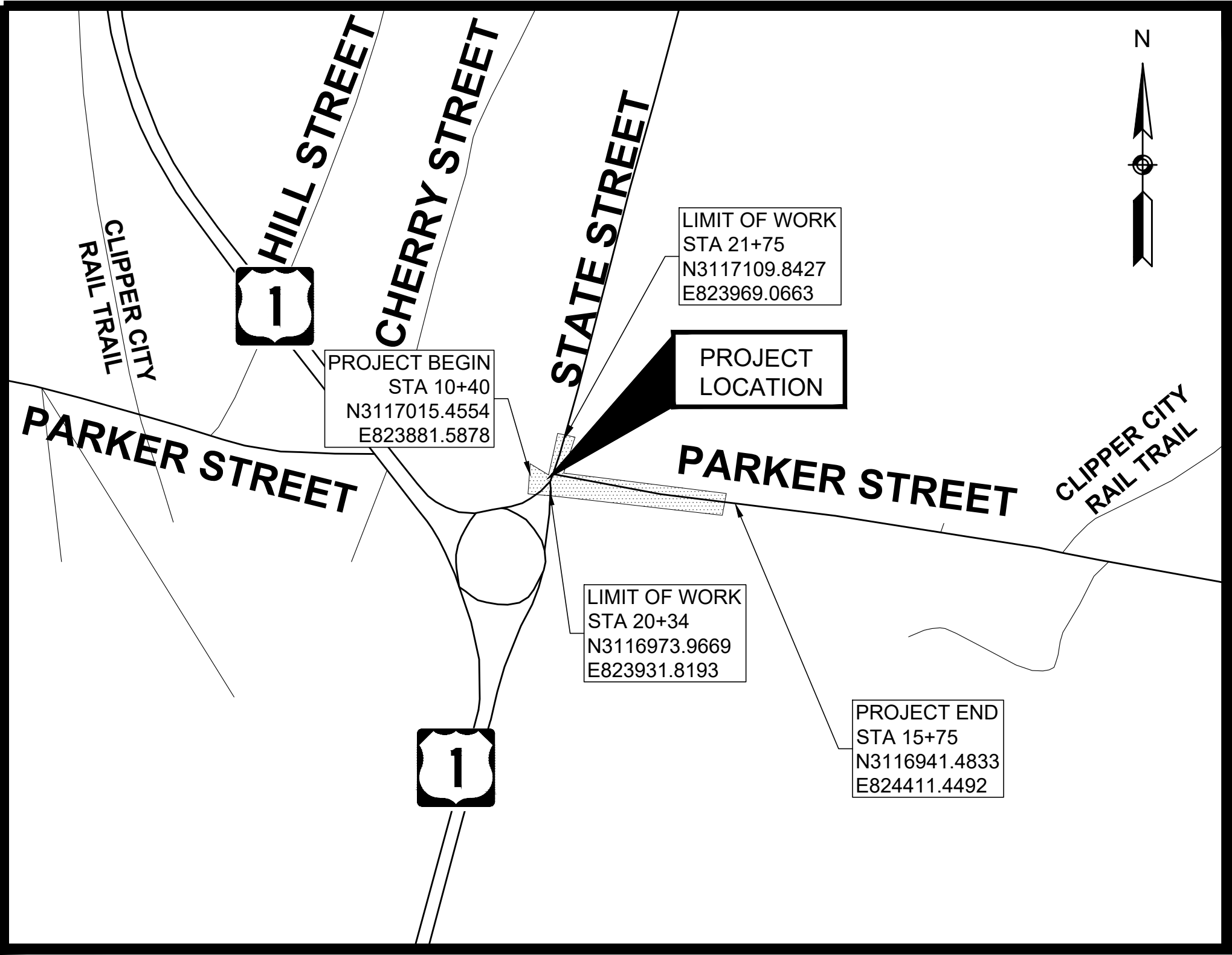
NEWBURYPORT
PARKER STREET TRAIL
TITLE SHEET & INDEX
SHEET 1 OF 18

THESE PLANS ARE SUPPLEMENTED BY THE OCTOBER 2017 CONSTRUCTION STANDARD DETAILS, THE 2015 OVERHEAD SIGNAL STRUCTURE AND FOUNDATION STANDARD DRAWINGS, MASSDOT TRAFFIC MANAGEMENT PLANS AND DETAIL DRAWINGS, THE 1990 STANDARD DRAWINGS FOR SIGNS AND SUPPORTS, THE 1968 STANDARD DRAWINGS FOR TRAFFIC SIGNALS AND HIGHWAY LIGHTING, AND THE LATEST EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK.

100% SUBMITTAL

INDEX

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LENGTH OF PROJECT (PARKER STREET) = 535 FEET = 0.101 MILES
LENGTH OF PROJECT (STATE STREET) = 141 FEET = 0.027 MILES
TOTAL LENGTH OF PROJECT = 676 FEET = 0.128 MILES

DESIGN DESIGNATION

	PARKER STREET	STATE STREET
DESIGN SPEED	40 MPH	40 MPH
FUNCTIONAL CLASSIFICATION	URBAN MINOR ARTERIAL	URBAN PRINCIPAL ARTERIAL

06/26/2020	100% SUBMITTAL	1
04/15/2020	50% SUBMITTAL	-
DATE	DESCRIPTION	REV #
146 Dascomb Road Andover, MA 01810 978-794-1792 311 Main Street 2nd Floor Worcester, MA 01608 508-868-5104 169 Ocean Blvd, Unit 3 PO Box 249 Hampton, NH 03842 603-601-8154 www.TheEngineeringCorp.com		
DESIGNED BY RLC	CHECKED BY LSA	DATE 06/26/2020
DRAWN BY DPS	APPROVED BY LSA	PROJECT NO. T0936

EXISTING	PROPOSED	DESCRIPTION
JB	JB	JERSEY BARRIER
CB	CB/GI	CATCH BASIN OR GUTTER INLET
CB/GI	CB/GI	CATCH BASIN OR GUTTER INLET W/ CURB INLET
FP	FP	FLAG POLE
GP	GP	GAS PUMP
MB	MB	MAIL BOX
POST SQUARE	POST SQUARE	POST SQUARE
POST CIRCULAR	POST CIRCULAR	POST CIRCULAR
WELL	WELL	WELL
EHH	EHH	ELECTRIC HANDHOLE
FENCE GATE POST	FENCE GATE POST	FENCE GATE POST
GG	GG	GAS GATE
BHL #	BHL #	BORING HOLE
MW #	MW #	MONITORING WELL
TP #	TP #	TEST PIT
HYDRANT	HYDRANT	HYDRANT
LIGHT POLE	LIGHT POLE	LIGHT POLE
COUNTY BOUND	COUNTY BOUND	COUNTY BOUND
GPS POINT	GPS POINT	GPS POINT
CABLE MANHOLE	CABLE MANHOLE	CABLE MANHOLE
DRAINAGE MANHOLE	DRAINAGE MANHOLE	DRAINAGE MANHOLE
ELECTRIC MANHOLE	ELECTRIC MANHOLE	ELECTRIC MANHOLE
GAS MANHOLE	GAS MANHOLE	GAS MANHOLE
MISC MANHOLE	MISC MANHOLE	MISC MANHOLE
SEWER MANHOLE	SEWER MANHOLE	SEWER MANHOLE
TELEPHONE MANHOLE	TELEPHONE MANHOLE	TELEPHONE MANHOLE
WATER MANHOLE	WATER MANHOLE	WATER MANHOLE
MHB	MHB	MASSACHUSETTS HIGHWAY BOUND
MONUMENT	MONUMENT	MONUMENT
STONE BOUND	STONE BOUND	STONE BOUND
TOWN OR CITY BOUND	TOWN OR CITY BOUND	TOWN OR CITY BOUND
TRAVERSE OR TRIANGULATION STATION	TRAVERSE OR TRIANGULATION STATION	TRAVERSE OR TRIANGULATION STATION
TROLLEY POLE OR GUY POLE	TROLLEY POLE OR GUY POLE	TROLLEY POLE OR GUY POLE
TRANSMISSION POLE	TRANSMISSION POLE	TRANSMISSION POLE
UTILITY POLE W/ FIREBOX	UTILITY POLE W/ FIREBOX	UTILITY POLE W/ FIREBOX
UTILITY POLE WITH DOUBLE LIGHT	UTILITY POLE WITH DOUBLE LIGHT	UTILITY POLE WITH DOUBLE LIGHT
UTILITY POLE W / 1 LIGHT	UTILITY POLE W / 1 LIGHT	UTILITY POLE W / 1 LIGHT
UTILITY POLE	UTILITY POLE	UTILITY POLE
BUSH	BUSH	BUSH
TREE	TREE	TREE
STUMP	STUMP	STUMP
SWAMP / MARSH	SWAMP / MARSH	SWAMP / MARSH
WATER GATE	WATER GATE	WATER GATE
WATER SHUTOFF/CURB STOP	WATER SHUTOFF/CURB STOP	WATER SHUTOFF/CURB STOP
PARKING METER	PARKING METER	PARKING METER

TRAFFIC SYMBOLS		
EXISTING	PROPOSED	DESCRIPTION
		CONTROLLER CABINET, FOUNDATION
		CONTROLLER CABINET, FOUNDATION, CONC. PAD
		MAST ARM FOUNDATION (SCALE OF BLOCK = DIAMETER IN INCHES)
		MAST ARM (LENGTH NOTED)
		EMERGENCY PREEMPTION CONFIRMATION STROBE LIGHT
		VEHICULAR SIGNAL HEAD
		PEDESTRIAN SIGNAL HEAD
		MAST ARM OR TS POLE MOUNTED SIGN
		EMERGENCY PRE-EMPTION RECEIVER
		EMERGENCY PRE-EMPTION CONFIRMATION STROBE
		PEDESTRIAN PUSH BUTTON
		YAGI ANTENNA
		BICYCLE WIRE LOOP DETECTOR (SIZE AS NOTED)
		WIRE LOOP DETECTOR (SIZE AND TYPE NOTED)
		TRAFFIC SIGN (1 POST)
		TRAFFIC SIGN (2 POST)
		PULL BOX 12"x12" (OR AS NOTED)
		ELECTRIC HANDHOLE 12"x24" (OR AS NOTED)
		TRAFFIC SIGNAL CONDUIT

EXISTING	PROPOSED	DESCRIPTION
		PAVEMENT ARROW - WHITE
		LEGEND "ONLY" - WHITE
		BIKE LANE LEGEND - WHITE
		STOP LINE
		CROSSWALK
		SOLID WHITE LINE
		SOLID YELLOW LINE
		BROKEN WHITE LINE
		BROKEN YELLOW LINE
		DOTTED WHITE LINE
		DOTTED YELLOW LINE
		DOTTED WHITE LINE EXTENSION
		DOTTED YELLOW LINE EXTENSION
		DOUBLE WHITE LINE
		DOUBLE YELLOW LINE
		DOUBLE WHITE LINE
		DOUBLE YELLOW LINE

EXISTING CONDITIONS INFORMATION COMPILED FROM SURVEY BY HANCOCK SURVEY ASSOCIATES, BOSTON, MA PERFORMED IN OCTOBER, 2019.

HORIZONTAL DATUM = NAD83 (MASSACHUSETTS STATE PLANE COORDINATES)
VERTICAL DATUM = NAVD88

- ALL EXISTING STATE, COUNTY, AND TOWN LOCATION LINES HAVE BEEN ESTABLISHED FROM AN ACTUAL ON-THE-GROUND SURVEY. ALL PRIVATE PROPERTY LINES HAVE BEEN ESTABLISHED FROM AVAILABLE INFORMATION AND THEIR EXACT LOCATION ARE NOT GUARANTEED.
- THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL CONTACT DIGSAFE (1-888-DIGSAFE) A MINIMUM OF 72 HOURS PRIOR TO ANY CONSTRUCTION TO VERIFY THE LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.
- WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED TO THE ENGINEER FOR RESOLUTION OF THE CONFLICT.
- ALL MUNICIPALLY OWNED UTILITY STRUCTURES (CATCH BASINS, DRAIN MANHOLES, WATER GATES, ETC.) SHALL BE ADJUSTED BY THE CONTRACTOR TO FINISHED GRADE UNLESS DIRECTED OTHERWISE.
- ALL PRIVATELY OWNED UTILITY STRUCTURES (GAS GATES, ELECTRIC /TELEPHONE MANHOLES, ETC.) SHALL BE ADJUSTED TO FINISHED GRADE BY THE PRIVATE UTILITY COMPANY, UNLESS DIRECTED OTHERWISE. THE CONTRACTOR SHALL COORDINATE WITH PRIVATE UTILITY COMPANIES FOR THE ALTERATION AND ADJUSTMENT, AS NECESSARY.
- PROPOSED LATERAL DRAIN PIPES SHALL BE INSTALLED WITH A PITCH OF 2.0% (TYP) / 0.5% (MINIMUM) UNLESS OTHERWISE NOTED.
- AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTORS EXPENSE.

**NEWBURYPORT
PARKER STREET TRAIL
LEGEND & ABBREVIATIONS
SHEET 2 OF 18**

PAVEMENT NOTES

PROPOSED MILL & HOT MIX ASPHALT (HMA) OVERLAY

SURFACE: 1½" SUPERPAVE SURFACE COURSE - 12.5 (SSC - 12.5) OVER
VARIABLE DEPTH (COMPACTED IN 2" MAX LIFTS) SUPERPAVE
LEVELING COURSE - 9.5 (SSC - 9.5) (AS REQUIRED TO MEET PROPOSED
LINES AND GRADES) OVER
PAVEMENT MICROMILLING (VARIABLE DEPTH, MIN 1½")

PROPOSED FULL DEPTH PAVEMENT

SURFACE: 1½" SUPERPAVE SURFACE COURSE - 12.5 (SSC - 12.5) OVER
1¾" SUPERPAVE INTERMEDIATE COURSE - 19.0 (SIC - 19.0) OVER

BASE: 3¾" SUPERPAVE BASE COURSE - 37.5 (SBC - 37.5) OVER

SUBBASE: 12" GRAVEL BORROW, TYPE b

PROPOSED PERMANENT PAVEMENT TRENCH PATCH

SURFACE: VARIABLE DEPTH HMA FOR PATCHING TO MATCH EXISTING PAVEMENT PER SECTION 450.53
(COMPACTED IN 2" (MAX) LIFTS TO MATCH EXIST PAVEMENT THICKNESS)

BASE: 8" GRAVEL BORROW, TYPE b OVER

SUBBASE: EXISTING MATERIAL SUITABLE FOR RE-USE (SEE VARIOUS TRENCH DETAILS)

PROPOSED CEMENT CONCRETE SIDEWALKS / WHEELCHAIR RAMPS

SURFACE: 4" CEMENT CONCRETE (AIR ENTRAINED, 4000 PSI, ¾", 610)

BASE: 8" GRAVEL BORROW, TYPE b

PROPOSED HMA SHARED USE PATH

SURFACE: 1½" SUPERPAVE SURFACE COURSE - 9.5 (SSC - 9.5) OVER
2½" SUPERPAVE INTERMEDIATE COURSE - 19.0 (SIC - 19.0)

BASE: 8" GRAVEL BORROW, TYPE b (SEE PAVEMENT NOTE 8 BELOW)

SUBBASE: EXISTING SUBGRADE OR GRANULAR FILL (SEE NOTE 1 BELOW)

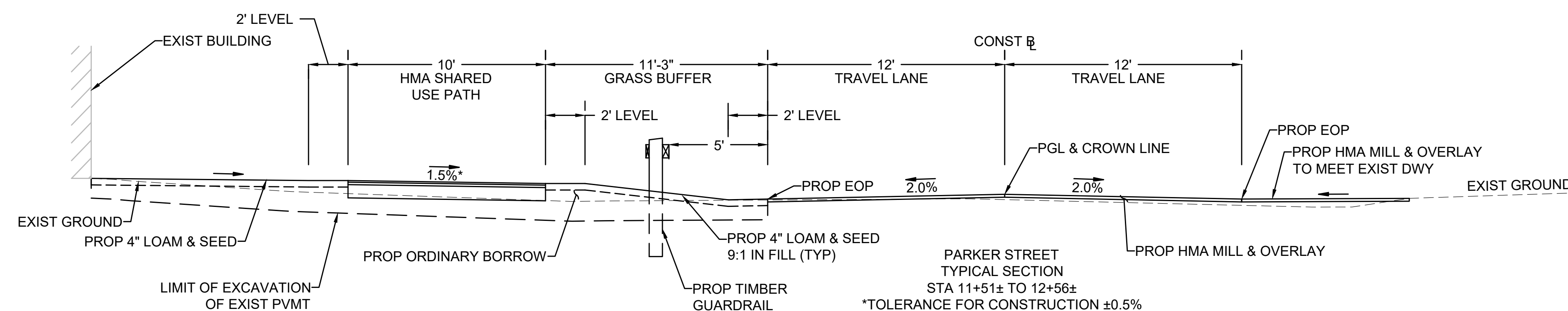
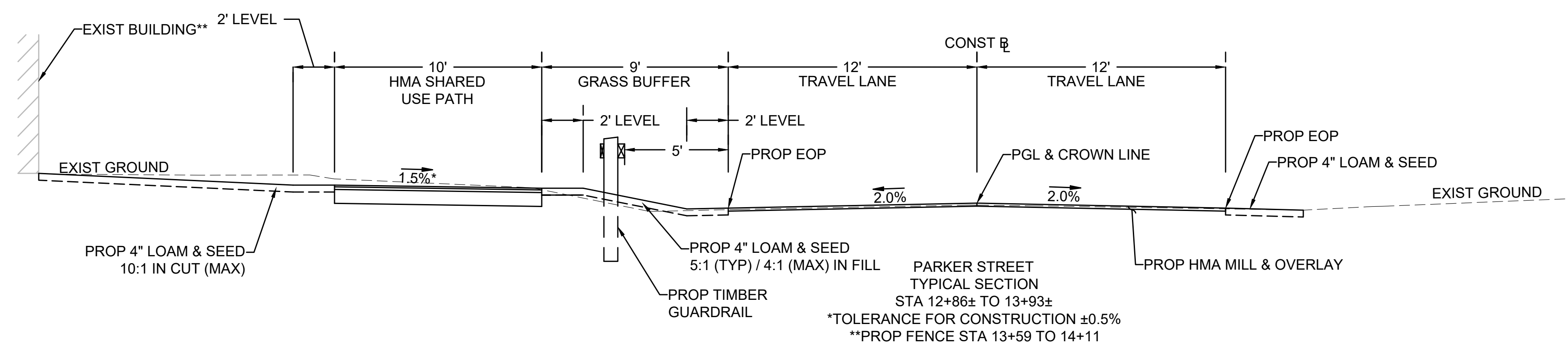
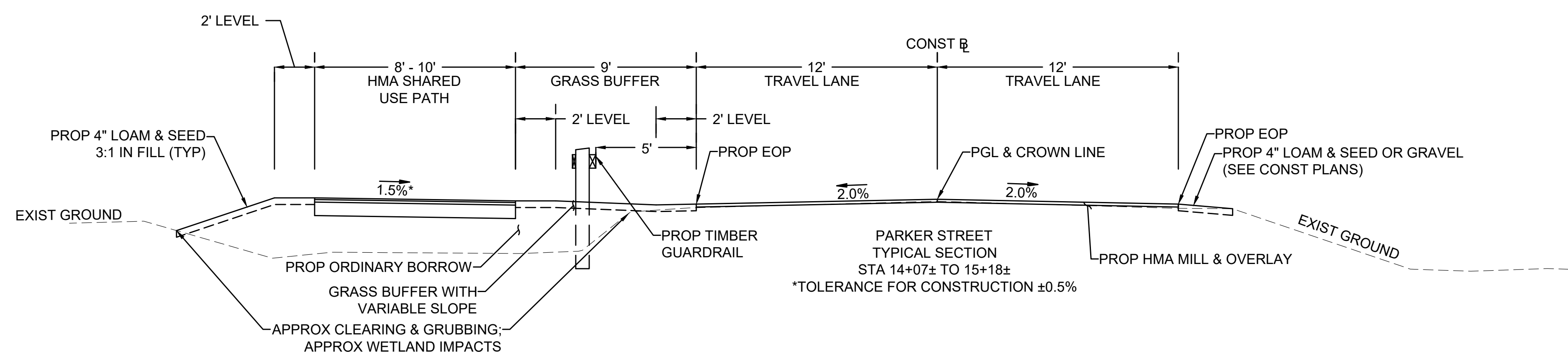
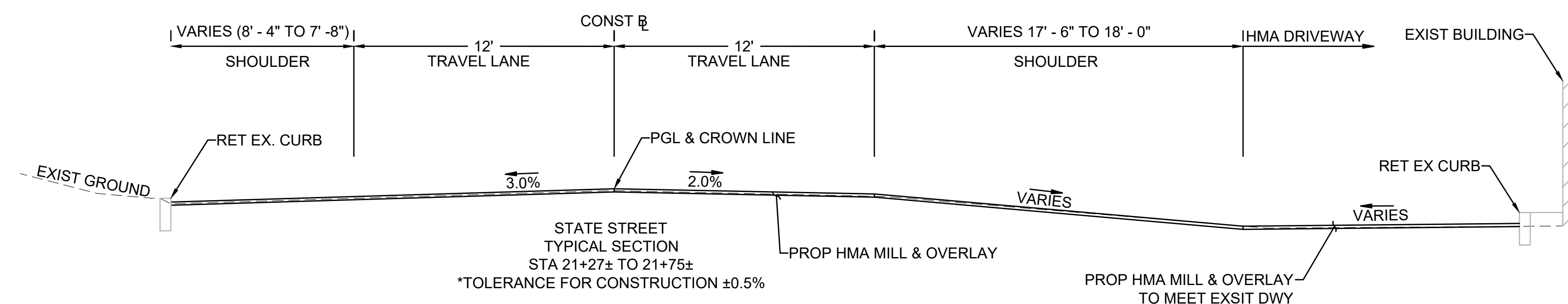
PROPOSED HMA DRIVEWAY (TO MATCH EXIST)

SURFACE: 1½" SUPERPAVE SURFACE COURSE - 9.5 (SSC - 9.5) OVER
2" SUPERPAVE INTERMEDIATE COURSE - 19.0 (SIC - 19.0) OVER

BASE: 8" SUITABLE EXISTING GRAVEL;
ADD GRAVEL BORROW, TYPE b AS REQUIRED

GENERAL PAVEMENT NOTES:

1. REMOVE ALL LOAM, CLAY, MUD, STUMPS, AND OTHER IMPROPER ROAD FOUNDATION MATERIAL WITHIN 3' OF SUBGRADE. REPLACE WITH COMPACTED GRANULAR FILL MATERIAL ACCEPTABLE TO THE DIRECTOR OF PUBLIC SERVICES. COMPACTION TO BE AT LEAST 95% OF THE DRY WEIGHT AS DETERMINED BY MODIFIED PROCTOR TESTING (ASTM 1557).
2. ALL MATERIALS AND CONSTRUCTION SHALL MEET AND BE COMPLETED IN STRICT ACCORDANCE WITH THE CITY OF NEWBURYPORT'S CURRENT ROAD AND DRAINAGE SPECIFICATIONS.
3. ASPHALT EMULSION FOR TACK COAT SHALL BE APPLIED BETWEEN ALL ASPHALT SURFACES AND SAWCUT JOINTS BEFORE PAVING. HMA JOINT SEALANT SHALL BE APPLIED TO ALL COLD JOINTS (LONGITUDINAL AND TRANSVERSE) BEFORE PAVING SURFACE COURSE. ASPHALT EMULSION FOR TACK COAT SHALL BE APPLIED AT A RATE OF 0.05 GAL/SY, EXCEPT OVER MILLED AND CEMENT CONCRETE SURFACES, WHERE THE APPLICATION RATE SHALL BE 0.07 GAL/SY. ALL SURFACES SHALL BE CLEAN OF ALL ORGANICS, DEBRIS, AND SAND PRIOR TO PAVING.
4. ALL HMA SHALL BE PRODUCED WITH WMA ADDITIVE.
5. ALL HMA SHALL BE IN ACCORDANCE WITH SECTION 450.
6. ASPHALT EMULSION FOR TACK COAT SHALL BE RS-1H TO RESIST TRACKING OF TACK BY HAUL VEHICLES.
7. HMA FOR WALKS AND DRIVEWAYS SHALL BE IN ACCORDANCE WITH SECTION 700.
8. ALL GRAVEL BORROW MEETING SPECIFICATION SHALL BE RETAINED IN PLACE, COMPACTED, AND LEVELED AS REQUIRED.



