

TRANSPORTATION IMPROVEMENT PROJECT

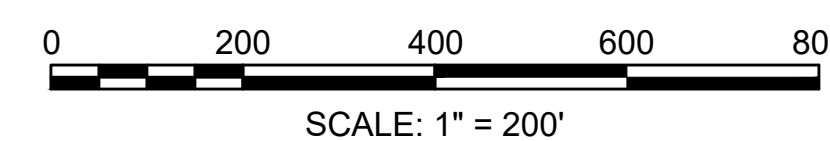
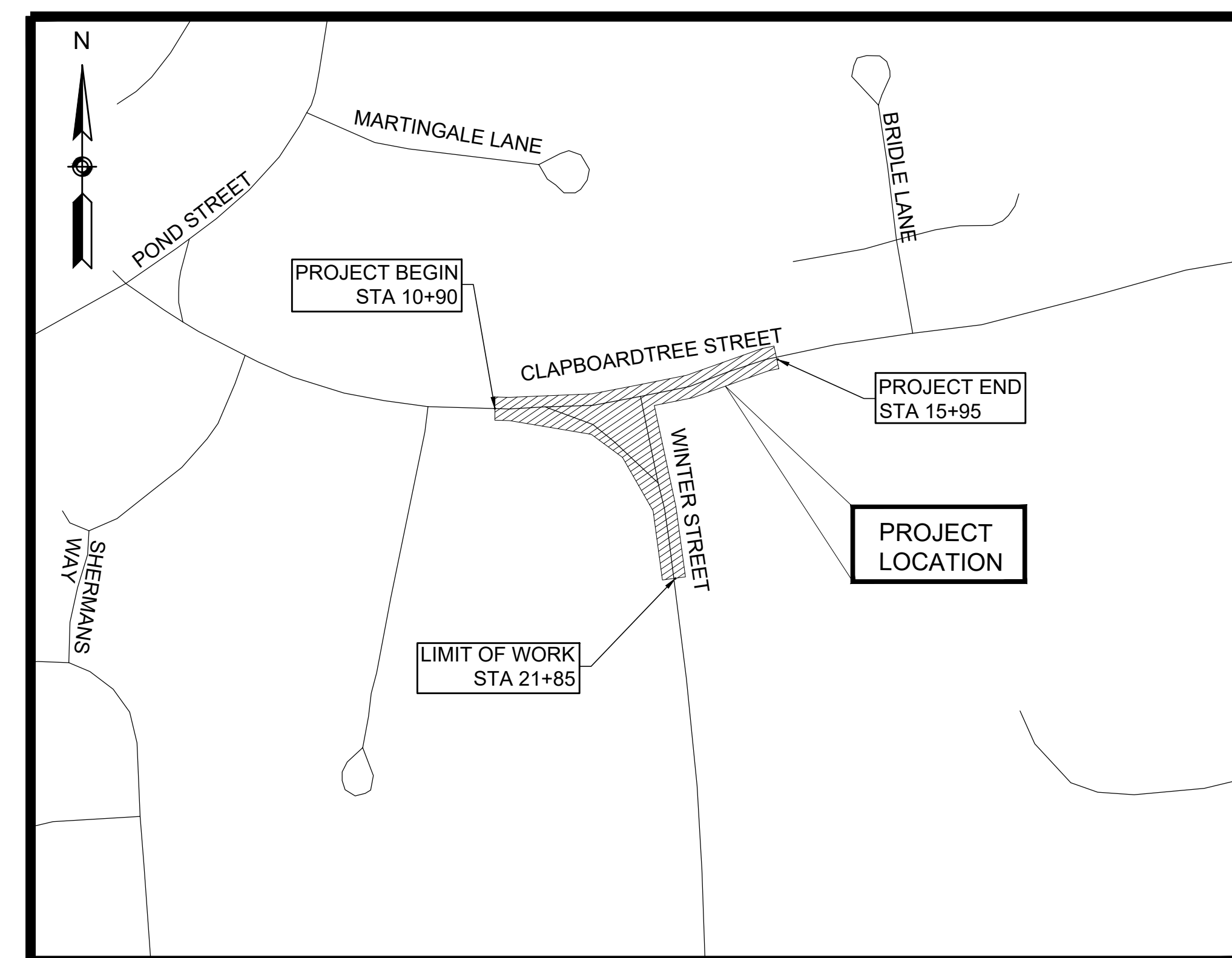
WESTWOOD
CLAPBOARDTREE STREET & WINTER STREET
TITLE SHEET & INDEX
SHEET 1 OF 19