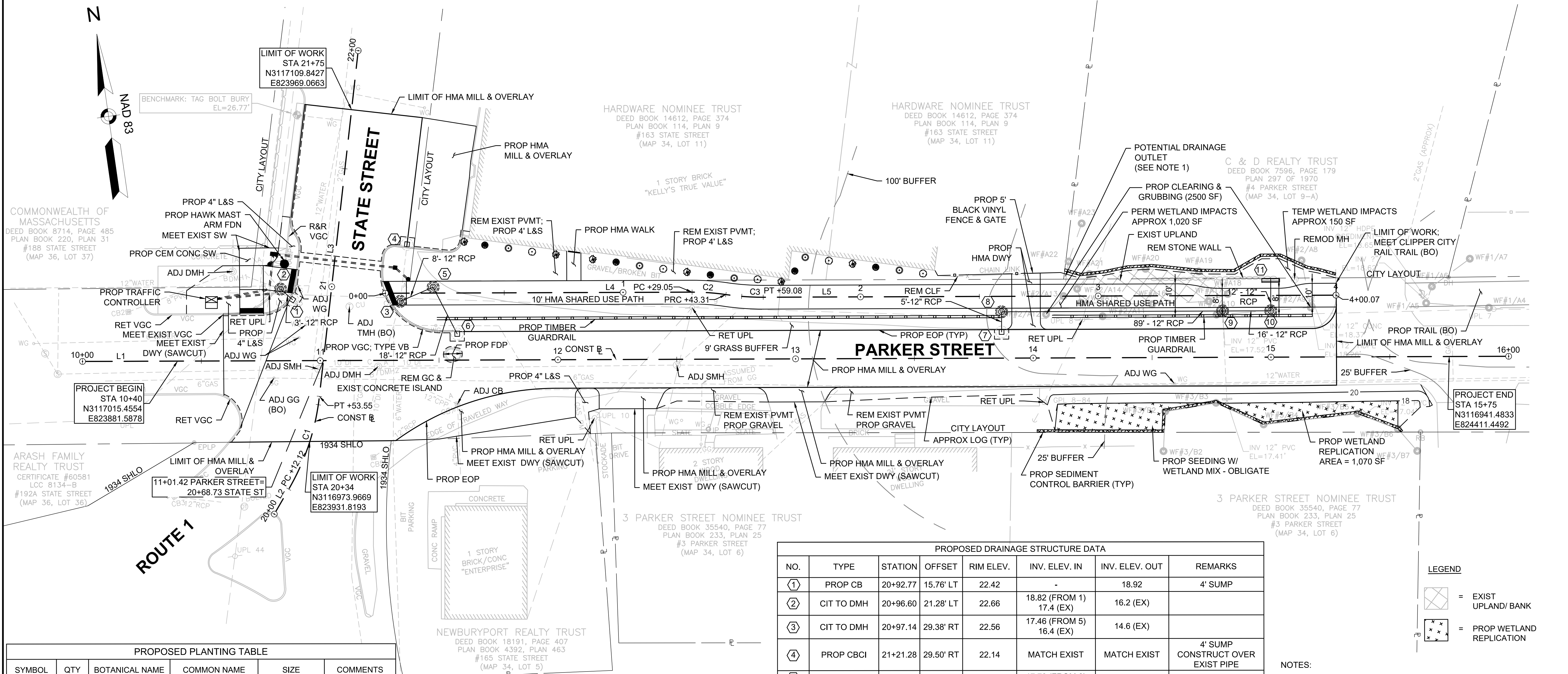
PARKER STREET CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L1	10+00.00	3117020.986	823841.972		S82°03'09"E 600.00'	16+00.00	3116938.027	824436.209

STATE ST CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L2	20+00.00	3116945.941	823912.729		N38°17'36"E 12.12'	20+12.12	3116955.455	823920.240
C1	20+12.12	3116955.455	823920.240	R=100.00' Δ=23°44'19" L=41.43' T=21.02'		20+53.55	3116992.293	823938.546
L3	20+53.55	3116992.293	823938.546		N14°33'17"E 146.45'	22+00.00	3117134.040	823975.349

SHARED USE PATH CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L4	0+00.00	3117031.334	823972.169		S82°03'09"E 129.05'	1+29.05	3117013.490	824099.981
C2	1+29.05	3117013.490	824099.981	R=95.00' Δ=8°36'09" L=14.26' T=7.15'		1+43.31	3117010.467	824113.906
C3	1+43.31	3117010.467	824113.906	R=105.00' Δ=8°36'09" L=15.76' T=7.90'		1+59.08	3117007.126	824129.298
L5	1+59.08	3117007.126	824129.298		S82°03'07"E 240.99'	4+00.07	3116973.803	824367.970

EXISTING DRAINAGE TABLE		
CB1	CB4	CB7
RIM = 21.03	RIM = 22.06	RIM = 20.97
SUMP = 15.7	A = 17.4	A = 17.2
CB2	B = 16.2	B = 19.0
RIM = 21.29	CB5	
INV = 17.1	RIM = 21.01	
CB3	INV = 16.09	
RIM = 22.06	CB6	
INV = 17.3	RIM = 21.78	
	A = 14.6	
	B = 16.4	

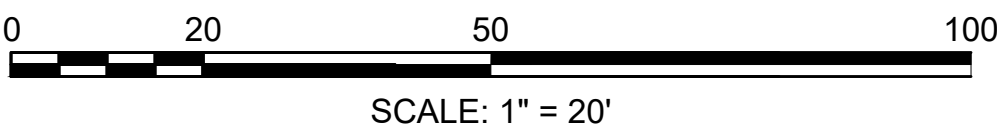
EXISTING DRAINAGE TABLE		
DMH 1		
RIM = 22.72		
A = 17.2		
B = 21.1		
DMH 2		
RIM = 21.71		
A = 16.0		
B = 16.5		
C = 15.9		



PROPOSED DRAINAGE STRUCTURE DATA						
NO.	TYPE	STATION	OFFSET	RIM ELEV.	INV. ELEV. IN	INV. ELEV. OUT
1	PROP CB	20+92.77	15.76' LT	22.42	-	18.92
2	CIT TO DMH	20+96.60	21.28' LT	22.66	18.82 (FROM 1) 17.4 (EX)	16.2 (EX)
3	CIT TO DMH	20+97.14	29.38' RT	22.56	17.46 (FROM 5) 16.4 (EX)	14.6 (EX)
4	PROP CBCI	21+21.28	29.50' RT	22.14	MATCH EXIST	MATCH EXIST
5	PROP DMH	11+47.63	30.75' LT	22.26	17.78 (FROM 6)	17.68
6	PROP CB	11+57.68	11.00' LT	21.64	-	18.14
7	PROP GI	13+86.72	11.00' LT	20.56	-	18.06
8	PROP CB W/ MH COVER	13+86.72	19.50' LT	21.62	18.03	18.03
9	PROP DMH	14+79.72	19.50' LT	20.92	17.59 (FROM 8) 17.59 (FROM 10)	17.52 (EX)
10	PROP DMH	15+00.00	19.50' LT	20.77	17.91	17.91
11	PROP HEADWALL	15+00.00	33.00' LT	-	18.51	-

LEGEND	
	= EXIST UPLAND/ BANK
	= PROP WETLAND REPLICATION

- NOTES:
- POTENTIAL DRAINAGE OUTLET FROM HARDWARE STORE. CONTRACTOR SHALL MAINTAIN EXISTING OUTLET, AND IF NECESSARY EXTEND OUTLET TO NEW LOCATION TO BE COORDINATED WITH THE ENGINEER AND CITY.

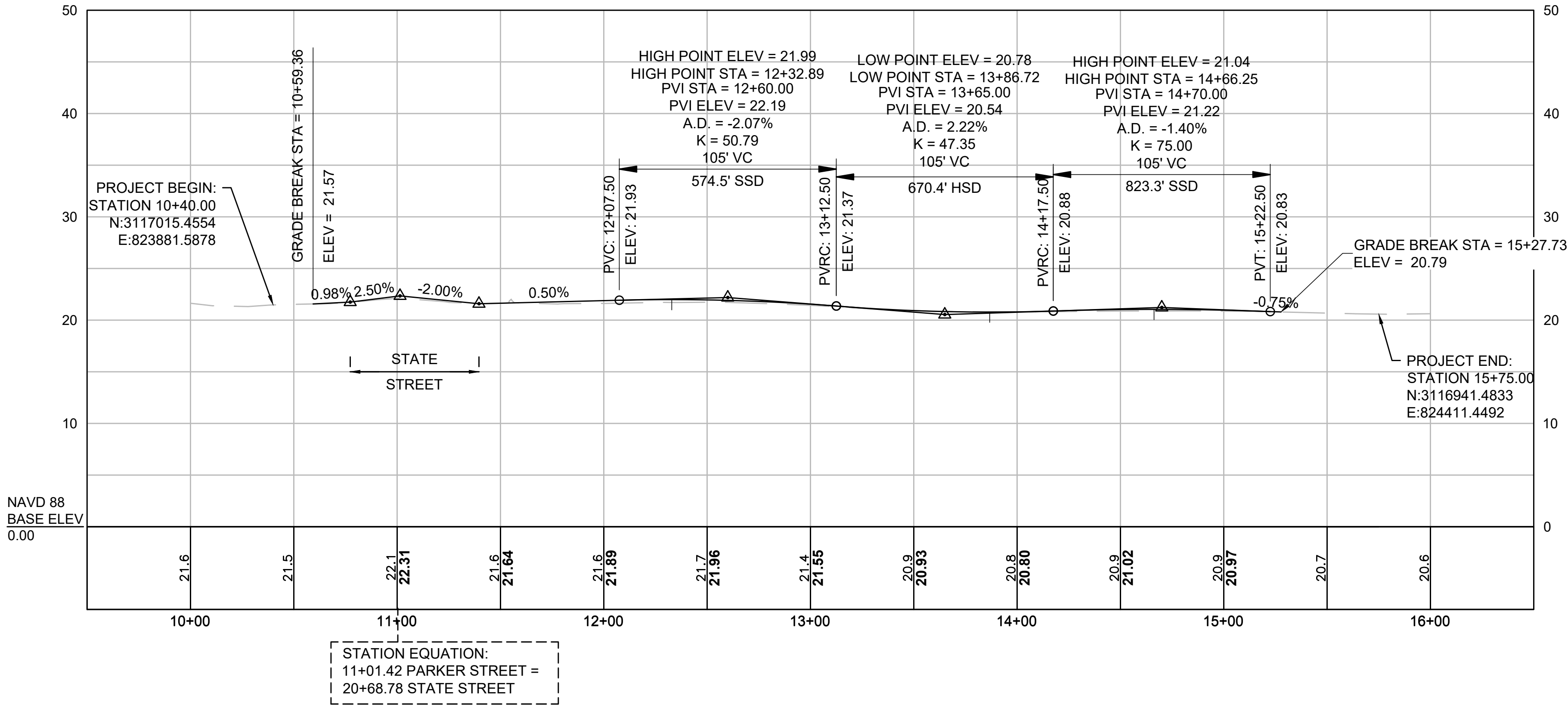


FOR PROFILE SEE SHEET 5

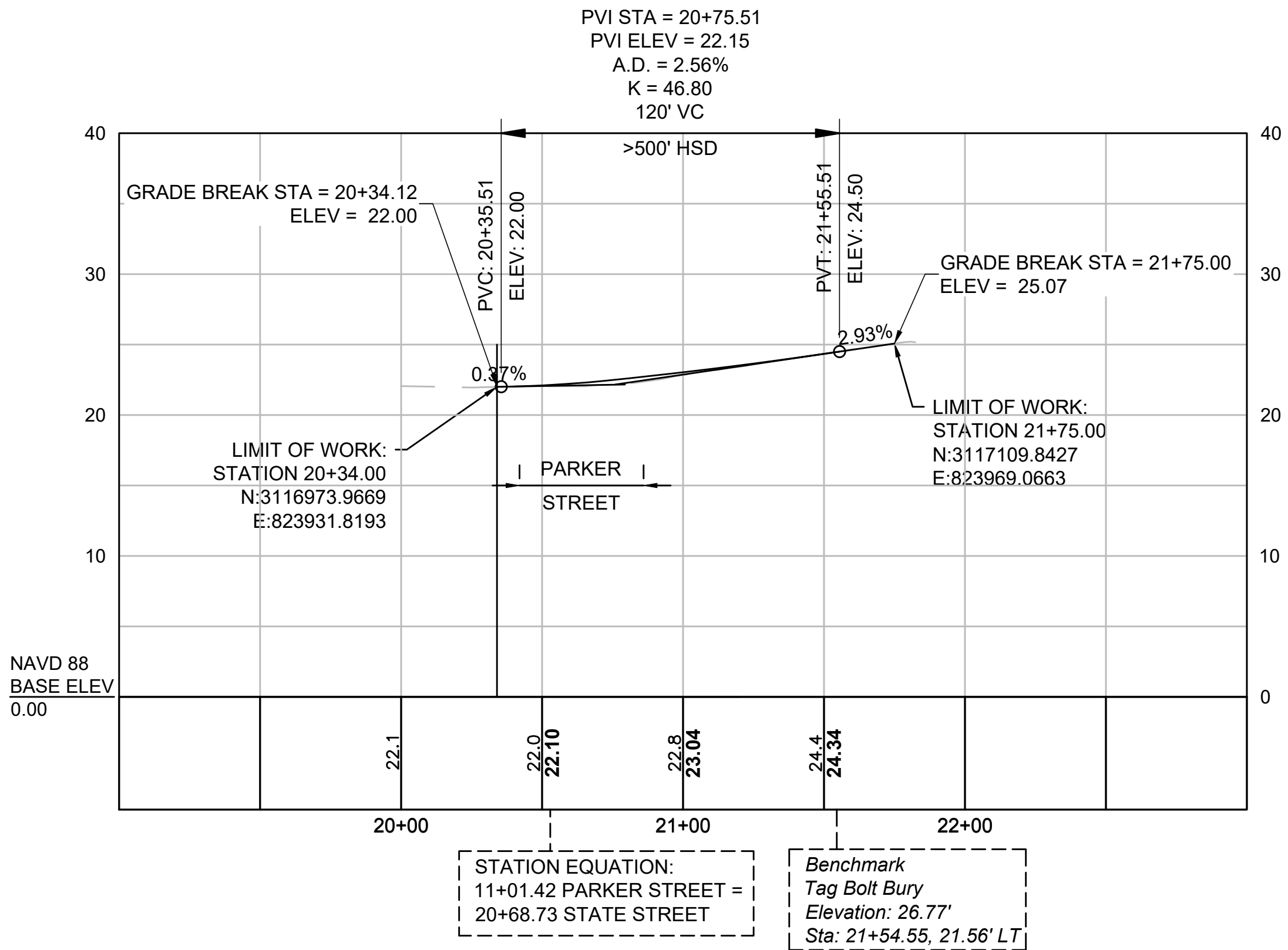
PROPOSED PLANTING TABLE					
SYMBOL	QTY	BOTANICAL NAME	COMMON NAME	SIZE	COMMENTS
	5	HYDRANGEA MACROPHYLLA	QUICKFIRE HYDRANGEA	30-36 INCH	5 GALLON POT
	5	CLETHRA ALNIFOLIA	SUMMERSWEET CLETHRA	24-30 INCH	5 GALLON POT
	5	ARONIA 'BRILLIANTISSIMA'	CHOKEBERRY	24-30 INCH	5 GALLON POT
	5	VIBURNUM OPULUS 'NANUM'	EUROPEAN CRANBERRYBUSH	30-36 INCH	5 GALLON POT

- PLANTING NOTES:
- CONTRACTOR SHALL HAVE ALL SUBSURFACE UTILITIES MARKED PRIOR TO THE START OF WORK.
 - FINAL LOCATION OF ALL PLANT MATERIAL SHALL BE REVIEWED AND BE APPROVED BY THE CITY PRIOR TO PLANTING.
 - ALL PLANT MATERIAL SHALL HAVE TAGS INDICATING COMMON NAME, BOTANICAL NAME & SIZE.
 - ALL PLANTS SHALL BE MULCHED PER THE PLANTING SPECIFICATIONS AND DETAILS.
 - ALL DISTURBED AREAS SHALL BE LOAMED AND SEEDED UNLESS NOTED OTHERWISE.

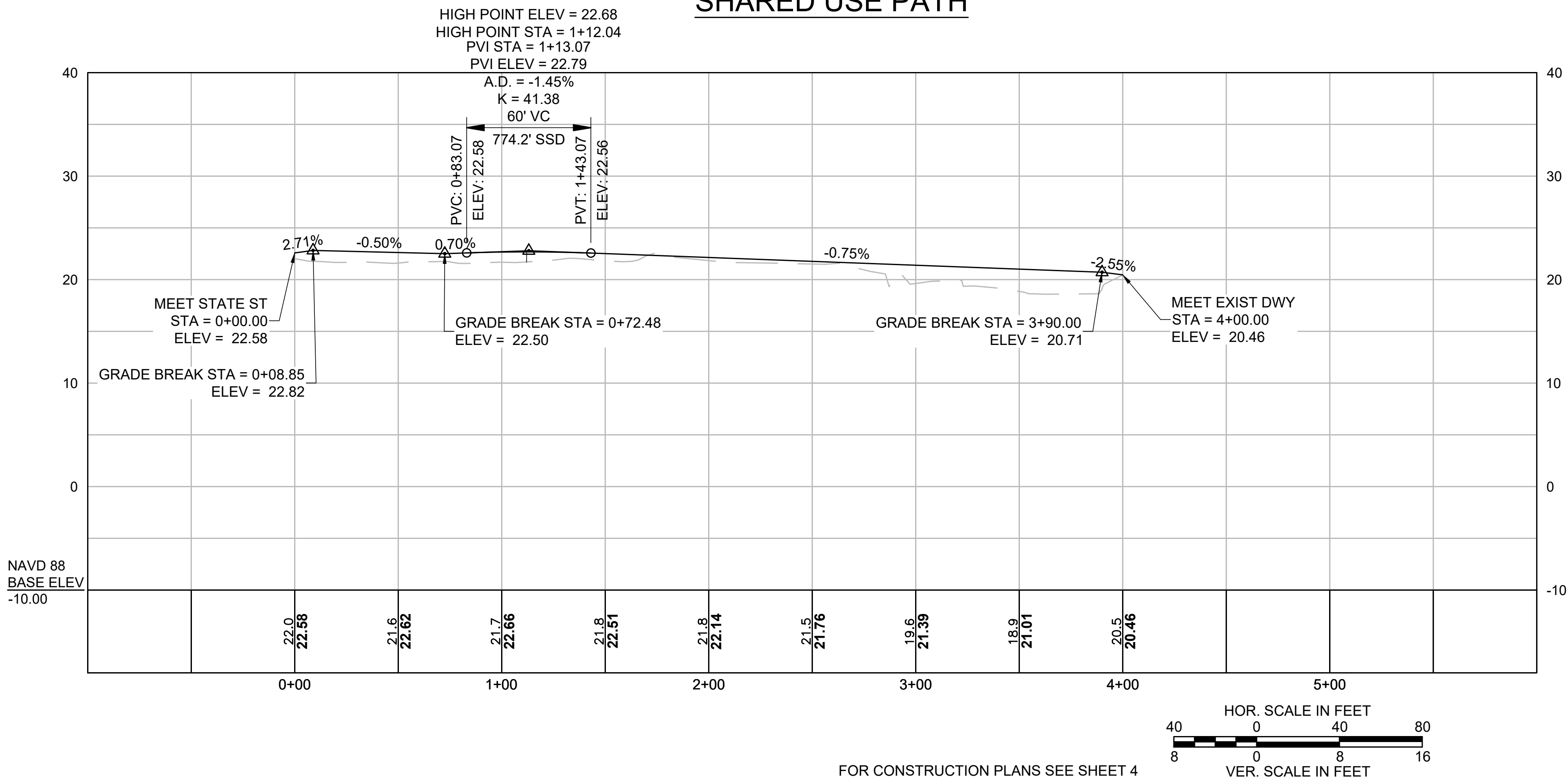
PARKER STREET

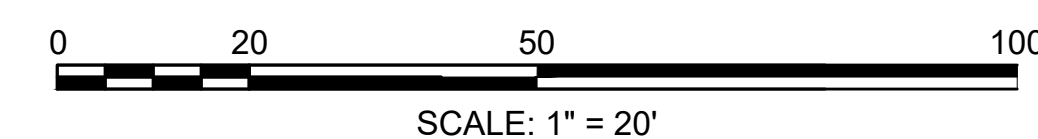


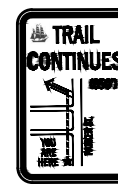
STATE ST



SHARED USE PATH

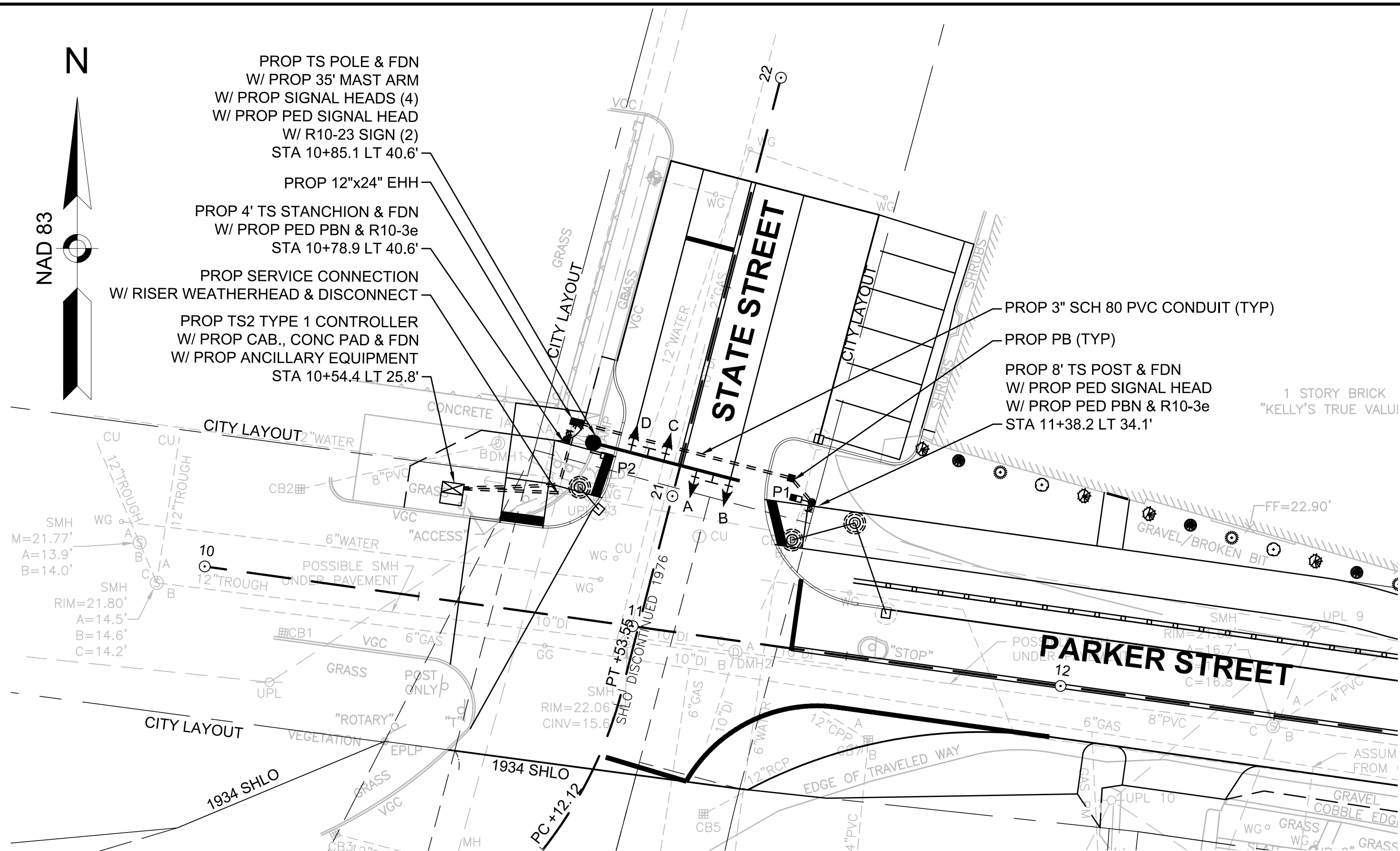




TRAFFIC SIGN SUMMARY													
IDENTIFICATION NUMBER	SIZE OF SIGN (in)		LEGEND	TEXT DIMENSIONS (in)			NUMBER OF SIGNS REQUIRED	COLOR			NUMBER OF POSTS REQUIRED*	UNIT AREA (SF)	TOTAL AREA (SF)
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR		BACK- GROUND	LEGEND	BORDER			
R1-1	30	30		①			1	RED	WHITE	WHITE	P5 1	6.25	6.25
R7-1	12	18					1	WHITE	RED	RED	P5 1	1.50	1.50
R10-3e	9	15					2	WHITE	BLACK	BLACK	0 MOUNT ON TS POST	PAID FOR UNDER ITEM 815.1	
R10-15	30	30					1	YELLOW	BLACK	BLACK	0 MOUNT W/ R1-1	6.25	6.25
								WHITE	RED / BLACK	BLACK			
R10-23	24	30		▼			2	WHITE	BLACK/ RED	BLACK	0 MOUNT ON MAST ARM	5.00	10.00
MA-D3-1a	36	8	SEE RIGHT	6B/4.5B	1 1	6" CITY SEAL	2	GREEN	WHITE	WHITE	0 MOUNT 2 W/ R1-1	PAID FOR UNDER ITEM 874.	
MA-D3-1b	33	8	SEE RIGHT	6B/4.5B	1 1	6" CITY SEAL	2	GREEN	WHITE	WHITE	0 MOUNT 2 W/ R1-1	PAID FOR UNDER ITEM 874.	
SP-1	39	33		4C 4C	3 2 2 3	21" OUTER DIAMETER	1	WHITE	BLACK/ RED	WHITE	P5 1	8.94	8.94
SP-2	12	18		1.75C .75C	1.75 1 1 5.50 0.25 0.25 1.75	2" TRAIL SEAL	1	WHITE	BLUE	BLUE	P5 1	1.50	1.50



- NOTES:
- ① SEE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS FOR TEXT AND LEGEND DIMENSIONS.
 - A MINIMUM 3'-0" PATH OF TRAVEL CLEARANCE, EXCLUDING CURB, IS REQUIRED WHEN PLACING SIGNS. SIGN POSTS SHALL NOT BE LOCATED CLOSER THAN 3 FEET TO THE EDGE OF THE SHARED USE PATH.
 - THE MINIMUM MOUNTING HEIGHT OF POST MOUNTED SIGNS, MEASURED VERTICALLY FROM THE BOTTOM OF THE SIGN TO THE TOP OF THE CURB OR SIDEWALK SHALL BE 7 FEET. ANY SIGNS WITHIN 3 FEET OF THE SHARED USE PATH SHALL BE MOUNTED WITH 8 FOOT MINIMUM VERTICAL CLEARANCE.



SEQUENCE & TIMING NOTES:

1. AUTOMATIC FLASHING OPERATION PER 2009 M.U.T.C.D. AS AMENDED.
2. PEDESTRIAN PHASE UPON PUSH BUTTON ACTIVATION ONLY.
3. MAXIMUM 1 = NORMAL OPERATION
MAXIMUM 2 = NOT USED
4. STOP AND GO OPERATION FOR 24 HOURS PER DAY. FLASHING OPERATION FOR EMERGENCY ONLY.
5. DURING PEDESTRIAN INTERVAL, FDW THROUGH YELLOW OPERATION SHALL NOT BE IN EFFECT.
6. THE RIGHT-OF-WAY MAY BE ASSIGNED TO ANY PHASE OR ANY COMBINATION OF NON-CONFLICTING PHASES.
7. IF THE ASSIGNED RIGHT-OF-WAY FOR ANY TRAFFIC MOVEMENT IS TO REMAIN IN EFFECT DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATIONS FOR THAT TRAFFIC MOVEMENT WILL NOT CHANGE DURING THE CLEARANCE INTERVAL.
8. IF THE ASSIGNED RIGHT-OF-WAY FOR ANY TRAFFIC MOVEMENT IS TO CHANGE DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATIONS FOR THAT TRAFFIC MOVEMENT WILL DISPLAY THE APPROPRIATE CLEARANCE INTERVAL.
9. VEHICULAR SIGNAL HEADS SHALL BE ON DARK MODE IF THERE IS NO PEDESTRIAN ACTIVATION.
10. THE HYBRID BEACON SHALL OPERATE THROUGH NORMAL SEQUENCE WHEN ACTIVATED BY PUSH BUTTON. DURATION OF HYBRID BEACON OPERATION UPON RECEIPT OF VALID CALL SHALL BE AS SHOWN IN THE SEQUENCE AND TIMING CHART.
11. SUCCESSIVE PEDESTRIAN ACTIVATIONS WILL HAVE A MINIMUM DELAY OF 60 SECONDS OF GREEN TIME ALONG MAIN STREET.
12. PEDESTRIAN COUNTDOWN DISPLAY SHALL ONLY BE DISPLAYED DURING THE ALTERNATING FLASHING RED INTERVAL.
13. DURING EMERGENCY OPERATION (MMU CONFLICT), THE VEHICLE INDICATION SHALL DISPLAY A FLASHING YELLOW INDICATION AND THE PEDESTRIAN INDICATIONS SHALL BE DARK PER MUTCD STANDARDS.

STATE STREET PEDESTRIAN HYBRID BEACON
LIST OF MAJOR ITEMS REQUIRED

ITEM #	QUANTITY	DESCRIPTION
815.1	1	8Ø TS 2 TYPE 1 CONTROLLER IN A TYPE P BASE MOUNTED CABINET, CONC. PAD W/ FOUNDATION (PAINTED GLOSS BLACK)
	1	TS POLE W/ 35' MAST ARM, TYPE 2 STEEL MONOLEVER, W/ FOUNDATION (PAINTED GLOSS BLACK)
	4	SIGNAL HEAD, HYBRID 3-SECTION W/ 12" L.E.D. MODULES, TUNNEL VISORS, 5" BACKPLATES W/ 2" RETROREFLECTIVE STRIP (PAINTED GLOSS BLACK)
	2	PEDESTRIAN SIGNAL HEAD, 16" L.E.D. MODULE, COUNTDOWN INDICATOR (PAINTED GLOSS BLACK)
	2	PEDESTRIAN PUSH BUTTON [VIBRATORY & AUDIBLE] (PAINTED YELLOW) W/ R10-3e AND SIGN SADDLE (PAINTED GLOSS BLACK)
	1	4' TS STANCHION W/ FOUNDATION (PAINTED GLOSS BLACK)
	1	8' TS POST W/ FOUNDATION (PAINTED GLOSS BLACK)
	1	CABINET POWER SUPPLY
	1	MALFUNCTION MANAGEMENT UNIT (MMU)
	2	SPARE B.I.U (BUS INTERFACE UNITS)
	1	SERVICE CONNECTION (OVERHEAD) W/ LATERAL RISER, WEATHERHEAD, AND DISCONNECT
804.3	±130 FT	3" SCH. 80 PVC CONDUIT
811.22	1	ELECTRIC HANDHOLE - SD2.022
811.31	1	PULL BOX 12 X 12 INCHES - SD2.031
832.	10 SF	SIGNS (R10-23) AS NOTED - RIGIDLY MOUNTED ON TS EQUIPMENT

PLUS NECESSARY CONDUIT, CABLE, LABOR, MISCELLANEOUS MATERIAL AND EQUIPMENT TO COMPLETE THE INSTALLATION AND PROVIDE AN OPERATING TRAFFIC CONTROL SIGNAL.

SEQUENCE AND TIMING CHART FOR TRAFFIC SIGNAL CONTROL							
STATE STREET PEDESTRIAN HYBRID BEACON, NEAR PARKER STREET (NEWBURYPORT, MASSACHUSETTS)			ø1		ø2		
APPROACH	DIRECTION	HOUSING	1	2	3	5	6
STATE STREET	NB	A-B	DK	FY	Y	R/R	FR/FR
STATE STREET	SB	C-D	DK	FY	Y	R/R	FR/FR
PEDESTRIAN	EB - WB	P1-P2	DW	DW	DW	W	FDW
MINIMUM INTERVAL			60				
VEHICLE EXTENSION			-				
MAXIMUM 1			60				
MAXIMUM 2			-				
FLASHING YELLOW INTERVAL				5.0			
STEADY YELLOW INTERVAL					4.0		
STEADY RED INTERVAL						7.0	
PEDESTRIAN WALK INTERVAL						7.0	
PEDESTRIAN CLEARANCE INTERVAL							9.0
RECALL			MIN		OFF		
DETECTOR			NON-LOCK		LOCK		

PROPOSED SIGNAL HOUSING DATA	
A-D	P1-P2
ALL 12" LENSES WITH 5" BACKPLATES AND 2" RETROREFLECTIVE STRIP AND TUNNEL VISORS	ALL 16" L.E.D. W/ COUNTDOWN INDICATION

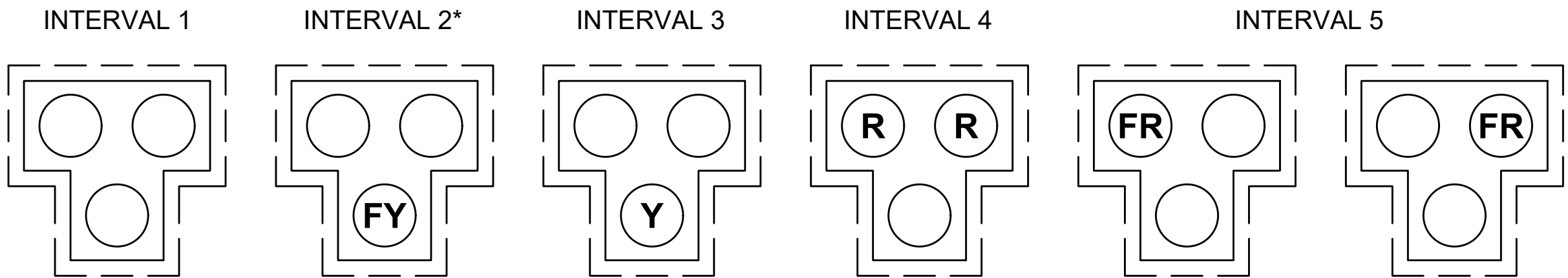
TIMING CHART & PHASE SEQUENCE LEGEND:

1. DK = SIGNAL HEADS ARE DARK
2. R = STEADY RED
3. Y = STEADY YELLOW
4. FY = FLASHING YELLOW
5. FR = FLASHING RED (FR/FR = FLASHING ALTERNATING RED)
6. W = WALK
7. FDW = FLASHING DON'T WALK
8. DW = DON'T WALK

CONSTRUCTION NOTES:

1. THE CONSTRUCTION SHALL CONFORM WITH MASSACHUSETTS DEPARTMENT OF TRANSPORTATION, HIGHWAY DIVISION SPECIFICATIONS UNLESS OTHERWISE NOTED.
2. ALL MAST ARM FOUNDATIONS SHALL CONFORM WITH MASSACHUSETTS DEPARTMENT OF TRANSPORTATION, HIGHWAY DIVISION "MAST ARM & FOUNDATION DETAILS STANDARD DRAWINGS", DATED DECEMBER 2015.
3. ALL SIGNAL HEADS AND SIGNS SHALL BE RIGIDLY MOUNTED.
4. PULL BOXES SHALL NOT BE LOCATED IN WHEELCHAIR RAMPS.
5. PEDESTRIAN PUSH BUTTONS SHALL BE ACCESSIBLE PEDESTRIAN SIGNAL (APS) WITH THE FOLLOWING FEATURES: LOCATOR TONE, VISIBLE AND AUDIBLE INDICATOR, AND PEDESTRIAN PUSH BUTTON (VIBRATORY).

PREFERENTIAL PHASE SEQUENCE



* UPON PEDESTRIAN PUSH BUTTON ACTUATION ONLY

NOTES:

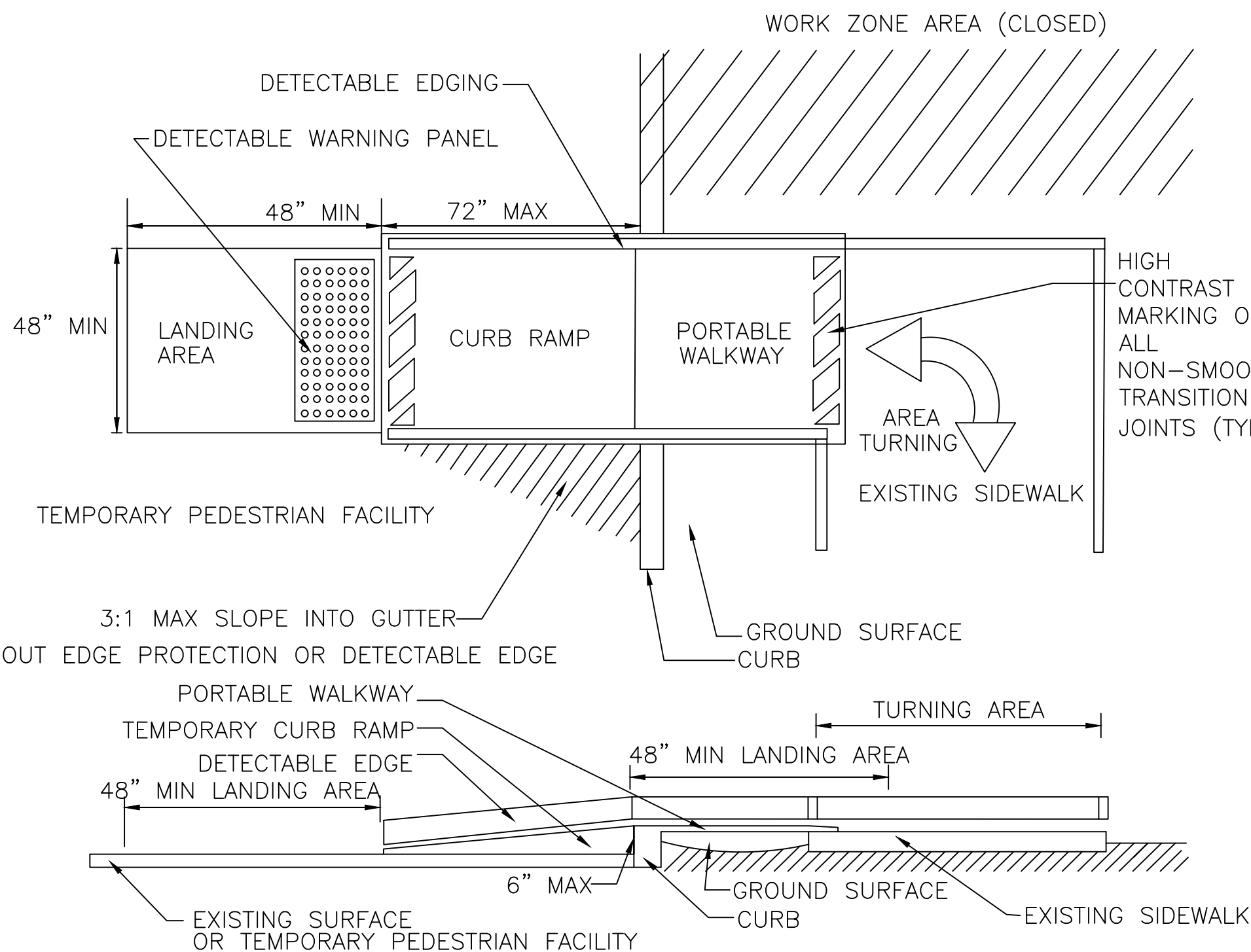
- ALL TEMPORARY TRAFFIC CONTROL WORK SHALL CONFORM TO THE LATEST EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) AND ALL REVISIONS, UNLESS SUPERCEDED BY THESE PLANS.
- ALL SIGN LEGENDS, BORDERS, AND MOUNTING SHALL BE IN ACCORDANCE WITH THE MUTCD.
- TEMPORARY CONSTRUCTION SIGNING AND ALL OTHER TRAFFIC CONTROL DEVICES SHALL BE IN PLACE PRIOR TO THE START OF ANY WORK.
- TEMPORARY CONSTRUCTION SIGNING, BARRICADES, AND ALL OTHER NECESSARY WORK ZONE TRAFFIC CONTROL DEVICES SHALL BE REMOVED FROM THE HIGHWAY OR COVERED WHEN THEY ARE NOT REQUIRED FOR CONTROL OF TRAFFIC.
- SIGNS AND SIGN SUPPORTS LOCATED ON OR NEAR THE TRAVELED WAY, CHANNELIZING DEVICES, BARRIERS, AND CRASH ATTENUATORS MUST PASS THE CRITERIA SET FORTH IN THE "MANUAL FOR ASSESSING SAFETY HARDWARE" (MASH).
- CONTRACTORS SHALL NOTIFY EACH ABUTTER AT LEAST 24 HOURS IN ADVANCE OF THE START OF ANY WORK THAT WILL REQUIRE THE TEMPORARY CLOSURE OF ACCESS, SUCH AS CONDUIT INSTALLATION, EXISTING PAVEMENT EXCAVATION, TEMPORARY DRIVEWAY PAVEMENT PLACEMENT, AND SIMILAR OPERATIONS.
- THE FIRST TEN PLASTIC DRUMS OF A TAPER SHALL BE MOUNTED WITH SEQUENTIAL FLASHING LIGHTS.
- THE ADVISORY SPEED LIMIT, IF REQUIRED, SHALL BE DETERMINED BY THE ENGINEER.
- DISTANCES ARE A GUIDE AND MAY BE ADJUSTED IN THE FIELD BY THE ENGINEER.
- MAXIMUM SPACING OF TRAFFIC DEVICES IN A TAPER (DRUMS OR CONES) IS EQUAL IN FEET TO THE SPEED LIMIT IN MPH.
- MINIMUM LANE WIDTH IS TO BE 11 FEET UNLESS OTHERWISE SHOWN. MINIMUM LANE WIDTH TO BE MEASURED FROM THE EDGE OF DRUMS OR MEDIAN BARRIER.
- ALL SIGNS SHALL BE MOUNTED ON THEIR OWN STANDARD SIGN SUPPORTS.
- NO WORK THAT IMPACTS THE TRAVELED WAY SHALL BE PERMITTED DURING PEAK HOUR TRAFFIC. PEAK HOUR IS DEFINED AS WEEKDAYS FROM 7-9 AM & 4-6 PM.