PLAN AND PROFILE OF CLAPBOARDTREE STREET & WINTER STREET

IN THE TOWN OF
WESTWOOD
NORFOLK COUNTY

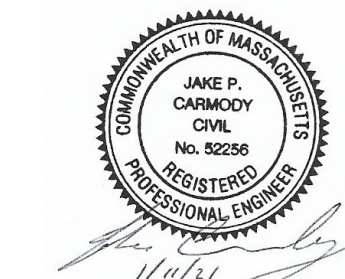
THESE PLANS ARE SUPPLEMENTED BY THE MASSDOT 2017 CONSTRUCTION STANDARD DETAILS, THE MASSDOT TRAFFIC MANAGEMENT PLANS AND DETAIL DRAWINGS, THE MASSDOT WORKZONE SAFETY TEMPORARY TRAFFIC CONTROL, THE 1996 CONSTRUCTION AND TRAFFIC STANDARD DETAILS (AS RELATES TO THE PAVEMENT MARKING DETAILS ONLY), THE MASSDOT 1990 STANDARD DRAWINGS FOR SIGNS AND SUPPORTS, THE MASSDOT 2015 OVERHEAD SIGNAL STRUCTURE AND FOUNDATION STANDARD DRAWINGS, THE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) WITH MASSACHUSETTS AMMENDMENTS AND THE STANDARD MUNICIPAL TRAFFIC CODE, THE MASSDOT 1968 STANDARD DRAWINGS FOR TRAFFIC SIGNALS AND HIGHWAY LIGHTING, AND THE LATEST EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK.

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TOTAL LENGTH OF PROJECT = 820 FEET = 0.155 MILES
CLAPBOARDTREE STREET = 505 FEET = 0.096 MILES
WINTER STREET = 315 FEET = 0.059 MILES

DATE	DESCRIPTION
01/08/2021	ISSUED FOR BIDDING
12/31/2019	FINAL SUBMISSION
2/22/2019	50% SUBMISSION



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	CHECKED BY	DATE
RLC	JJS	01/08/2021
DRAWN BY	APPROVED BY	PROJECT NO.
RLC/SPL	JAR	T0642.04