LEGEND:

- REFLECTORIZED PLASTIC DRUM OR 36" CONE
- P/F POLICE/FLAGGER DETAIL
- TYPE III BARRICADE
- CHANGEABLE MESSAGE SIGN
- ARROW BOARD
- WORK ZONE
- DIRECTION OF TRAFFIC
- IMPACT ATTENUATOR
- TEMPORARY BARRIER (TL-2)
- MEDIAN BARRIER WITH WARNING LIGHTS
- WORK VEHICLE
- TRUCK MOUNTED ATTENUATOR
- TRAFFIC OR PEDESTRIAN SIGNAL
- SIGN

SUGGESTED WORK ZONE WARNING SIGN SPACING

ROAD TYPE	DISTANCE BETWEEN SIGNS (FEET)		
	A	B	C
LOCAL OR LOW VOLUME ROADWAYS	350	350	350
MOST OTHER ROADWAYS	500	500	500
FREEWAYS AND EXPRESSWAYS	1,000	1,500	2,640



PEDESTRIAN TYPICAL DETAILS

NOTES:

- CURB RAMP SHALL BE 60 IN. MINIMUM WIDTH WITH A FIRM, STABLE AND NON-SLIP SURFACE.
- PROTECTIVE EDGING WITH A 2 IN. MINIMUM HEIGHT SHALL BE INSTALLED WHEN THE CURB RAMP OR LANDING PLATFORM HAS A VERTICAL DROP OF 6 IN. OR GREATER OR HAS A SIDE APRON SLOP STEEPER THAN 1:3 (33%). PROTECTIVE EDGING SHOULD BE CONSIDERED WHEN THE CURB RAMP OR LANDING PLATFORMS HAVE A VERTICAL DROP OF 3 IN. OR MORE.
- DETECTABLE EDGING WITH 6 IN. MINIMUM HEIGHT AND CONTRASTING COLOR SHALL BE INSTALLED ON ALL CURB RAMP LANDINGS WHERE THE WALKWAY CHANGES DIRECTION (TURNS).
- THE CURB RAMP WALKWAY AND LANDING AREA SURFACE SHALL BE OF A SOLID CONTINUOUS CONTRASTING COLOR ABUTTING UP TO THE EXISTING SIDEWALK.
- CURB RAMP AND LANDINGS SHOULD HAVE A 1:50 (2%) MAX CROSS-SLOPE.
- CLEAR SPACE OF 48x48 IN. MINIMUM SHALL BE PROVIDED ABOVE AND BELOW THE CURB RAMP.
- WATER FLOW IN THE GUTTER SYSTEM SHALL HAVE MINIMAL RESTRICTION.
- LATERAL JOINTS OR GAPS BETWEEN SURFACES SHALL BE LESS THAN 0.5 IN. WIDTH.
- CHANGES BETWEEN SURFACE HEIGHTS SHOULD NOT EXCEED 0.5 IN. LATERAL EDGES SHOULD BE VERTICAL UP TO 0.25 IN. HIGH, AND BEVELED AT 1:2 BETWEEN 0.25 IN. AND 0.5 IN. HEIGHT.
- IF A TEMPORARY PEDESTRIAN RAMP LEADS TO A CROSSWALK, THEN A DETECTABLE WARNING PAD MUST BE ADHERED TO THE BASE OF THE RAMP. IF IT LEADS TO A PROTECTED PEDESTRIAN BYPASS THAT DOES NOT CONFLICT WITH VEHICULAR TRAFFIC, THEN A PAD SHALL NOT BE INSTALLED ON THE RAMP.

- WHEN EXISTING PEDESTRIAN FACILITIES ARE DISRUPTED, CLOSED, OR RELOCATED IN A TTC ZONE, TEMPORARY FACILITIES SHALL BE PROVIDED AND THEY SHALL BE DETECTABLE AND INCLUDE ACCESSIBILITY FEATURES CONSISTENT WITH THE FEATURES PRESENT IN THE EXISTING PEDESTRIAN FACILITY.
- A PEDESTRIAN CHANNELIZING DEVICE THAT IS DETECTABLE BY A PERSON WITH A VISUAL DISABILITY TRAVELING WITH THE AID OF A LONG CANE SHALL BE PLACED ACROSS THE FULL WIDTH OF THE CLOSED SIDEWALK.
- WHEN USED, TEMPORARY RAMPS SHALL COMPLY WITH AMERICANS WITH DISABILITIES ACT (SEE FIGURES PED-1 & PED-2).
- THE ALTERNATE PATHWAY SHOULD HAVE A SMOOTH CONTINUOUS HARD SURFACE FOR THE ENTIRE LENGTH OF THE TEMPORARY PEDESTRIAN FACILITY.
- THE PROTECTIVE REQUIREMENTS OF A TTC SITUATION HAVE PRIORITY IN DETERMINING THE NEED FOR TEMPORARY TRAFFIC BARRIERS AND THEIR USE IN THIS SITUATION SHOULD BE BASED ON ENGINEERING JUDGMENT.
- AUDIBLE INFORMATION DEVICES SHOULD BE CONSIDERED WHERE MIDBLOCK CLOSINGS AND CHANGED CROSSWALK AREAS CAUSE INADEQUATE COMMUNICATION TO BE PROVIDED TO PEDESTRIANS WHO HAVE VISUAL DISABILITIES.

AUDIBLE DEVICES

FOR LONG TERM SIDEWALK CLOSURES (AT A MINIMUM OVERNIGHT) A FORM OF SPEECH MESSAGING FOR PEDESTRIANS WITH VISUAL DISABILITIES SHALL BE PROVIDED. AUDIBLE INFORMATION DEVICES SUCH AS DETECTABLE BARRIERS OR BARRICADES AND OTHER PASSIVE PEDESTRIAN ACTIVATION (MOTION ACTIVATED) DEVICES SHOULD BE CONSIDERED FOR THESE CASES. THESE AUDIBLE DEVICES CAN BE MOUNTABLE OR STAND ALONE.

TAPER LENGTH CRITERIA FOR TEMPORARY TRAFFIC CONTROL ZONES

TYPE OF TAPER	TAPER LENGTH (L)
MERGING TAPER	AT LEAST L
SHIFTING TAPER	AT LEAST 0.5L
SHOULDER TAPER	AT LEAST 0.33L
ONE-LANE, TWO-WAY TRAFFIC TAPER	50 FT MIN. 100 FT MAX.
DOWNSTREAM TAPER	50 FT MIN. 100 FT MAX. PER LANE

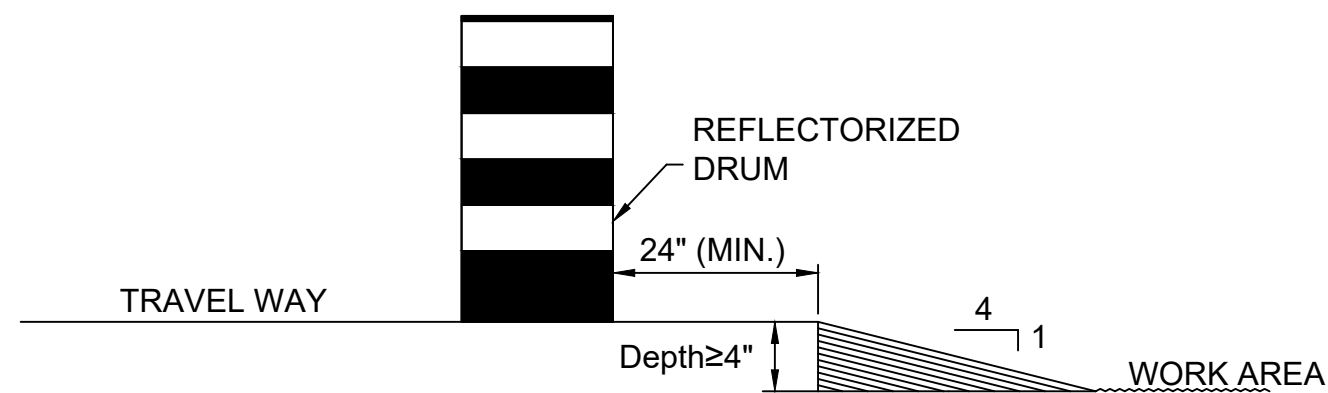
FORMULAS FOR DETERMINING TAPER LENGTHS

SPEED LIMIT (S)	TAPER LENGTH (L) FEET
40 MPH OR LESS	$L = \frac{WS^2}{60}$
45 MPH OR MORE	$L = WS$

WHERE: L = TAPER LENGTH IN FEET

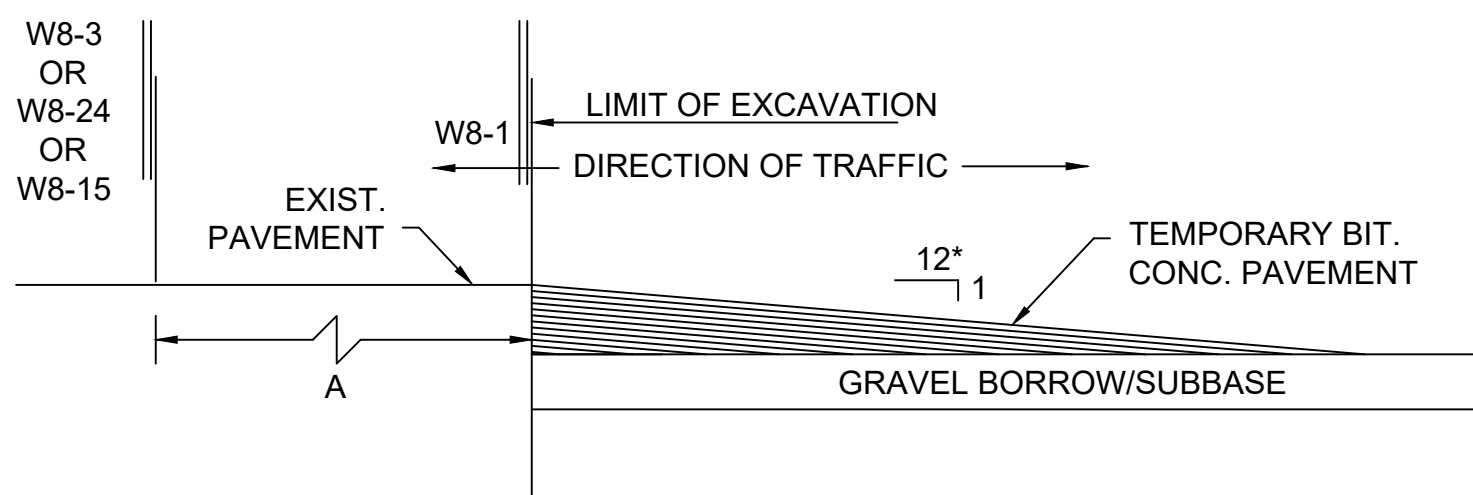
W = WIDTH OF OFFSET IN FEET

S = POSTED SPEED LIMIT, OR OFF-PEAK 85TH-PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED IN MPH



LATERAL DROP-OFF DETAIL

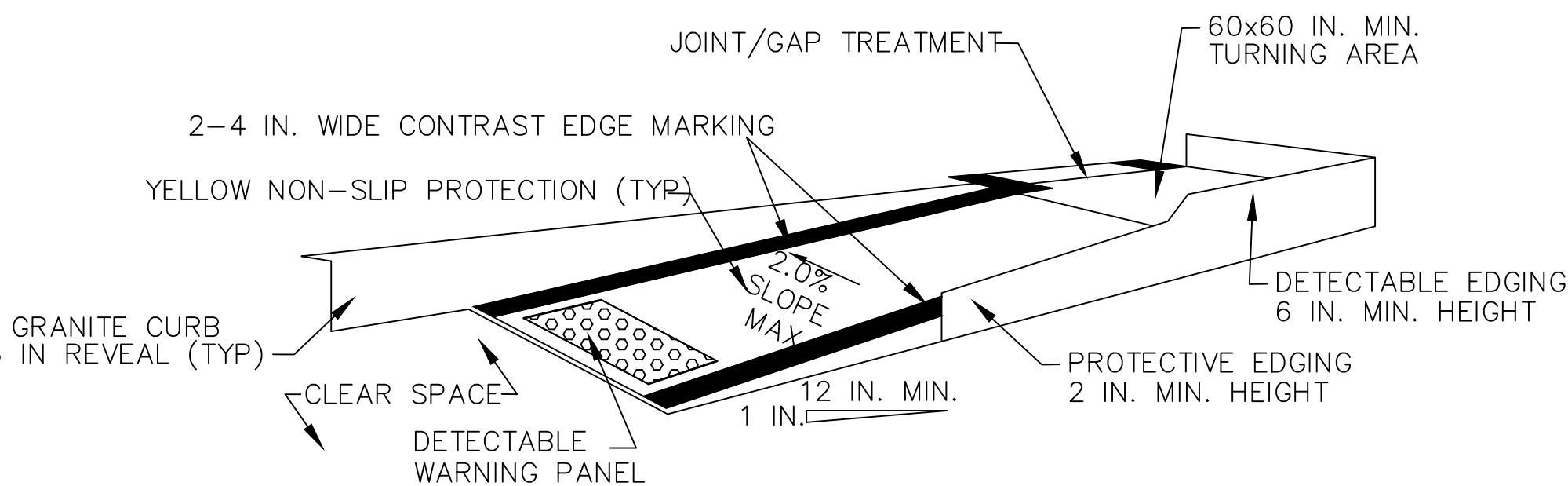
NOT TO SCALE



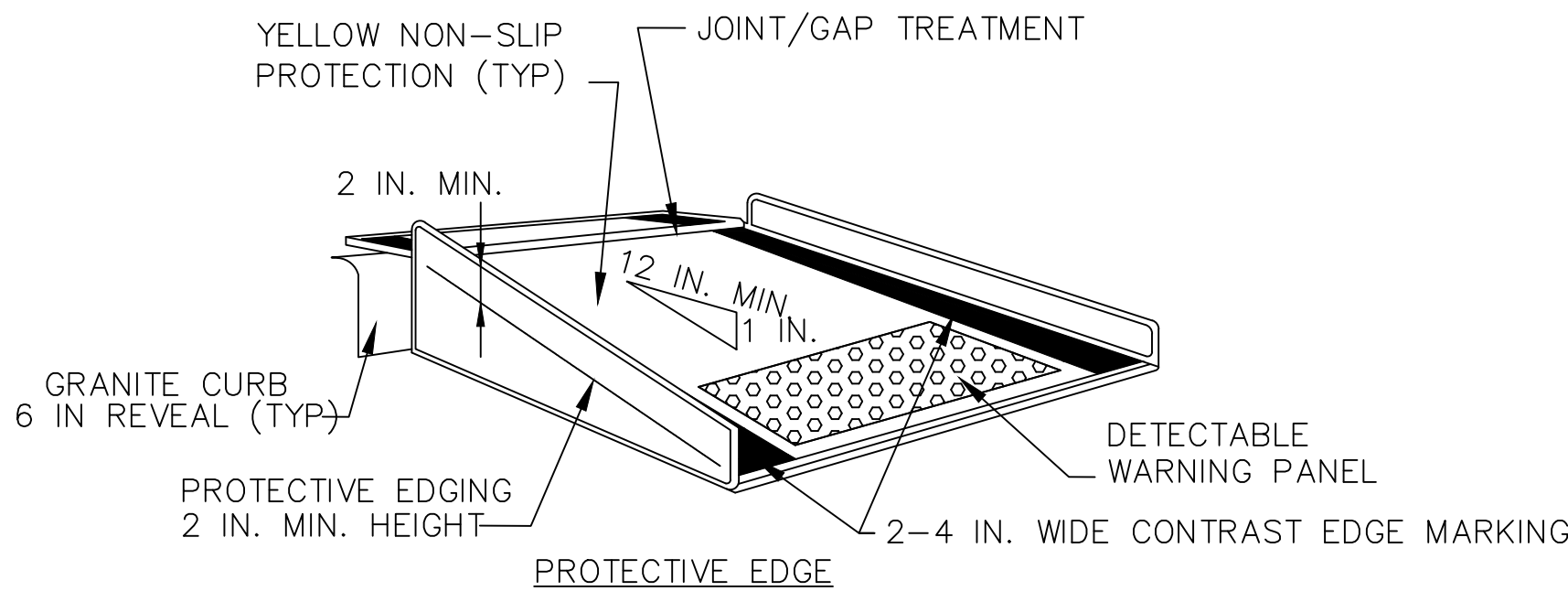
LONGITUDINAL DROP-OFF DETAIL

NOT TO SCALE

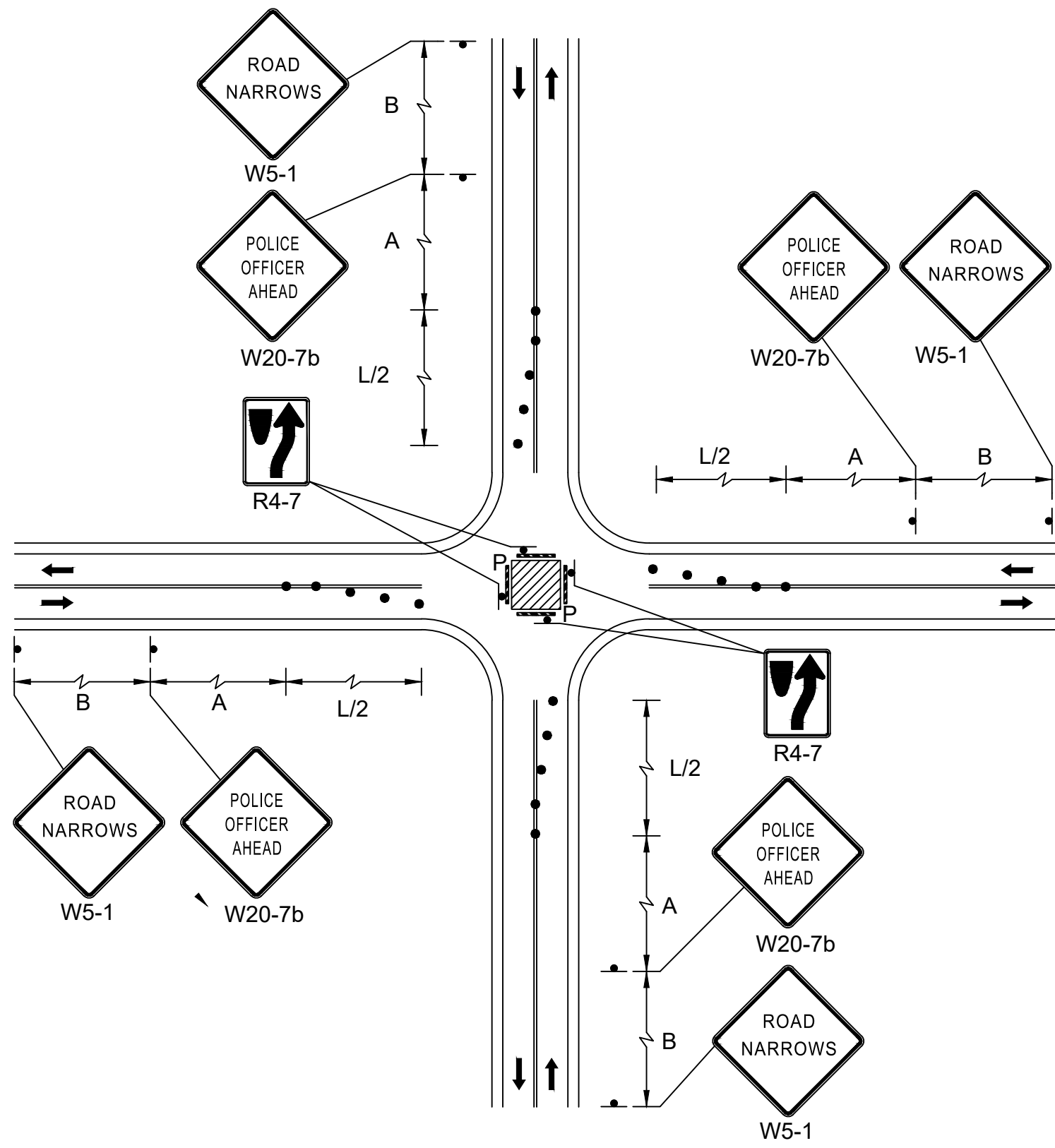
* - INCREASE SLOPE RATIO FOR HIGHER SPEEDS



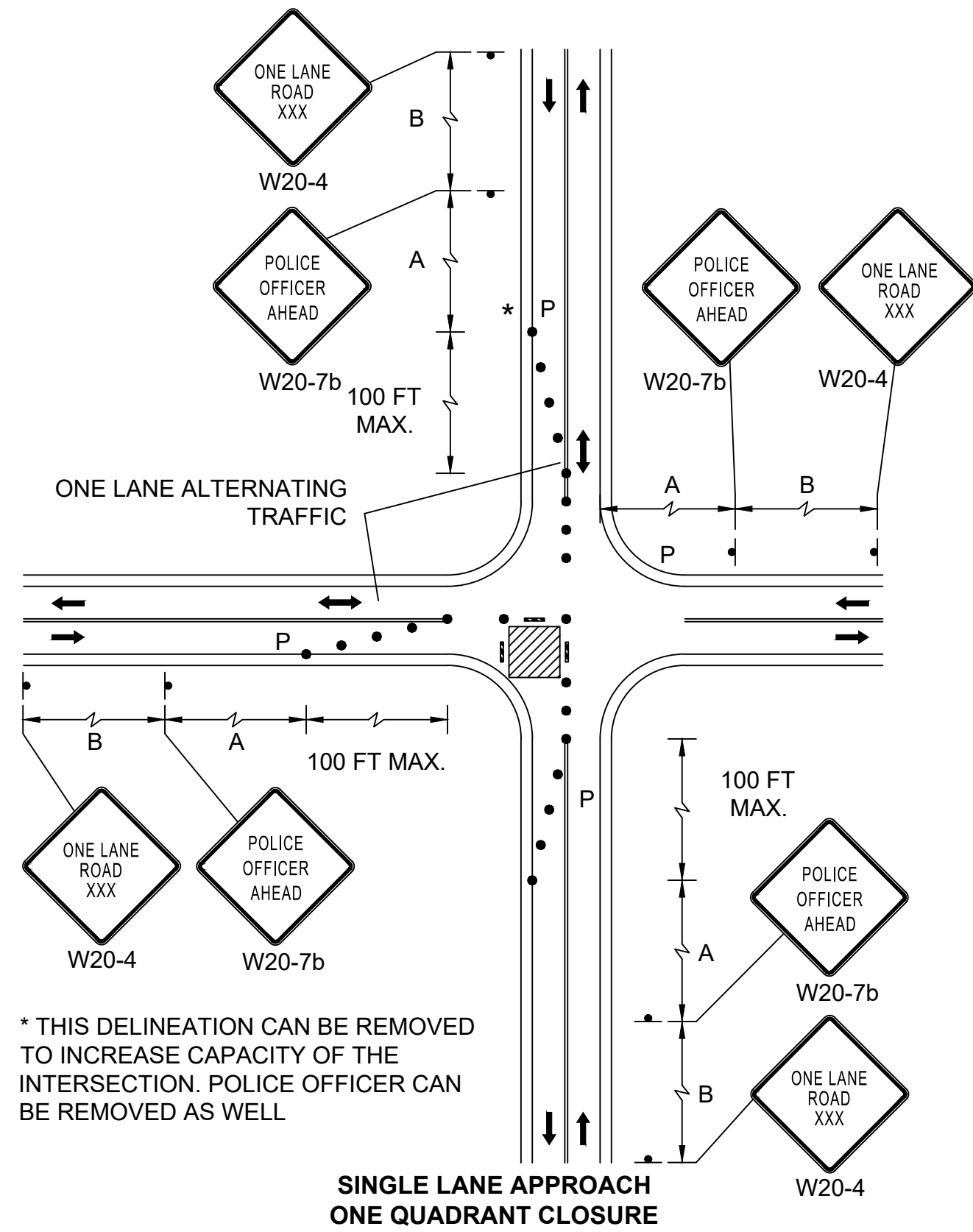
TEMPORARY CURB RAMP-PARALLEL TO CURB



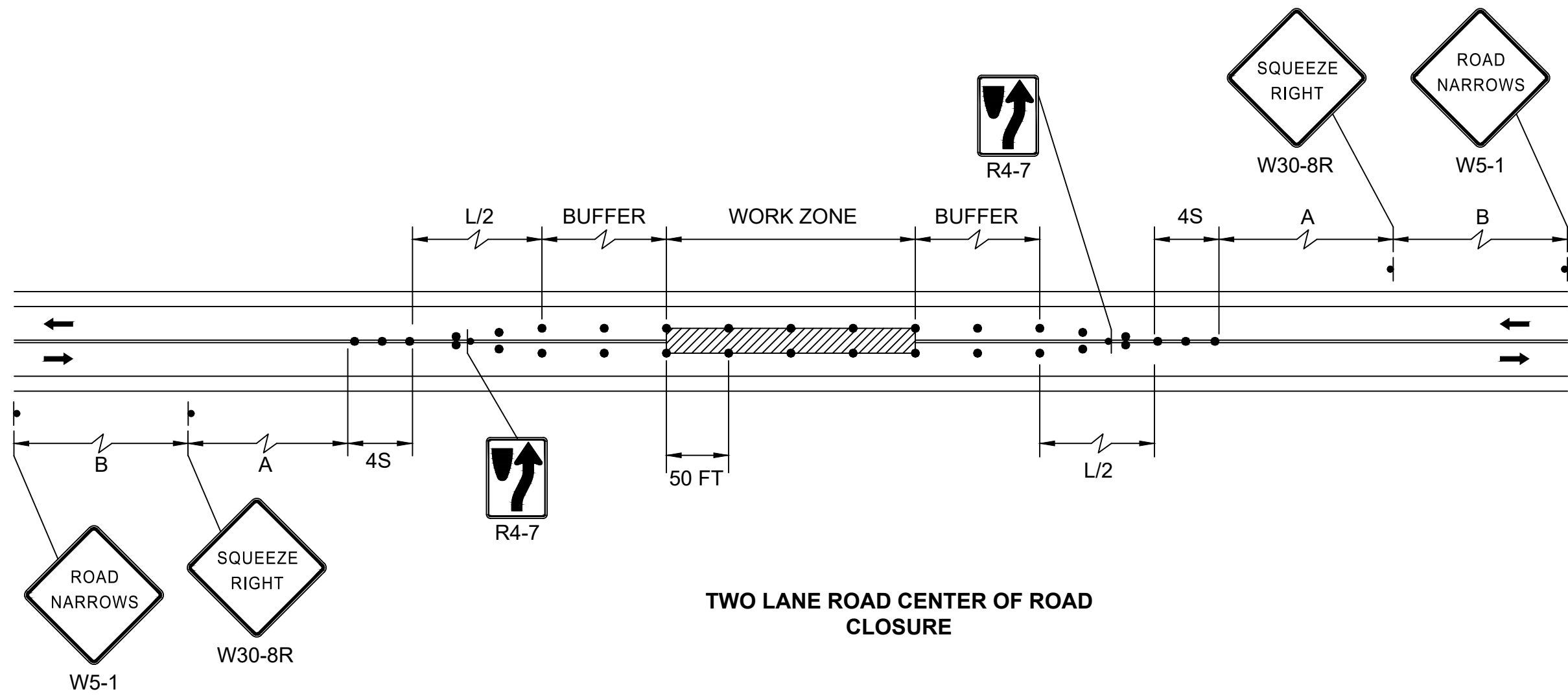
TEMPORARY CURB RAMP-PERPENDICULAR TO CURB



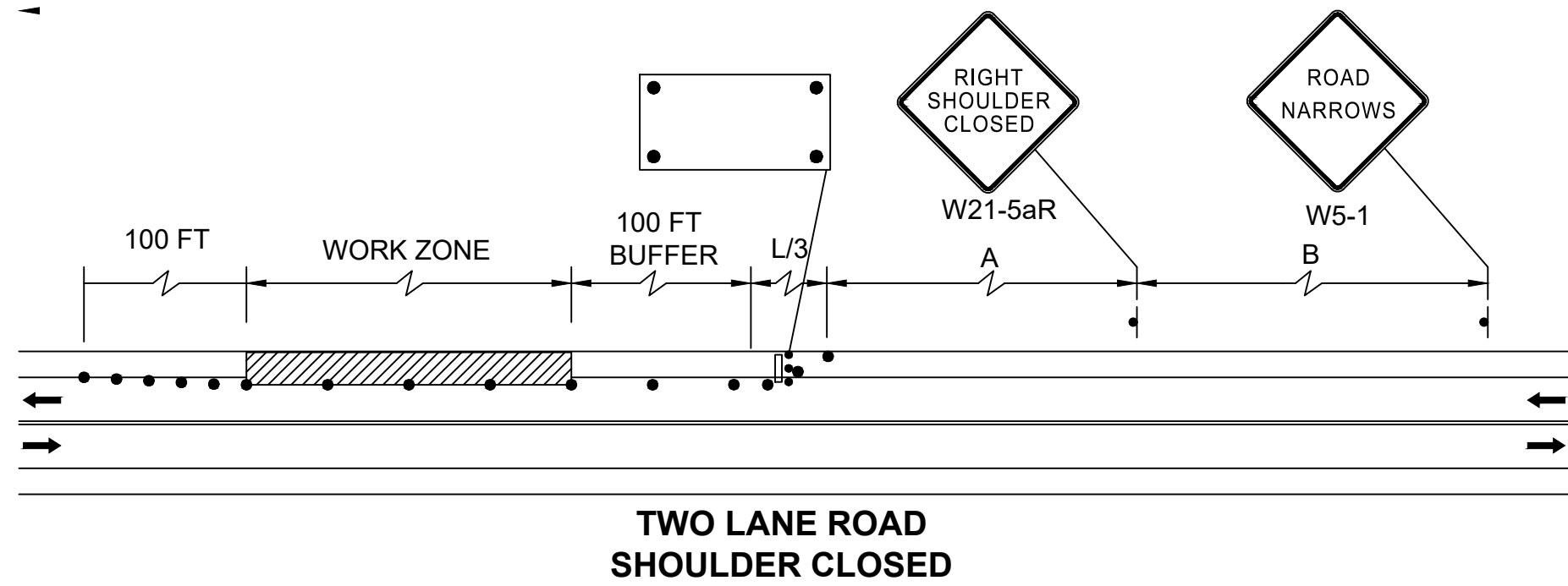
SINGLE LANE APPROACH
CENTER CLOSURE



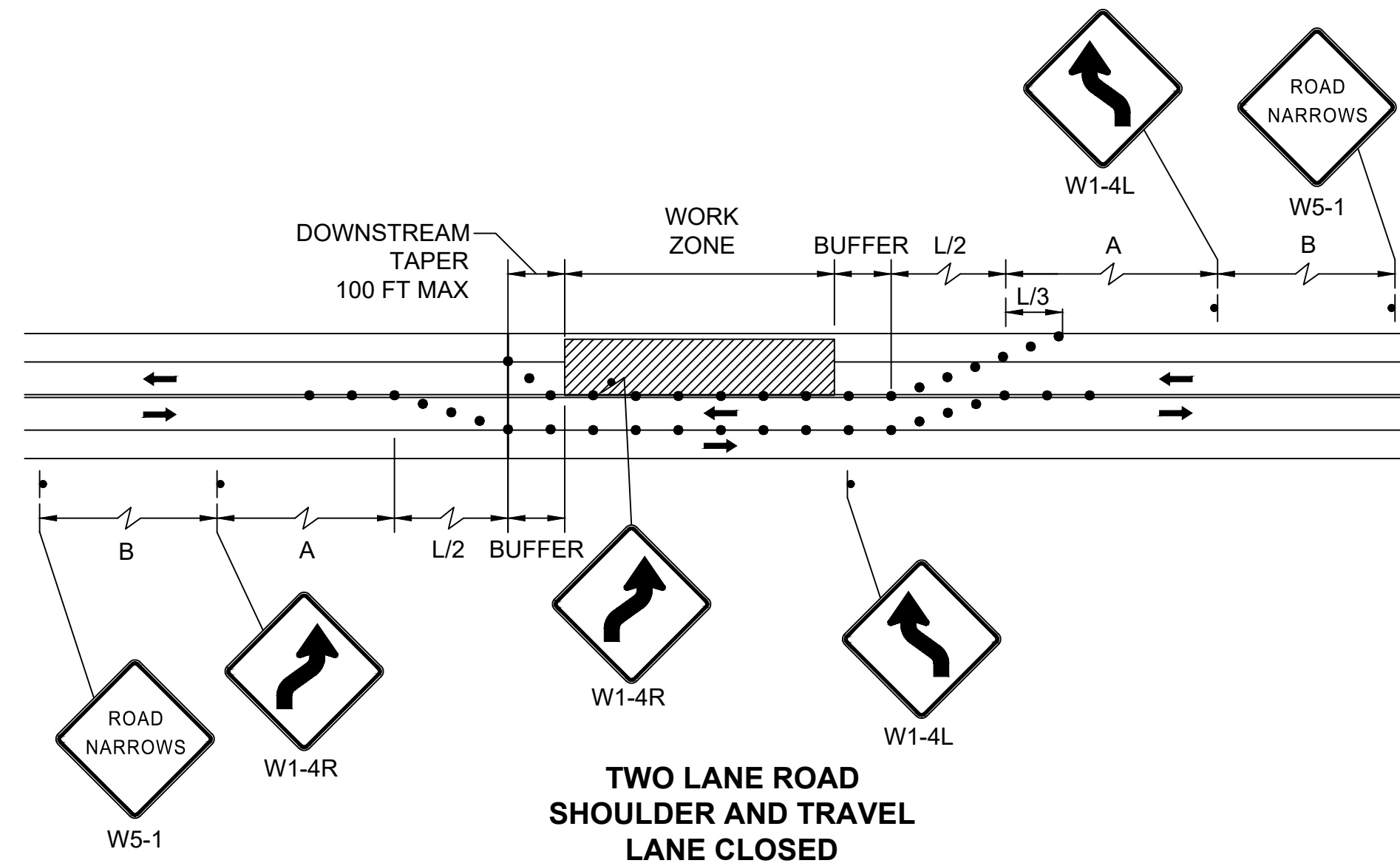
SINGLE LANE APPROACH
ONE QUADRANT CLOSURE



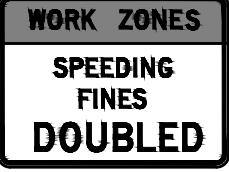
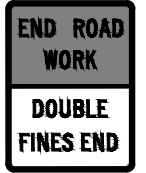
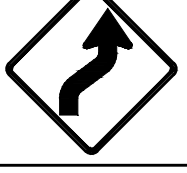
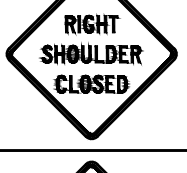
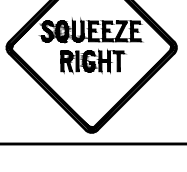
TWO LANE ROAD CENTER OF ROAD
CLOSURE

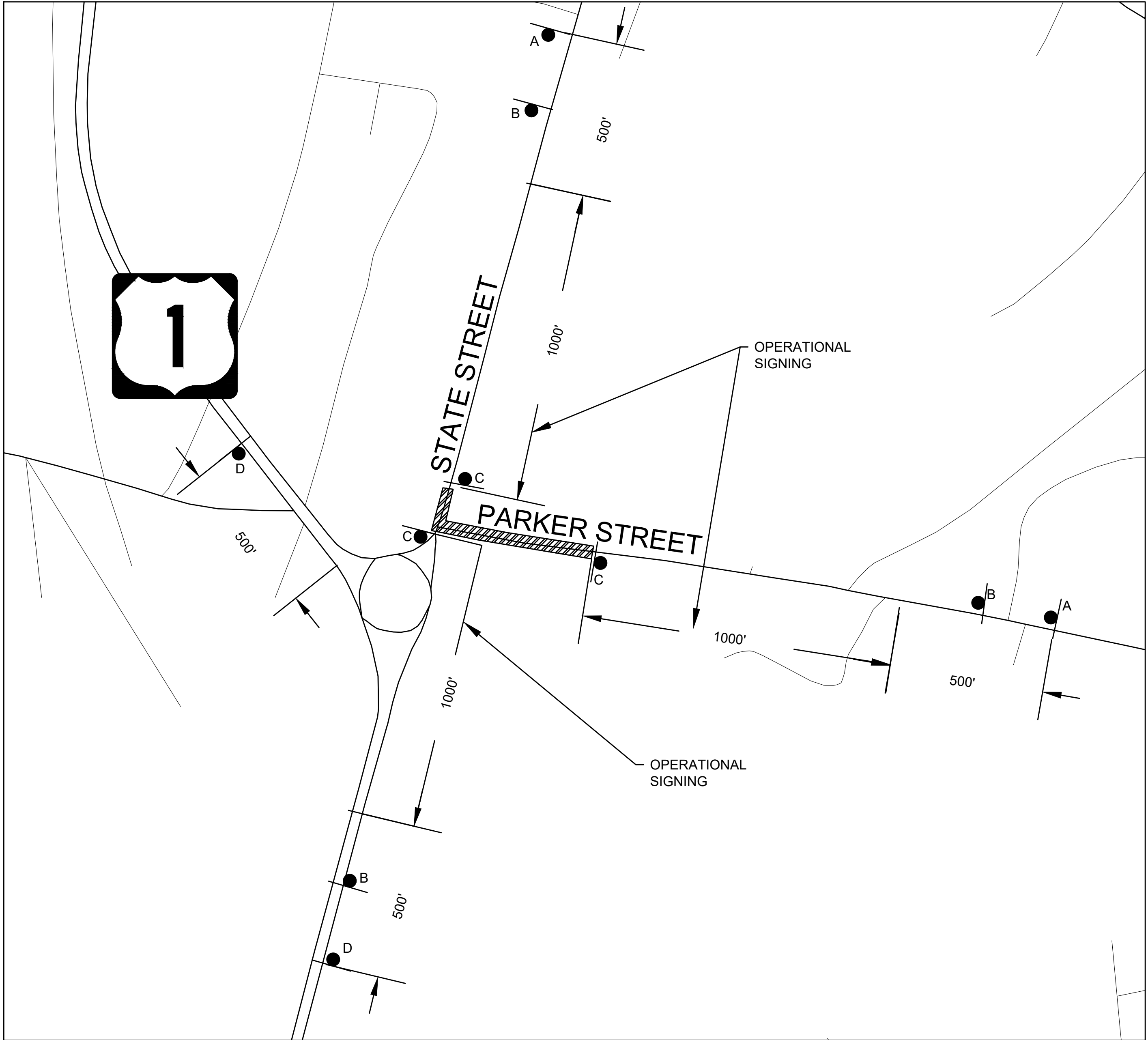


TWO LANE ROAD
SHOULDER CLOSED



TWO LANE ROAD
SHOULDER AND TRAVEL
LANE CLOSED

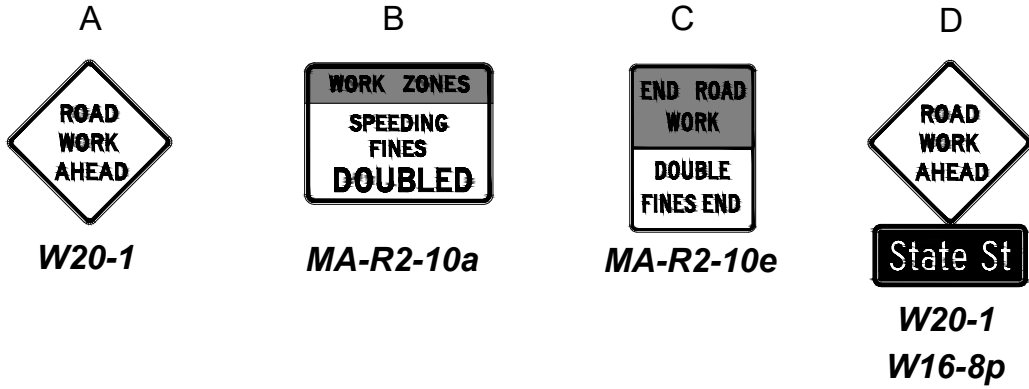
TRAFFIC SIGN SUMMARY												
IDENTIFICATION NUMBER	SIZE OF SIGN (in)		LEGEND	TEXT DIMENSIONS (in)			COLOR			NUMBER OF SIGNS REQUIRED	UNIT AREA (SF)	TOTAL AREA (SF)
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR	BACK-GROUND	LEGEND	BORDER			
MA-R2-10a	48	36		MASSDOT STANDARD SIGN			FL. ORANGE WHITE	BLACK BLACK	BLACK BLACK	3	12.00	36.00
MA-R2-10e	36	48					FL. ORANGE WHITE	BLACK BLACK	BLACK BLACK	3	12.00	36.00
R4-7	24	30		SEE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS			WHITE	BLACK	BLACK	4	5.00	20.00
W1-4L	36	36					FL. ORANGE	BLACK	BLACK	2	9.00	18.00
W1-4R	36	36					FL. ORANGE	BLACK	BLACK	2	9.00	18.00
W5-1	36	36					FL. ORANGE	BLACK	BLACK	4	9.00	36.00
W16-8p	20	8					FL. ORANGE	BLACK	BLACK	2	1.11	2.22
W20-1	36	36					FL. ORANGE	BLACK	BLACK	4	9.00	36.00
W20-4	36	36					FL. ORANGE	BLACK	BLACK	4	9.00	36.00
W20-7b	36	36					FL. ORANGE	BLACK	BLACK	4	9.00	36.00
W21-5aR	36	36					FL. ORANGE	BLACK	BLACK	1	9.00	9.00
W30-8R	36	36					FL. ORANGE	BLACK	BLACK	2	9.00	18.00

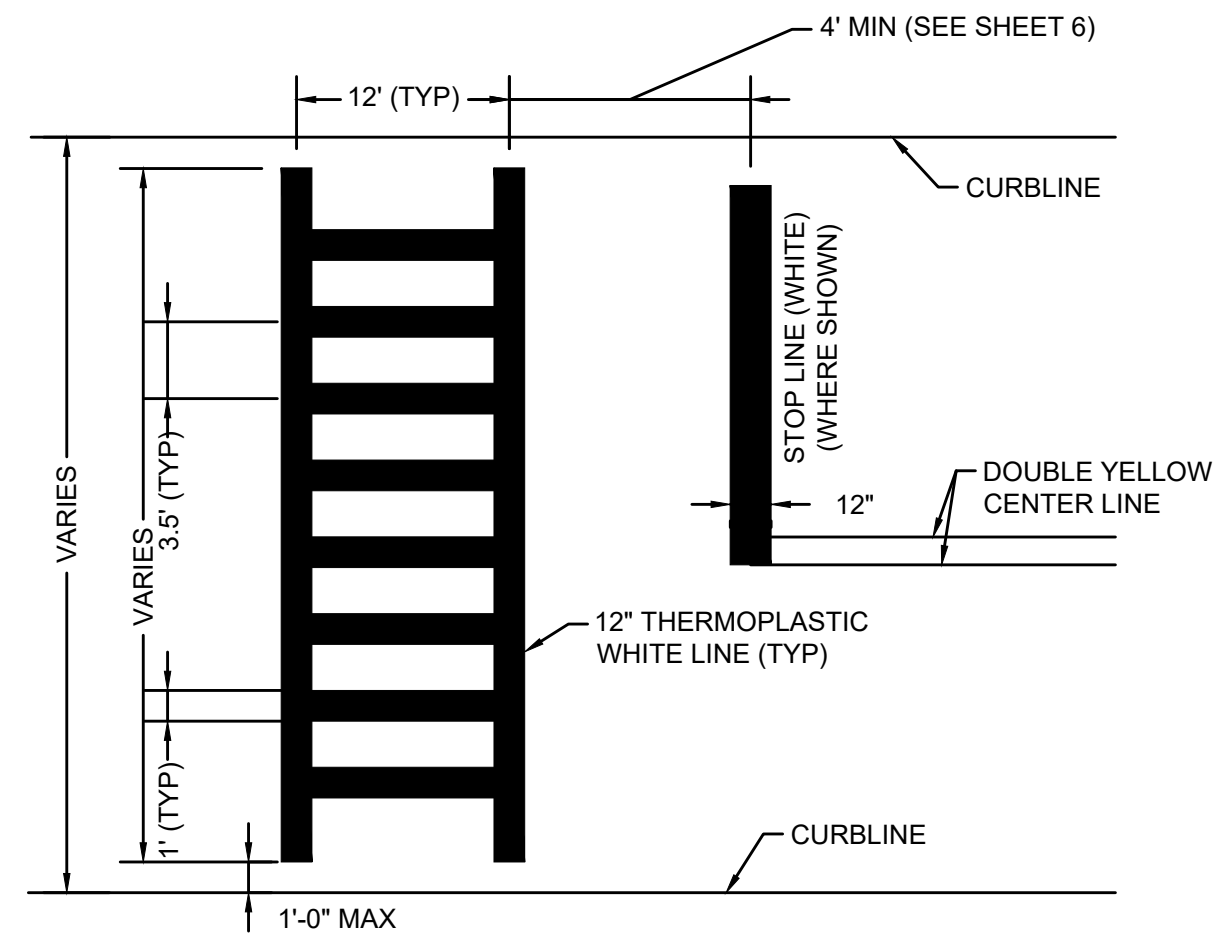


ADVANCED SIGNING SCHEMATIC

N.T.S.