GENERAL SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
		JERSEY BARRIER
		CATCH BASIN OR GUTTER INLET
		CATCH BASIN OR GUTTER INLET W/ CURB INLET
		FLAG POLE
		GAS PUMP
		MAIL BOX
		POST SQUARE
		POST CIRCULAR
		WELL
		ELECTRIC HANDHOLE
		FENCE GATE POST
		GAS GATE
		BORING HOLE
		MONITORING WELL
		TEST PIT
		HYDRANT
		LIGHT POLE
		COUNTY BOUND
		GPS POINT
		CABLE MANHOLE
		DRAINAGE MANHOLE
		ELECTRIC MANHOLE
		GAS MANHOLE
		MISC MANHOLE
		SEWER MANHOLE
		TELEPHONE MANHOLE
		WATER MANHOLE
		MASSACHUSETTS HIGHWAY BOUND
		MONUMENT
		STONE BOUND
		TOWN OR CITY BOUND
		TRAVERSE OR TRIANGULATION STATION
		TROLLEY POLE OR GUY POLE
		TRANSMISSION POLE
		UTILITY POLE W/ FIREBOX
		UTILITY POLE WITH DOUBLE LIGHT
		UTILITY POLE W / 1 LIGHT
		UTILITY POLE
		BUSH
		TREE
		STUMP
		SWAMP / MARSH
		WATER GATE
		WATER SHUTOFF/CURB STOP
		PARKING METER
		OVERHEAD CABLE/WIRE
		CURBING
		CONTOURS (ON-THE-GROUND SURVEY DATA)
		CONTOURS (PHOTOGRAMMETRIC DATA)
		UNDERGROUND DRAIN PIPE (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND ELECTRIC DUCT (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND GAS MAIN (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND SEWER MAIN (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND TELEPHONE DUCT (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND WATER MAIN (DOUBLE LINE 24 INCH AND OVER)
		BALANCED STONE WALL
		GUARD RAIL - STEEL POSTS
		GUARD RAIL - WOOD POSTS
		CHAIN LINK OR METAL FENCE
		WOOD FENCE
		HAY BALES/SILT FENCE
		TREE LINE
		EDGE OF PAVEMENT
		SAWCUT LINE
		TOP OR BOTTOM OF SLOPE
		LIMIT OF EDGE OF MICROMILLING AND OVERLAY
		BANK OF RIVER OR STREAM
		BORDER OF WETLAND
		100 FT WETLAND BUFFER
		200 FT RIVERFRONT BUFFER
		STATE HIGHWAY LAYOUT
		TOWN OR CITY LAYOUT
		COUNTY LAYOUT
		RAILROAD SIDELINE
		TOWN OR CITY BOUNDARY LINE
		PROPERTY LINE OR APPROXIMATE PROPERTY LINE
		EASEMENT