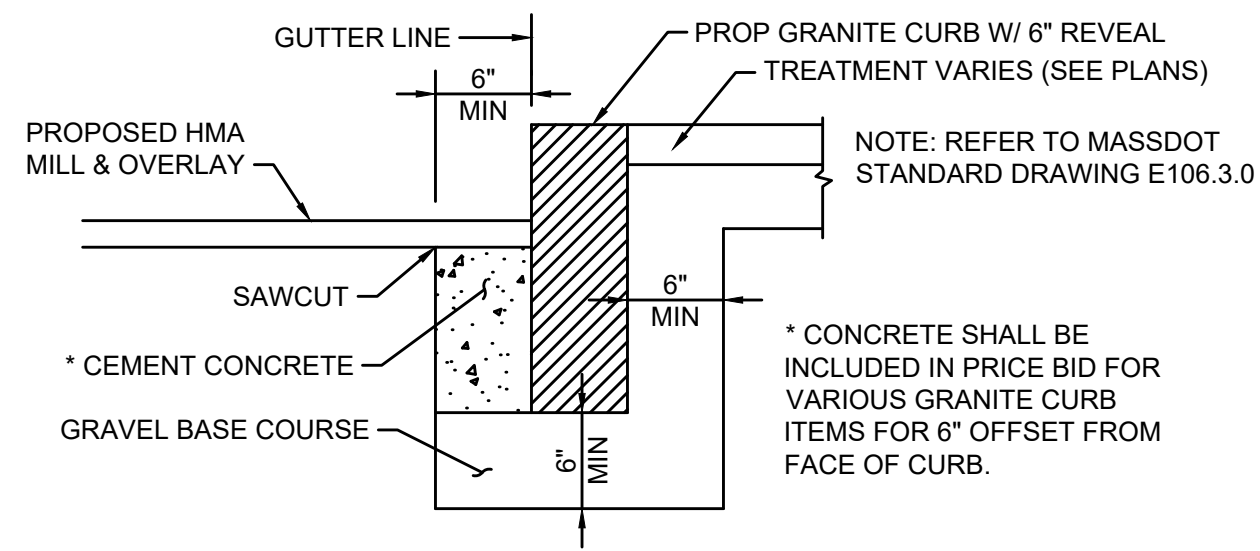
LEGEND:



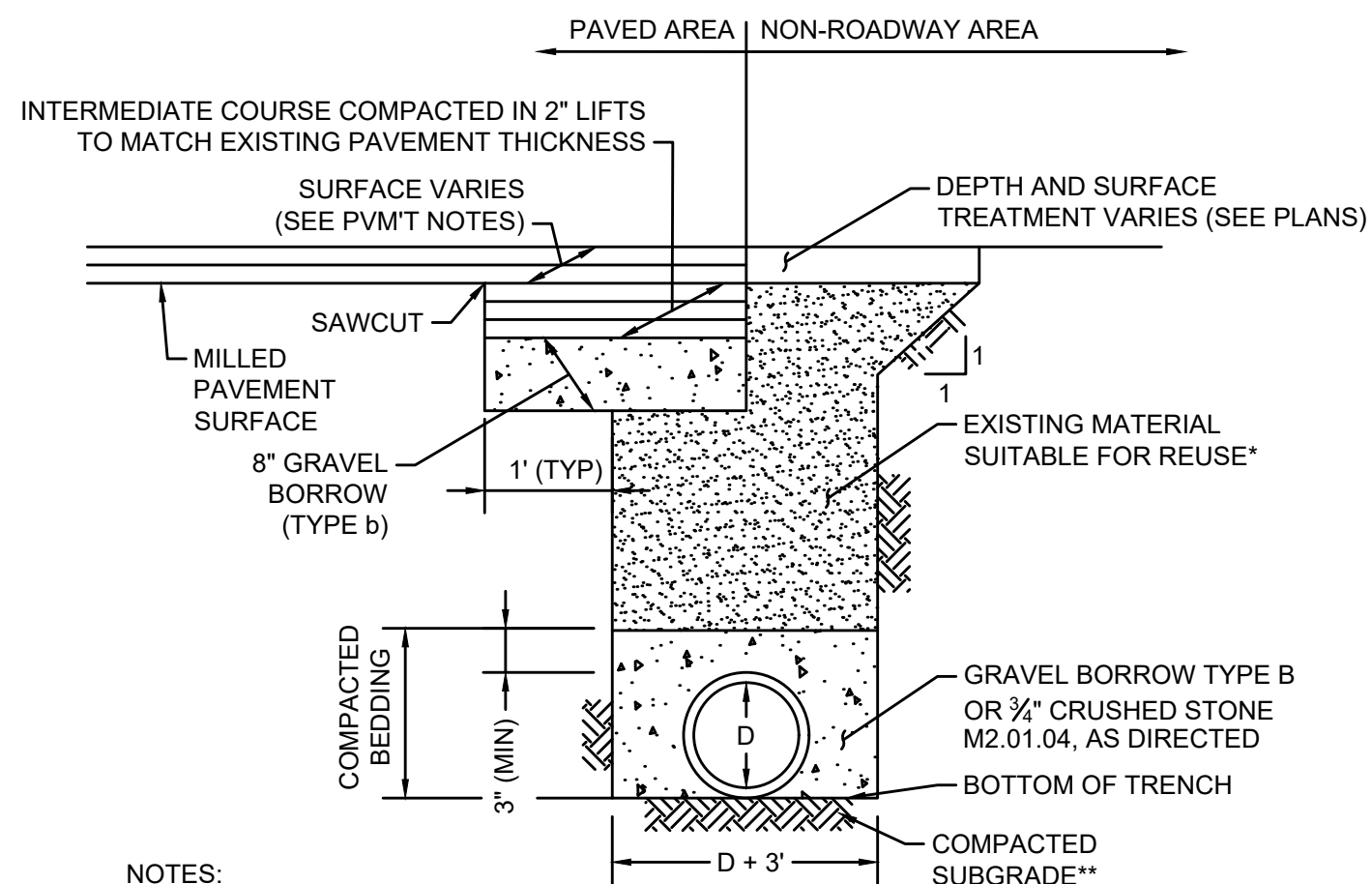


- NOTES:
- ALL 12" LINES SHALL BE APPLIED IN ONE APPLICATION. NO COMBINATION OF LINES (TWO - 6" LINES) WILL BE ACCEPTED.
 - LAYOUT OF CROSSWALKS SHALL BE APPROVED BY THE ENGINEER PRIOR TO APPLICATION.

CROSSWALK PAVEMENT MARKING
N.T.S.



GRANITE CURB IN HMA MILL & OVERLAY
N.T.S.

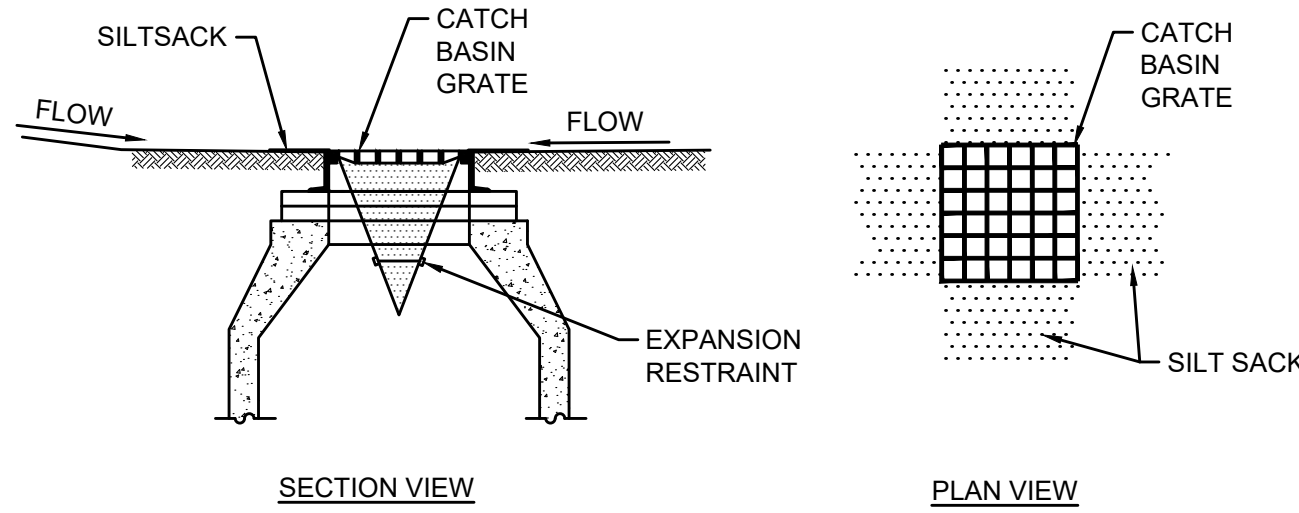


NOTES:

* EXISTING MATERIAL OBTAINED FROM EXCAVATION THAT IS DETERMINED TO BE SUITABLE, AND APPROVED BY THE ENGINEER SHALL BE USED. BACKFILL SHALL BE PLACED IN LAYERS NO MORE THAN 6" IN DEPTH AND THOROUGHLY COMPACTED. BACKFILLING TO A POINT 2' OVER THE PIPE SHALL CONTAIN NO STONES LARGER THAN 3".

**SOFT OR UNSUITABLE MATERIAL EXISTING BELOW THE REQUIRED BEDDING GRADE SHALL BE REMOVED AS DIRECTED AND REPLACED WITH SAND, GRAVEL, CRUSHED STONE OR OTHER SUITABLE MATERIAL AND THOROUGHLY COMPACTED.

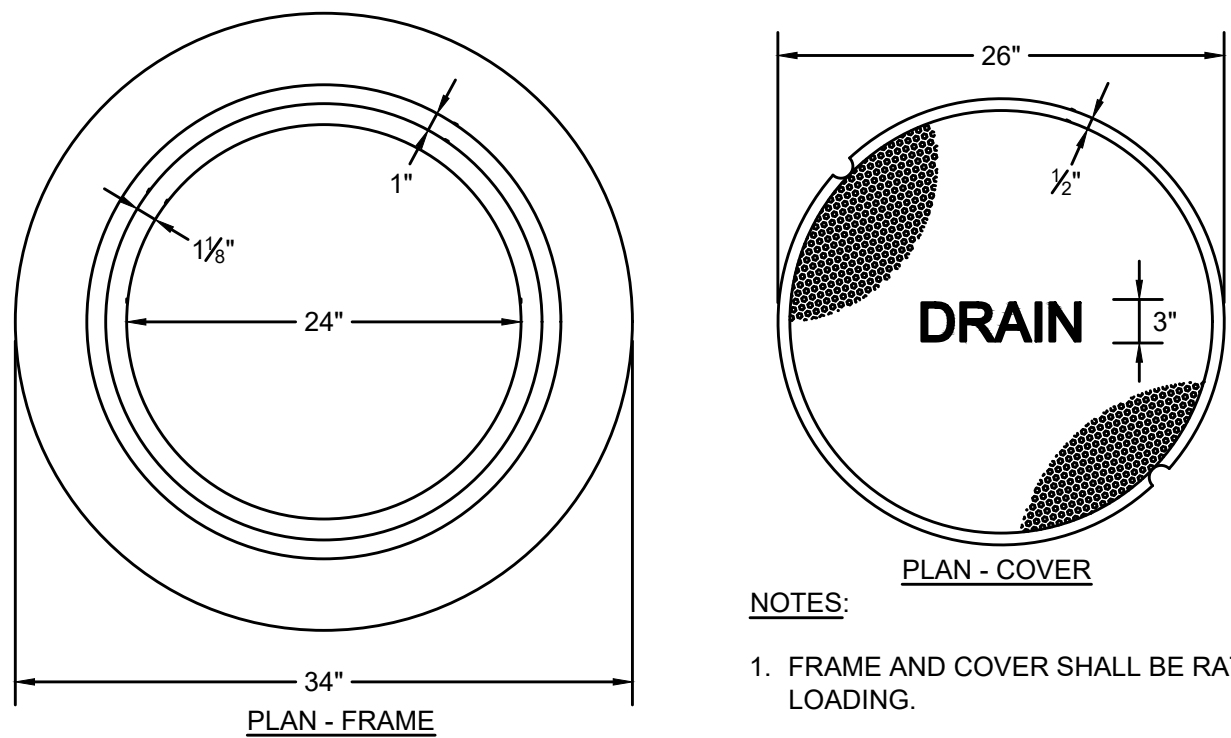
UTILITY TRENCH
N.T.S.



NOTES:

- INSTALL SILT SACK IN EXISTING CATCH BASINS BEFORE COMMENCING WORK, AND IN NEW CATCH BASINS IMMEDIATELY AFTER INSTALLATION OF STRUCTURE. MAINTAIN UNTIL BINDER COURSE PAVING IS COMPLETE OR A PERMANENT STAND OF GRASS HAS BEEN ESTABLISHED.
- GRATE TO BE PLACED OVER SILT SACK.
- SILT SACK SHALL BE INSPECTED PERIODICALLY AND AFTER ALL STORM EVENTS AND CLEANING OR REPLACEMENT SHALL BE PERFORMED PROMPTLY AS NEEDED.

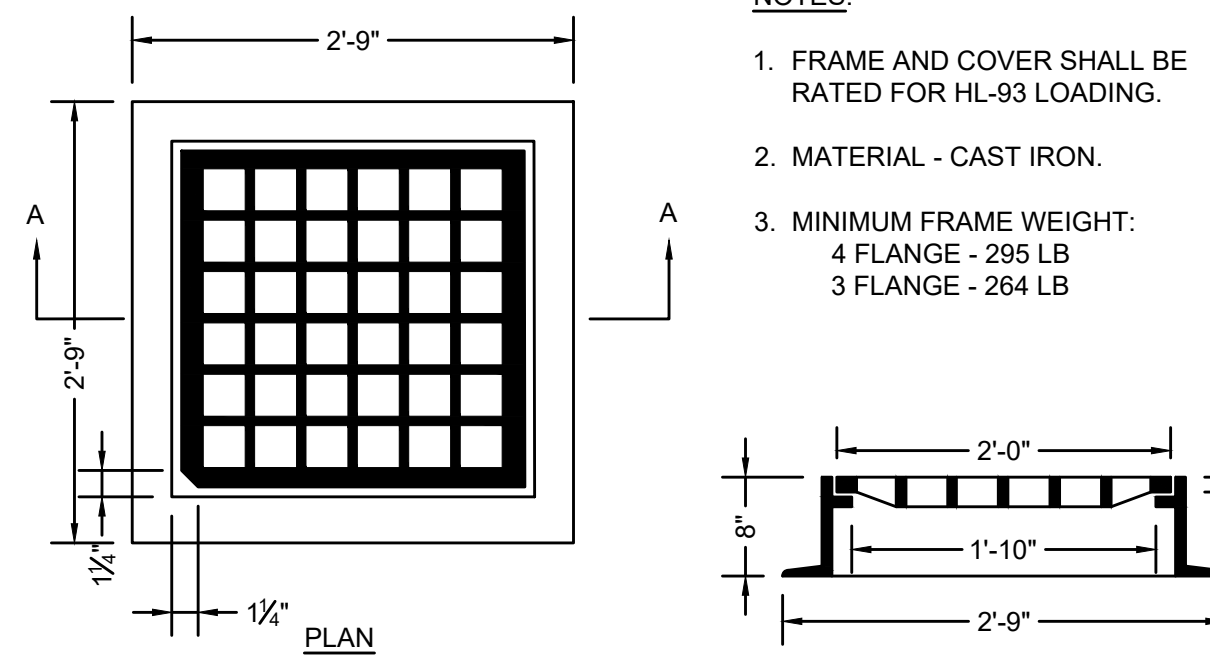
INLET PROTECTION SILT SACK IN CATCH BASIN
N.T.S.



NOTES:

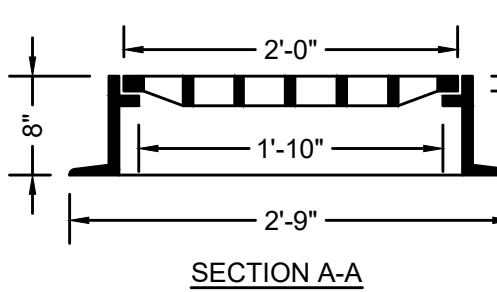
- FRAME AND COVER SHALL BE RATED FOR HL-93 LOADING.
- MATERIAL - CAST IRON.
- MINIMUM MASS - 265 LBS.
- ALL MH FRAMES AND COVERS SHALL BE ADA AND AAB COMPLIANT.
- MANHOLE COVERS SHALL HAVE A DIAMOND PATTERN, PICK HOLES, AND THE WORD "DRAIN" OR "SEWER" CAST IN 3-INCH LETTERS.
- MANHOLE COVERS WITHIN SHLO SHALL COMPLY WITH CONSTRUCTION STANDARD E202.6.0.

MANHOLE FRAME & COVER (MUNICIPAL STANDARD)
N.T.S.

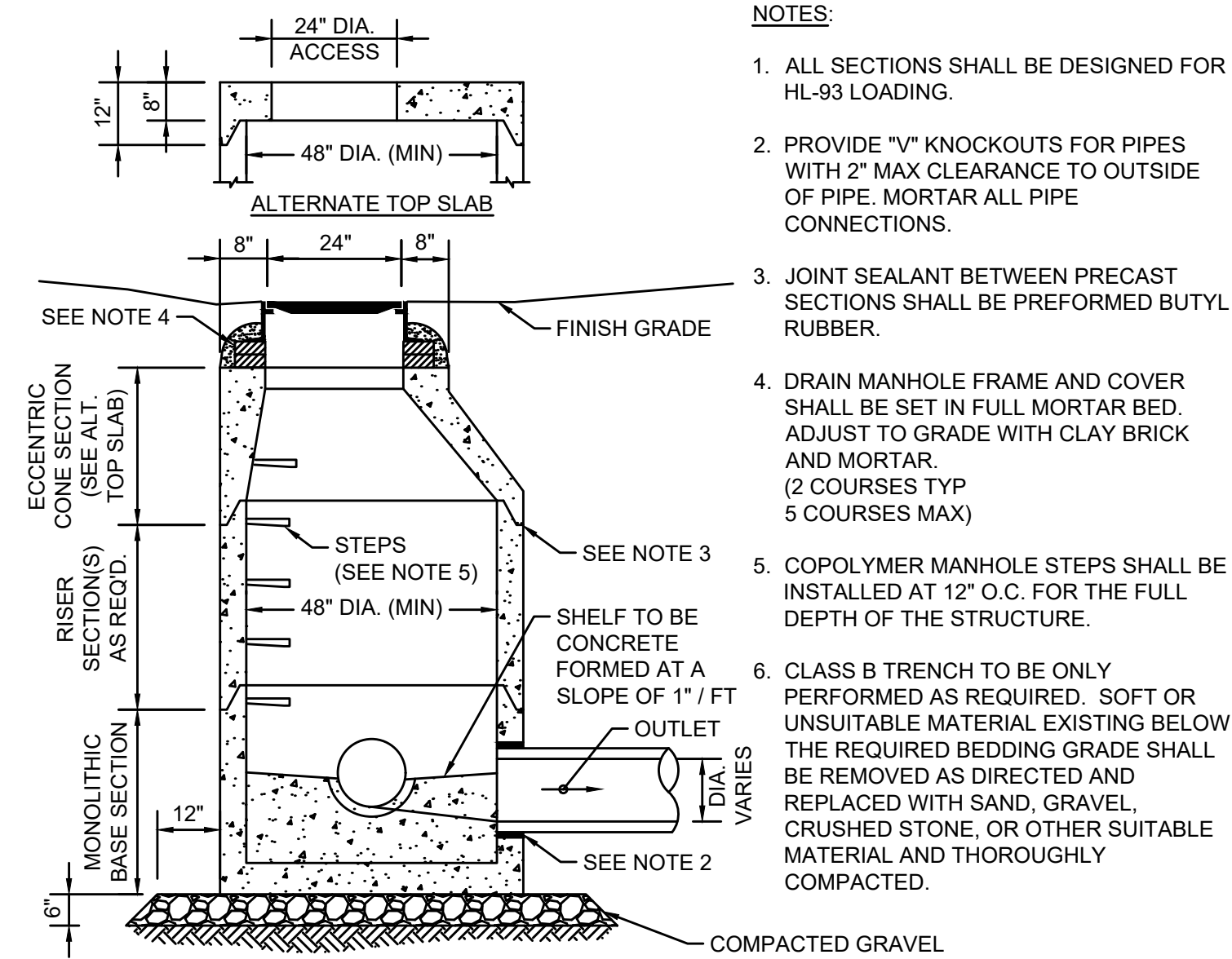


NOTES:

- FRAME AND COVER SHALL BE RATED FOR HL-93 LOADING.
- MATERIAL - CAST IRON.
- MINIMUM FRAME WEIGHT:
4 FLANGE - 295 LB
3 FLANGE - 264 LB



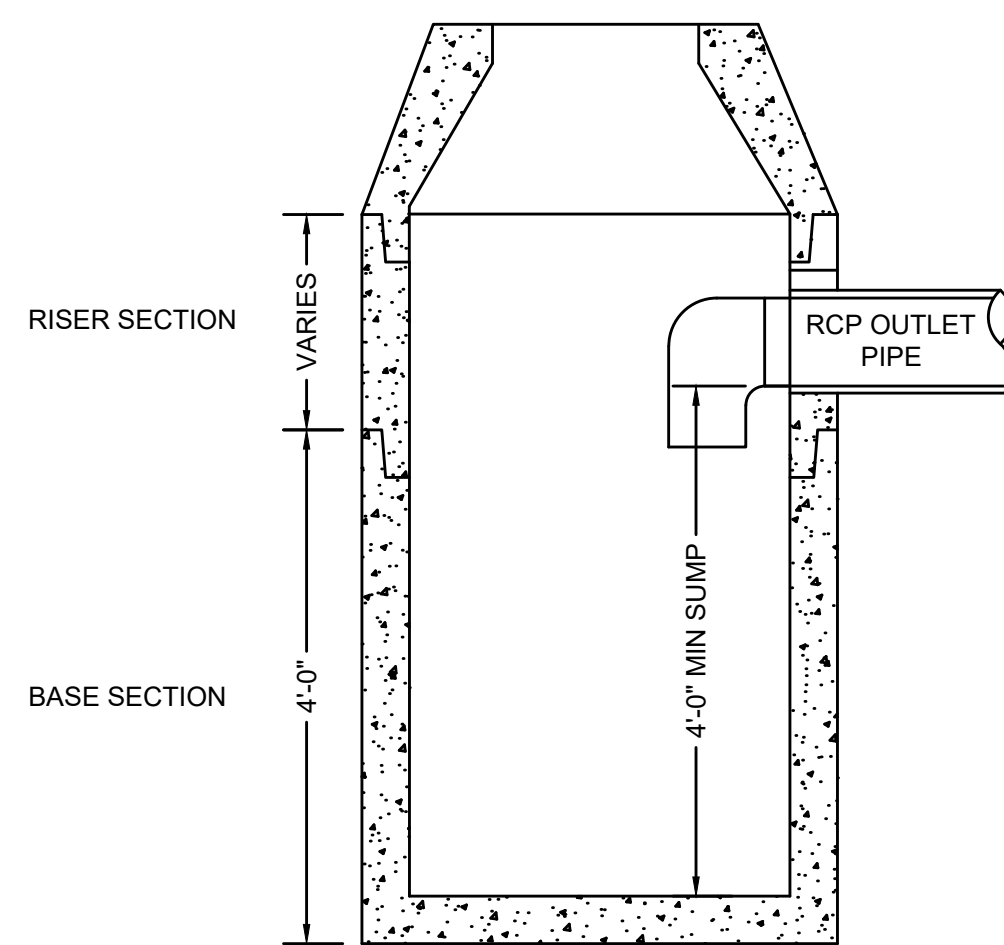
CATCH BASIN FRAME & GRATE (MUNICIPAL STANDARD)
N.T.S.



NOTES:

- ALL SECTIONS SHALL BE DESIGNED FOR HL-93 LOADING.
- PROVIDE "V" KNOCKOUTS FOR PIPES WITH 2" MAX CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS.
- JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.
- DRAIN MANHOLE FRAME AND COVER SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH CLAY BRICK AND MORTAR. (2 COURSES TYP 5 COURSES MAX)
- COPOLYMER MANHOLE STEPS SHALL BE INSTALLED AT 12" O.C. FOR THE FULL DEPTH OF THE STRUCTURE.
- CLASS B TRENCH TO BE ONLY PERFORMED AS REQUIRED. SOFT OR UNSUITABLE MATERIAL EXISTING BELOW THE REQUIRED BEDDING GRADE SHALL BE REMOVED AS DIRECTED AND REPLACED WITH SAND, GRAVEL, CRUSHED STONE, OR OTHER SUITABLE MATERIAL AND THOROUGHLY COMPACTED.

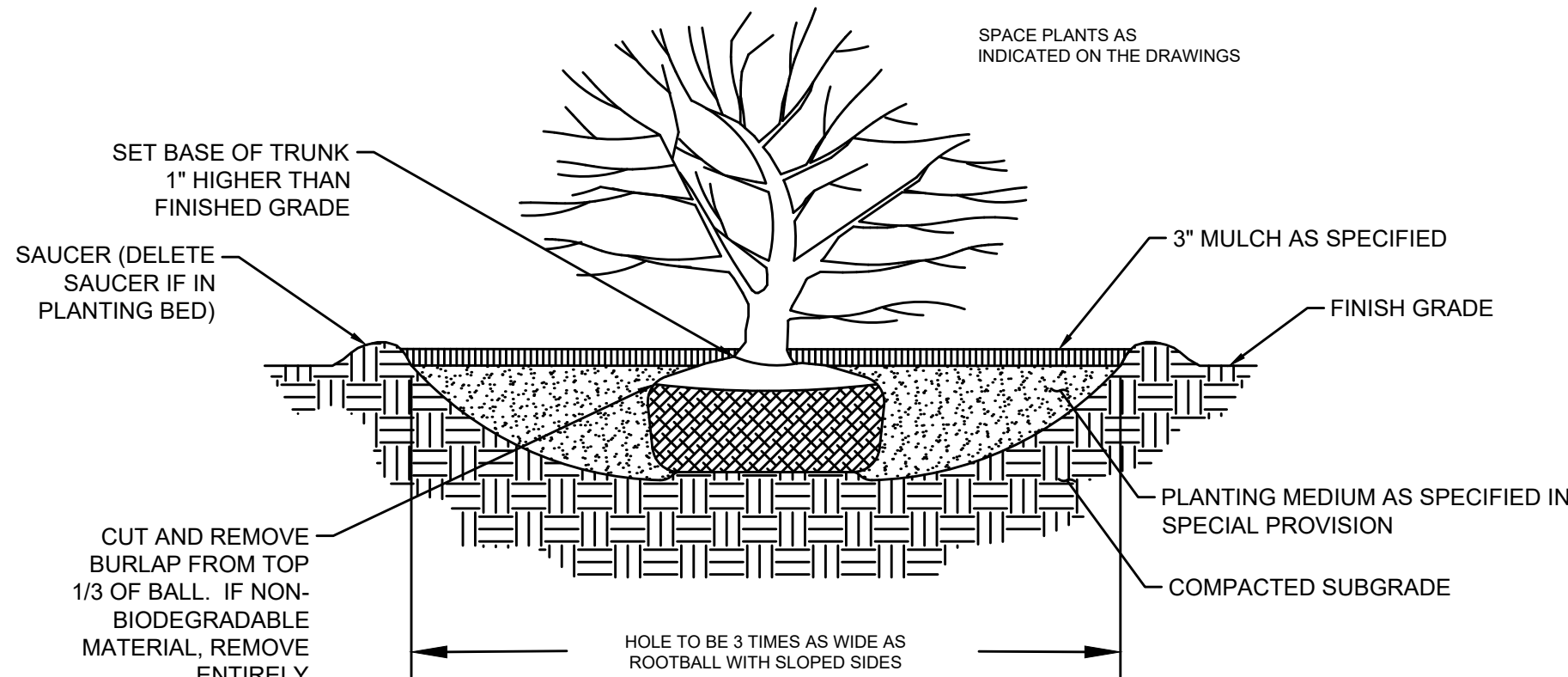
DRAIN MANHOLE
N.T.S.



NOTE:

ALL CATCH BASINS SHALL CONFORM TO MASSDOT CONSTRUCTION STANDARD E 201.4.0 EXCEPT FOR 4' SUMP DEPTH AS SHOWN

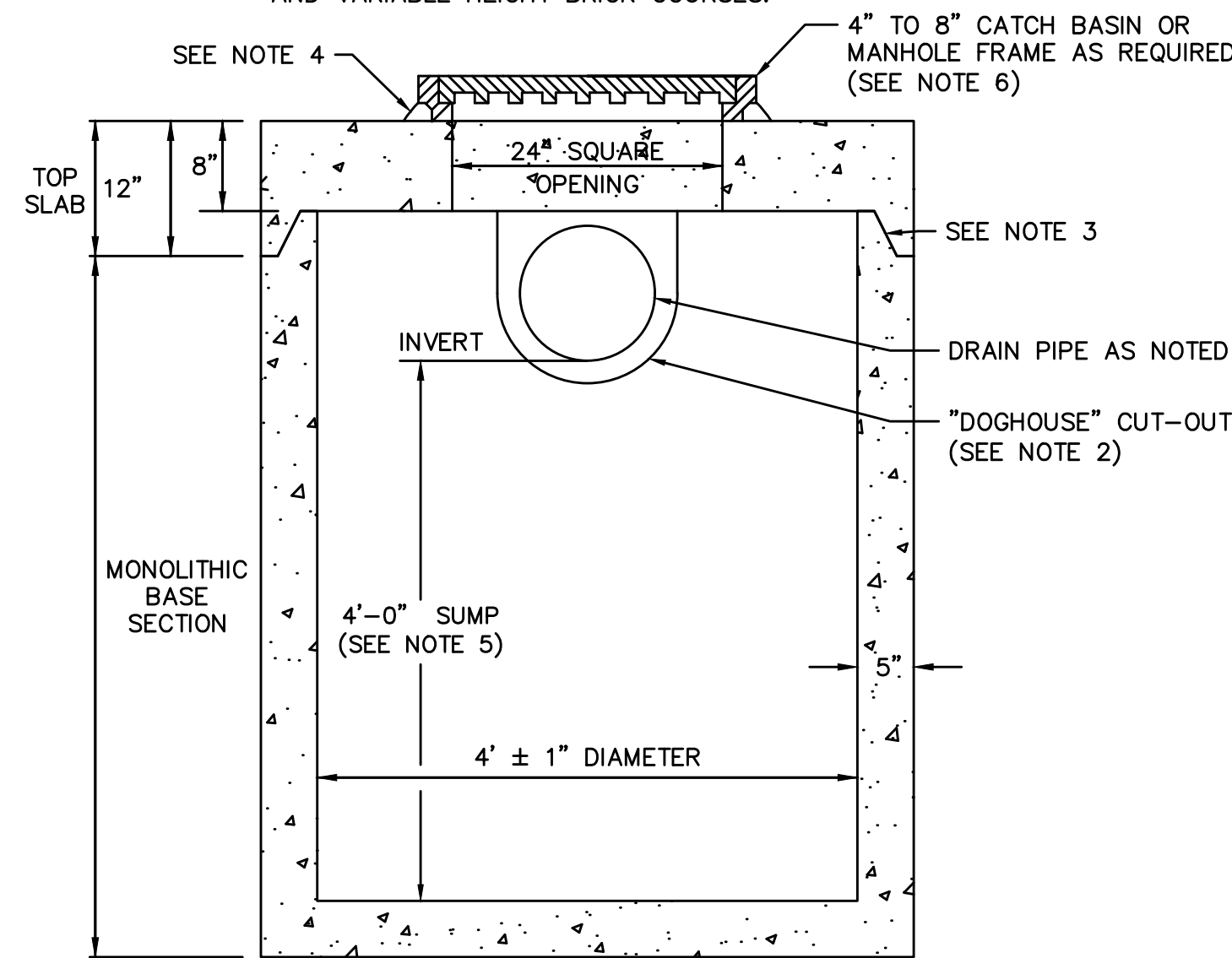
DEEP SUMP CATCH BASIN WITH HOOD
N.T.S.



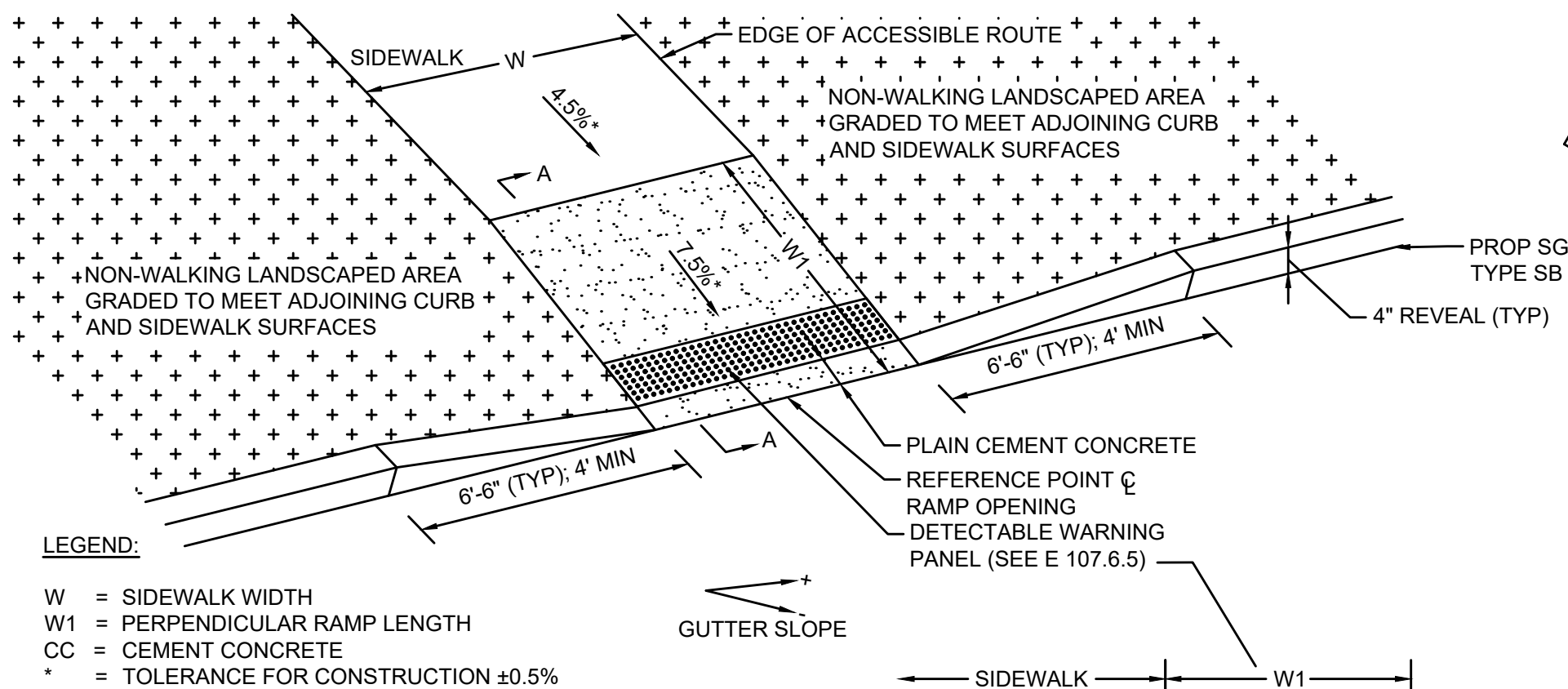
SHRUB PLANTING
N.T.S.

NOTES:

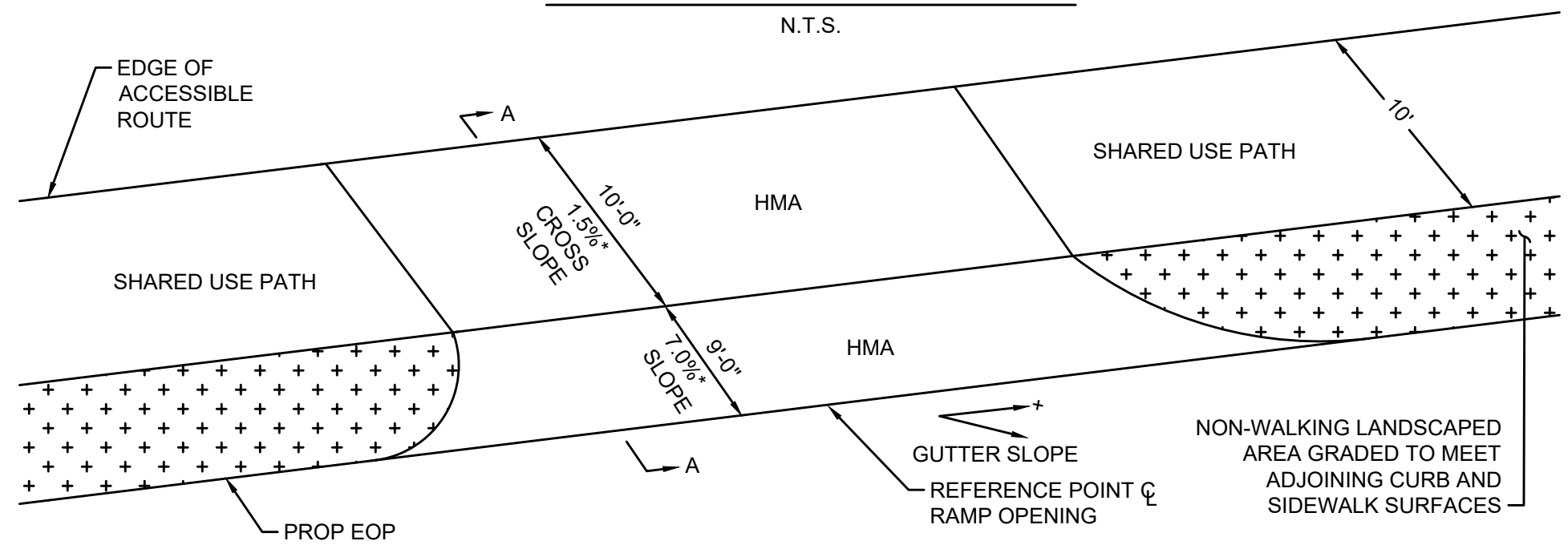
- ALL SECTIONS SHALL BE DESIGNED FOR HL-93 LOADING.
- PROVIDE DOGHOUSE OPENING FOR PIPE WITH 2" MAX CLEARANCE TO OUTSIDE OF PIPE. TOP SLAB SHALL NOT REST DIRECTLY ON PIPE. GROUT ALL PIPE CONNECTIONS WITH NON-SHRINK GROUT.
- JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.
- CATCH BASIN AND MANHOLE FRAMES SHALL BE SET IN FULL MORTAR BED.
- OMIT 4' SUMP FOR MANHOLE STRUCTURES.
- FRAME ELEVATION SHALL BE INSTALLED AT FINISH GRADE USING VARIABLE FRAME DEPTHS AND VARIABLE HEIGHT BRICK COURSES.