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

PAVEMENT MARKINGS SYMBOLS

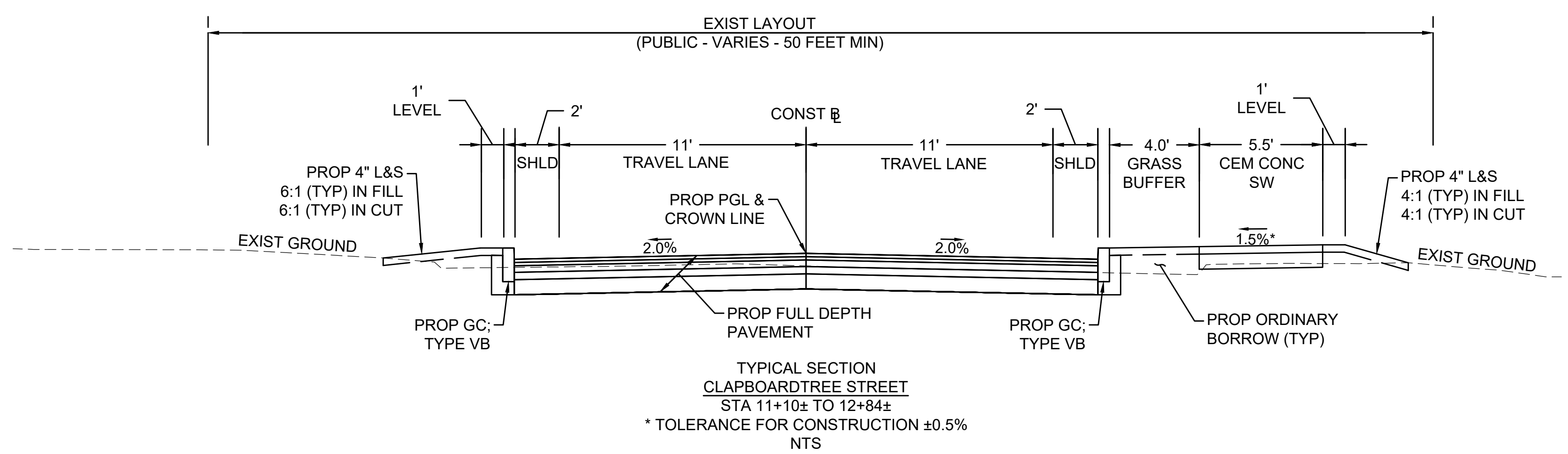
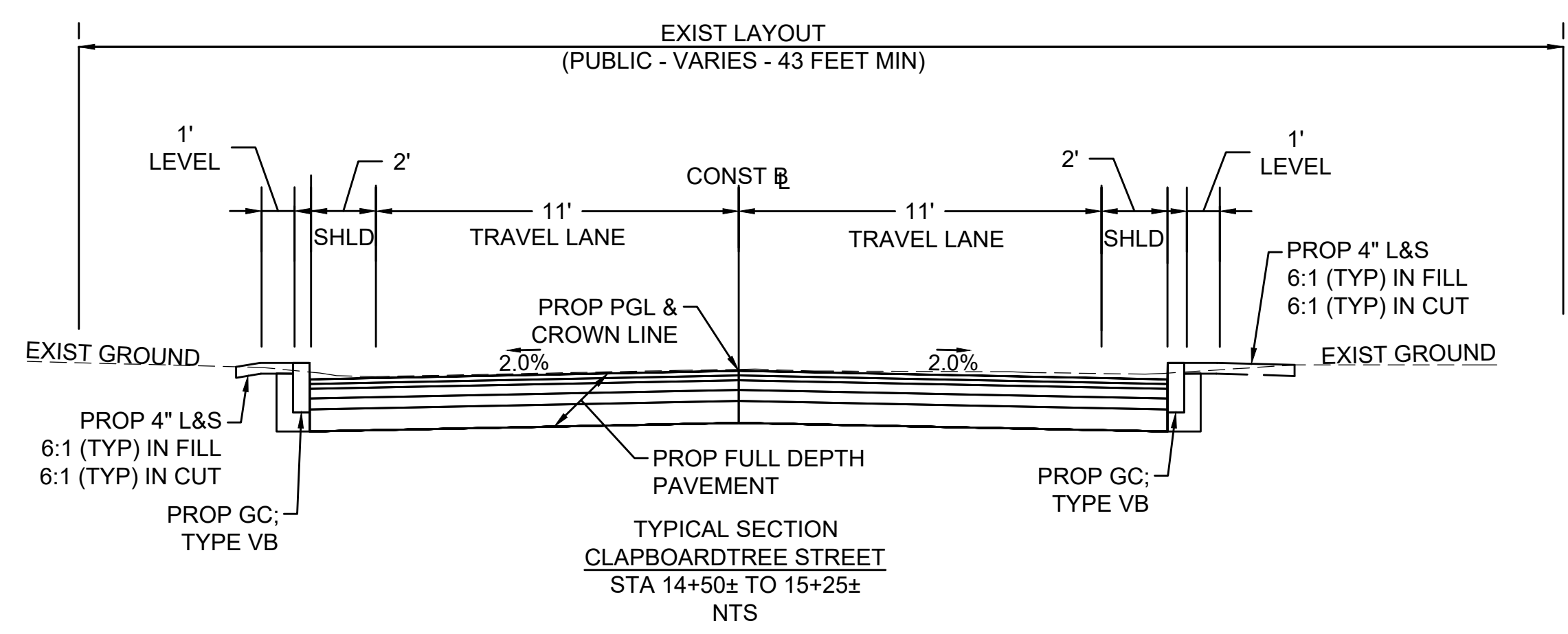
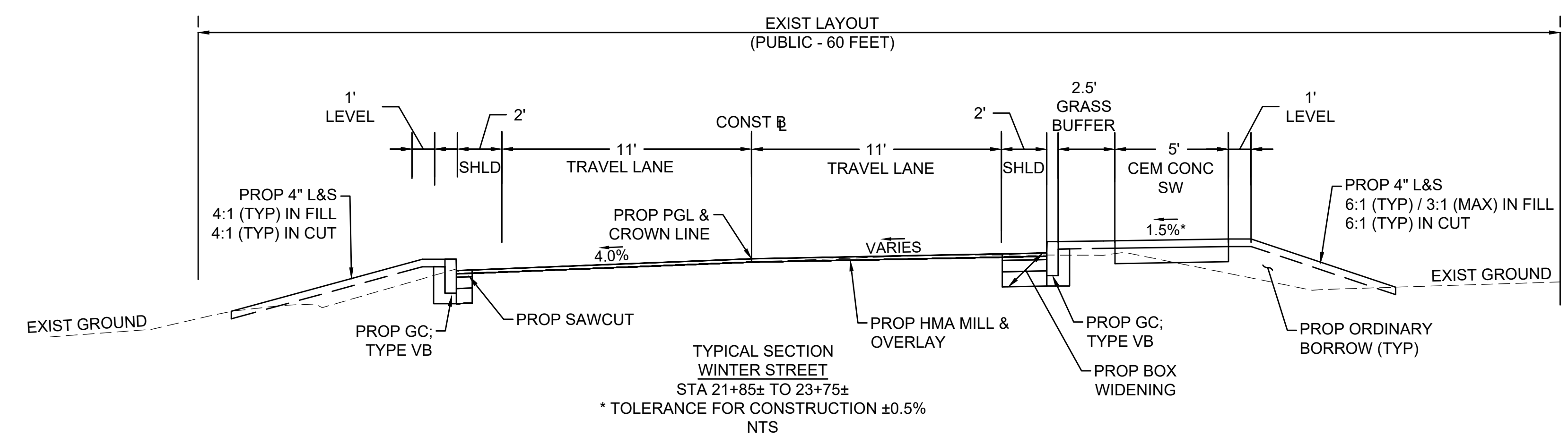
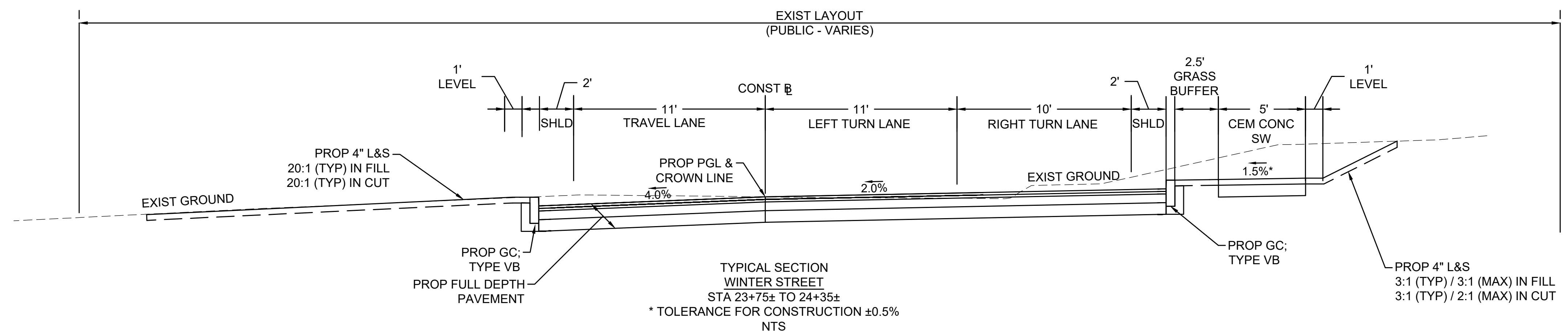
EXISTING	PROPOSED	DESCRIPTION
		PAVEMENT ARROW - WHITE
		LEGEND "ONLY" - WHITE
		BIKE LANE LEGEND - WHITE
		STOP LINE
		CROSSWALK
		SOLID WHITE LINE
		SOLID YELLOW LINE
		BROKEN WHITE LINE
		BROKEN YELLOW LINE
		DOTTED WHITE LINE
		DOTTED YELLOW LINE
		DOTTED WHITE LINE EXTENSION
		DOTTED YELLOW LINE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