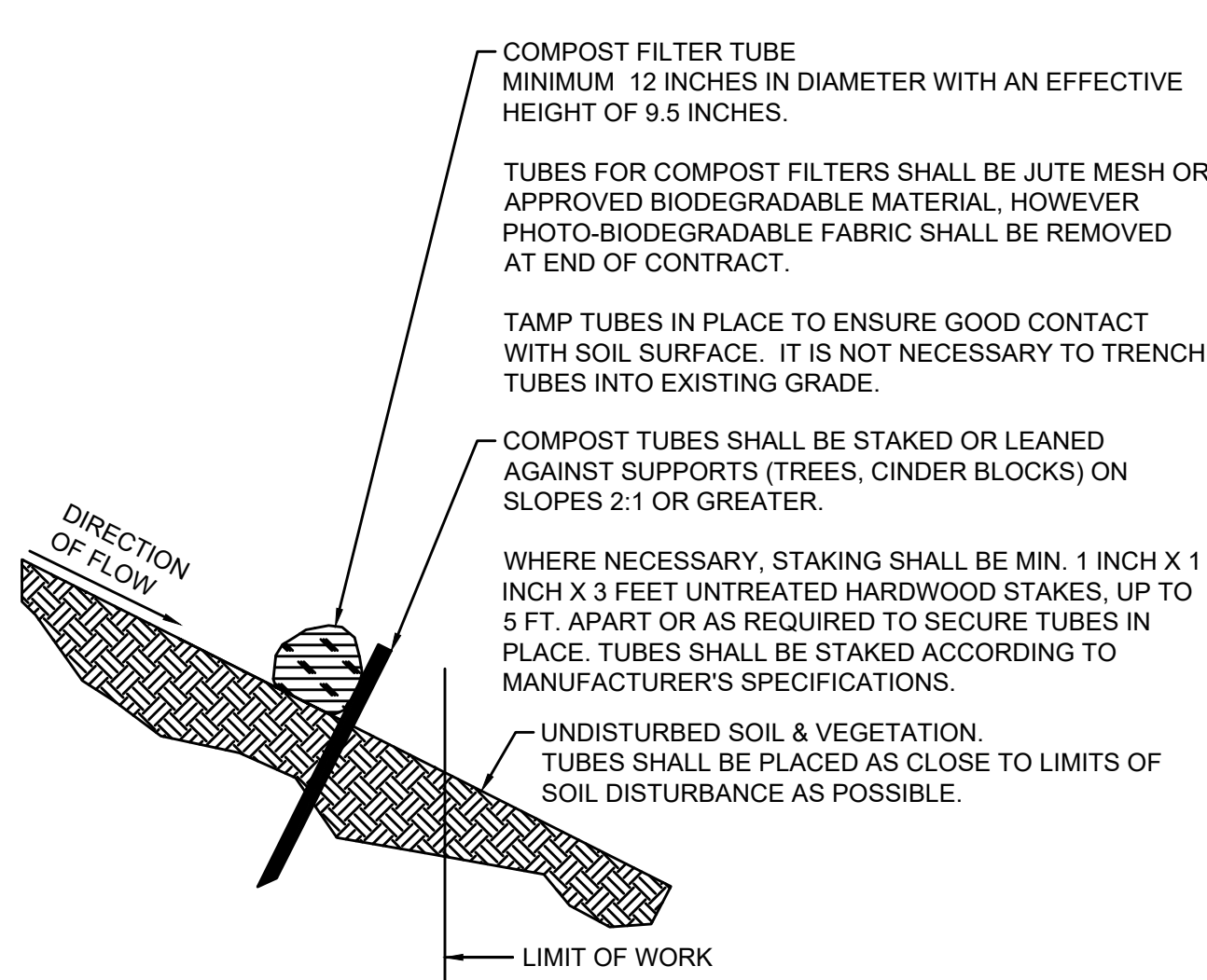
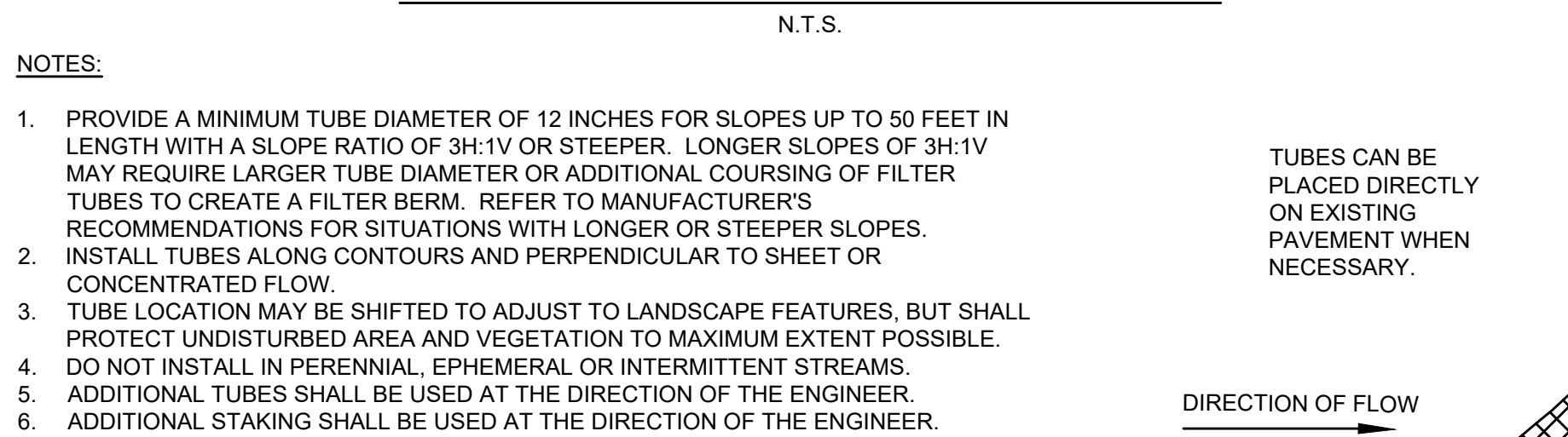
SPECIAL CATCH BASIN/MANHOLE (SHALLOW)
N.T.S.



WHEELCHAIR RAMP TYPE A

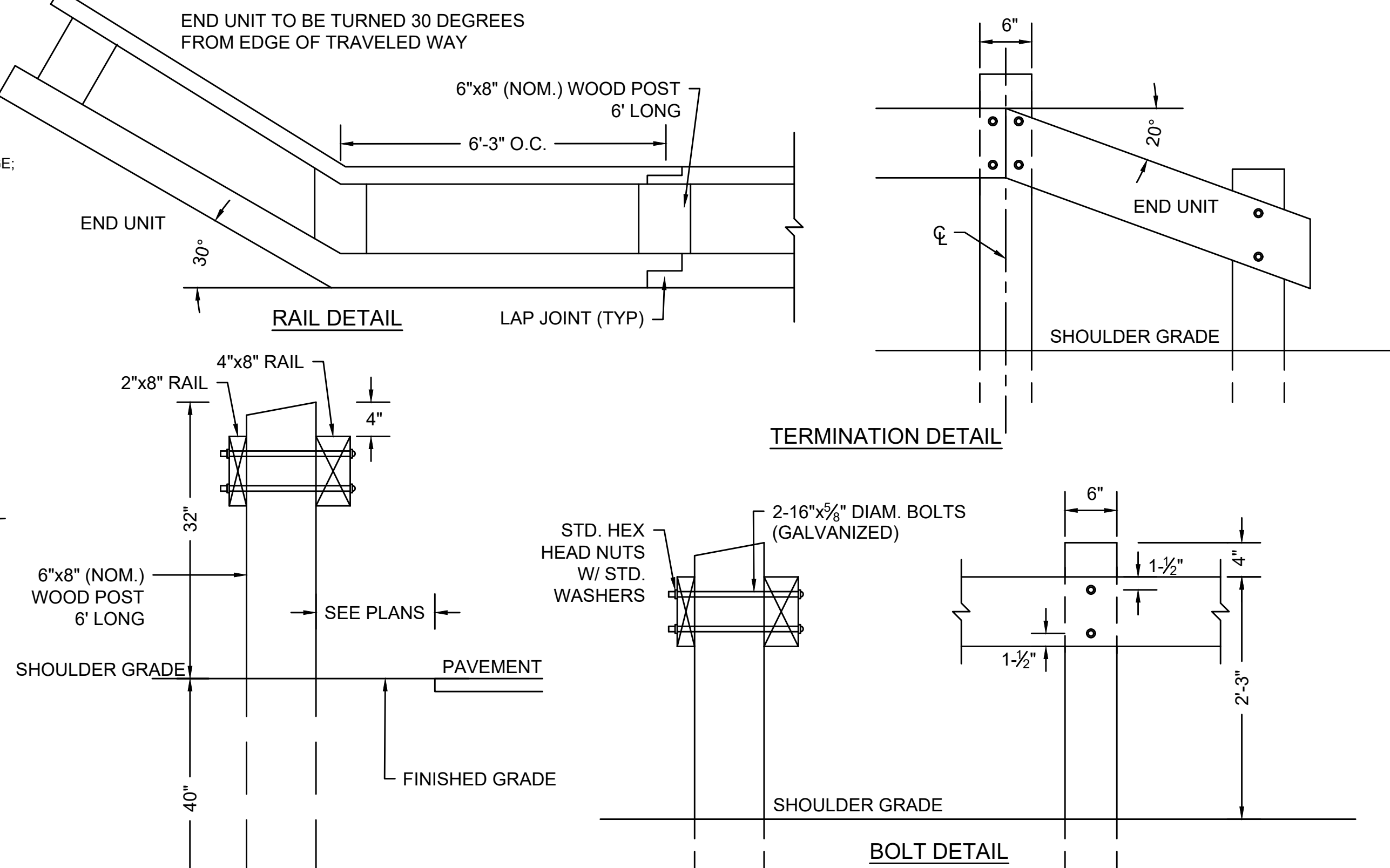


SIDEWALK THROUGH DRIVEWAY TYPE A



COMPOST FILTER TUBE

N.T.S.



PROPOSED PLANTING SUMMARY TABLE					
SYMBOL	QTY	BOTANICAL NAME	COMMON NAME	SIZE	COMMENTS
	5	AZALEA VISCOSUM	AZALEA - SWAMP	18" - 24"	CONTAINER
	5	VIBURNUM DENTATUM	ARROWWOOD	18" - 24"	CONTAINER
	5	CORNUS AMOMUM	SILKY DOGWOOD	24" - 36"	CONTAINER

- PLANTING NOTES:
- CONTRACTOR SHALL HAVE ALL SUBSURFACE UTILITIES MARKED PRIOR TO THE START OF WORK.
 - FINAL LOCATION OF ALL PLANT MATERIAL WILL BE APPROVED BY THE RESIDENT ENGINEER PRIOR TO PLANTING.
 - ALL PLANT MATERIAL WILL HAVE TAGS INDICATING COMMON NAME, BOTANICAL NAME & SIZE.
 - ALL PLANTS WILL BE MULCHED PER THE PLANTING SPECIFICATIONS AND DETAILS.
 - WETLAND SOIL OR LOAM SHALL BE APPLIED TO ALL DISTURBED AREAS AND SEEDED WITH THE CORRESPONDING SEED MIX PER THE APPLICABLE DETAIL.
 - WETLAND SEED MIX SHALL BE IN ACCORDANCE WITH MASSDOT STANDARDS. SEED MIX SHALL BE SITE SPECIFIC THAT IS NATIVE TO THE CITY OF NEWBURYPORT.

WETLAND REPLICATION SPECIFICATIONS & GENERAL NOTES:

REPLICATION SITE SELECTION

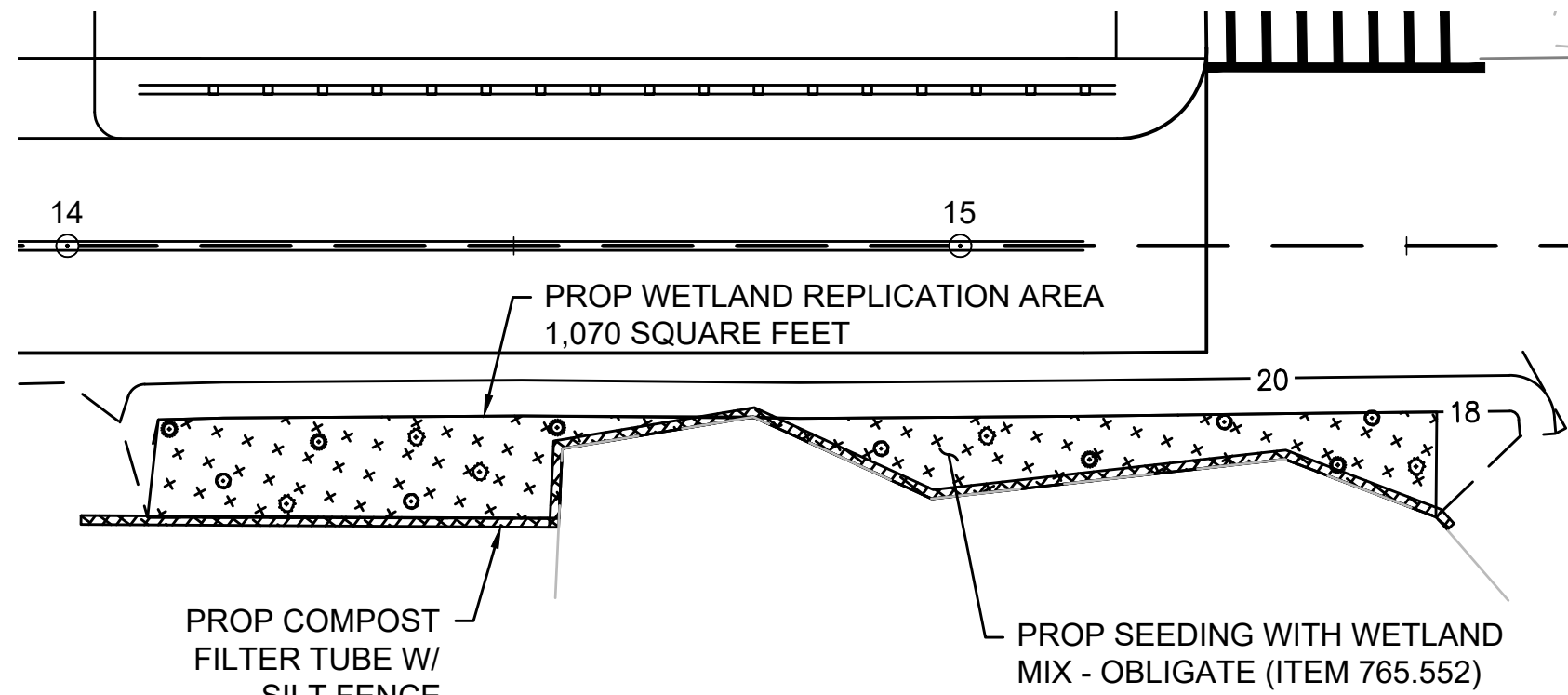
THE WETLAND REPLICATION AREA ABUTS EXISTING BORDERING VEGETATED WETLAND. THE PROPOSED WETLAND REPLICATION IS 1,070 S. F. REPRESENTING A MITIGATION IMPAT RATIO OF 1:1. THE REPLICATION AREA WILL CONSIST OF WETLAND SHRUBS AND WETLAND SEED MIX AS SHOWN IN THE ATTACHED TABLE. REPLICATION SHALL BE SUPERVISED BY A PROFESSIONAL WETLAND SCIENTIST. THE PROXIMITY OF THE EXISTING WETLAND TO THE REPLICATION AREA WILL IMPROVE THE LIKELIHOOD OF SUCCESSFUL RESTORATION AND AID IN THE RECRUITMENT OF THE AREA BY OTHER WETLAND PLANTS. THE REPLICATED WETLAND ONCE ESTABLISHED WITH NATIVE PLANTINGS WILL PROVIDE SIGNIFICANTLY IMPROVED HABITAT FUNCTION FROM THE IMPACTED WETLAND.

HYDROLOGY

WETLAND HYDROLOGY WITHIN THE REPLICATION AREA WILL BE ACHIEVED BY ESTABLISHING AN UNRESTRICTED HYDRAULIC CONNECTION BETWEEN THE REPLICATED WETLAND AND THE EXISTING WETLAND, AND BY INTERCEPTING THE SEASONAL HIGH GROUNDWATER TABLE. SUPPLEMENTAL HYDROLOGY WILL BE PROVIDED BY SURFACE RUNOFF FROM PARKER STREET. FINISHED GRADES OF THE REPLICATION AREA SHALL BE ADJUSTED IN THE FIELD TO ASSURE PROPER HYDROLOGIC CONNECTION WITH ADJACENT WETLAND AND PROPER RELATION TO GROUNDWATER ELEVATIONS TO ASSURE THE AREA WILL PERMANENTLY FUNCTION AS WETLAND.

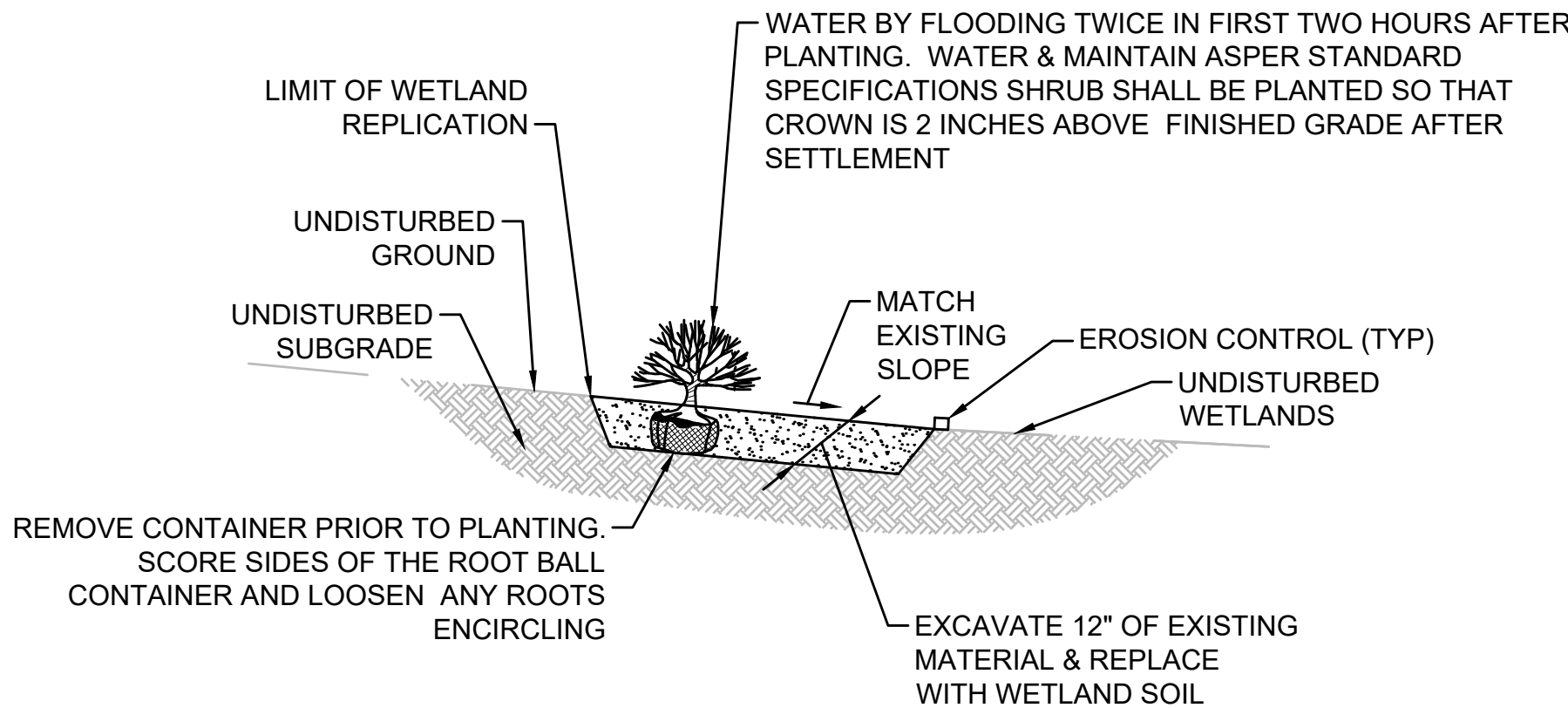
SOILS

SOIL TRANSLOCATION FROM THE IMPACTED WETLAND IS TYPICALLY THE PREFERRED METHODOLOGY FOR OBTAINING ORGANIC RICH LOAM WITH A MINIMUM 20% ORGANIC CARBON BY DRY WEIGHT. IMPORTED SOIL WILL BE APPROVED BY A WETLAND SCIENTIST PRIOR TO PLACEMENT IN THE REPLICATION AREA AND SHALL BE INSTALLED TO A MINIMUM DEPTH OF 12 INCHES. SURVEYING OF SUBGRADES AND FINISHED ELEVATIONS SHOULD BE CONDUCTED FREQUENTLY DURING CONSTRUCTION. SOILS TO BE USED AT THE MITIGATION SITE SHOULD BE USED IMMEDIATELY IF POSSIBLE AND STOCKPILED FOR AS LITTLE TIME AS POSSIBLE. WHILE STOCKPILED THE SOILS SHOULD BE KEPT WET AND NOT BE ALLOWED TO DRY OUT.



REPLICATION AREA - PLAN VIEW

SCALE: 1"=20'



- NOTES:
- ALL DISTURBED AREAS TO BE SEEDED WITH WETLAND MIX - OBLIGATE (ITEM 765.552).

WETLAND REPLICATION DETAIL

N.T.S.

COMTAMINATION OF THESE SOILS SHOULD BE PREVENTED. THEY SHOULD BE TRANSPORTED IN VEHICLES THAT HAVE BEEN WASHED SO THAT NO EXOTIC/INVASIVE SEEDS FROM OTHER SITES GET MIXED IN WITH THEM.

PLANTING REQUIREMENTS

SHRUBS SHOULD BE PLANTED 8-10 FEET ON CENTER IN A RANDOM PATTERN OR IN CLUSTERS TO MIMIC NATURAL CONDITIONS.

INVASIVE SPECIES

TRUCKS THAT HAVE PREVIOUSLY BEEN ON OTHER SITES SHOULD BE WASHED PRIOR TO INTRODUCTION TO THE REPLICATION SITE SO THAT MUD/DIRT WITH EXOTIC/INVASIVE SEEDS IS NOT INADVERTENTLY BROUGHT TO THE REPLICATION SITE.

TIMING OF PLANTINGS

ALL PLANTING SHOULD OCCUR AT THE BEGINNING OR END OF THE GROWING SEASON. FALL PLANTINGS SHOULD BE DONE BEFORE THE FIRST FROST, BUT NO LATER THAN NOVEMBER 15.

EROSION CONTROL

EROSION CONTROLS WILL BE PLACED ALONG THE BOUNDARY OF THE WETLAND REPLICATION AREA. UPON COMPLETION OF THE REPLICATION AREA, INSTALLATION OF SILTATION FENCING AND COMPOST FILTER TUBES BETWEEN THE REPLICATION AREA AND THE ADJACENT UPPLAND WILL BE PROVIDED TO PREVENT SILT FROM ENTERING THE REPLICATION AREA. PRIOR TO PERMANENT ESTABLISHMENT OF VEGETATION IN THE REPLICATION AREA, SOILS WILL BE TEMPORARILY STABILIZED TO PREVENT IMPACTS FROM EROSION BY MULCHING AND SEEDING WITH A WETLAND SEED MIXTURE UNTIL RE-ESTABLISHMENT OF WETLAND VEGETATION OCCURS. ALL EMBANKMENT SLOPES ADJACENT TO WETLAND REPLICATION AREAS SHOULD HAVE SLOPES NO GREATER THAN 2H:1V UNLESS STABILIZED BY STRUCTURAL MEANS. BIOENGINEERING STABILIZATION METHODS ARE RECOMMENDED FOR SLOPE STABILIZATION. ORGANIC SOILS AND WETLAND VEGETATION SHOULD NOT BE PLACED IN THE REPLICATION AREA UNTIL IT IS VERIFIED THAT THE FINAL EXCAVATED GRADE FOR THE REPLICATION AREA WILL ALLOW THE FINISHED GRADE OF THE REPLICATION SITE TO MEET THE DESIGN SPECIFICATIONS. FOLLOWING EXCAVATION WORK, FINAL GRADING AND LANDSCAPING SHOULD BE COMPLETED AS SOON AS POSSIBLE TO MINIMIZE EROSION. ALL EXPOSED SOIL WILL BE STABILIZED USING SEED-FREE MULCH OR OTHER APPROPRIATE EROSION CONTROL MEASURES IN THE EVENT THAT SEASONAL CONDITIONS RESULT IN A DELAY IN PLANTING. IF THE SITE IS EXCAVATED TO THE SUBGRADE IN THE FALL AND A DELAY IS INEVITABLE, CONSIDERATION SHOULD BE GIVEN TO STABILIZING THE SITE FOR WINTER, AND CONDUCTING FINAL GRADING IN THE SPRING.