ABBREVIATIONS

GENERAL	
AADT	ANNUAL AVERAGE DAILY TRAFFIC
ABAN	ABANDON
ADJ	ADJUST
APPROX.	APPROXIMATE
A.C.	ASPHALT CONCRETE
ACCM PIPE	ASPHALT COATED CORRUGATED METAL PIPE
BIT.	BITUMINOUS
BC	BOTTOM OF CURB
BD.	BOUND
BL	BASELINE
BLDG	BUILDING
BM	BENCHMARK
BO	BY OTHERS
BOS	BOTTOM OF SLOPE
BR.	BRIDGE
CB	CATCH BASIN
CBCI	CATCH BASIN WITH CURB INLET
CC	CEMENT CONCRETE
CCM	CEMENT CONCRETE MASONRY
CEM	CEMENT
CI	CURB INLET
CIP	CAST IRON PIPE
CLF	CHAIN LINK FENCE
CL	CENTERLINE
CMP	CORRUGATED METAL PIPE
CSP	CORRUGATED STEEL PIPE
CO.	COUNTY
CONC	CONCRETE
CONT	CONTINUOUS
CONST	CONSTRUCTION
CR GR	CROWN GRADE
DHV	DESIGN HOURLY VOLUME
DI	DROP INLET
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DW	STEADY DON'T WALK - PORTLAND ORANGE
DWY	DRIVEWAY
ELEV (or EL.)	ELEVATION
EMB	EMBANKMENT
EOP	EDGE OF PAVEMENT
EXIST (or EX)	EXISTING
EXC	EXCAVATION
F&C	FRAME AND COVER
F&G	FRAME AND GRATE
FDN.	FOUNDATION
FLDSTN	FIELDSTONE
GAR	GARAGE
GC	GRANITE CURB
GD	GROUND
GG	GAS GATE
GI	GUTTER INLET
GIP	GALVANIZED IRON PIPE
GRAN	GRANITE
GRAV	GRAVEL
GRD	GUARD
HDW	HEADWALL
HMA	HOT MIX ASPHALT
HOR	HORIZONTAL
HYD	HYDRANT
INV	INVERT
JCT	JUNCTION
L	LENGTH OF CURVE
LB	LEACH BASIN
LOG	LIMIT OF GRADING
LP	LIGHT POLE
L&S	LOAM AND SEED
LT	LEFT
MAX	MAXIMUM
MB	MAILBOX
MH	MANHOLE
MHB	MASSACHUSETTS HIGHWAY BOUND
MIN	MINIMUM
NIC	NOT IN CONTRACT
NO.	NUMBER
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVATURE
P.G.L.	PROFILE GRADE LINE
PI	POINT OF INTERSECTION
POC	POINT ON CURVE
POT	POINT ON TANGENT
PRC	POINT OF REVERSE CURVATURE
PROJ	PROJECT
PROP	PROPOSED
PSB	PLANTABLE SOIL BORROW
PT	POINT OF TANGENCY
PVC	POINT OF VERTICAL CURVATURE
PVI	POINT OF VERTICAL INTERSECTION

ABBREVIATIONS (cont.)

GENERAL	
PVT	POINT OF VERTICAL TANGENCY
PVMT	PAVEMENT
PWW	PAVED WATERWAY
R	RADIUS OF CURVATURE
R&D	REMOVE AND DISPOSE
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
RDWY	ROADWAY
REM	REMOVE
RET	RETAIN
RET WALL	RETAINING WALL
ROW	RIGHT OF WAY
RR	RAILROAD
RRFB	RECTANGULAR RAPID FLASHING BEACON
R&R	REMOVE AND RESET
R&S	REMOVE AND STACK
RT	RIGHT
SB	STONE BOUND
SHLD	SHOULDER
SMH	SEWER MANHOLE
ST	STREET
STA	STATION
SSD	STOPPING SIGHT DISTANCE
SHLO	STATE HIGHWAY LAYOUT LINE
SW	SIDEWALK
T	TANGENT DISTANCE OF CURVE/TRUCK %
TAN	TANGENT
TEMP	TEMPORARY
TC	TOP OF CURB
TOS	TOP OF SLOPE
TYP	TYPICAL
UP	UTILITY POLE
VAR	VARIES
VERT	VERTICAL
VC	VERTICAL CURVE
WCR	WHEEL CHAIR RAMP
WG	WATER GATE
WIP	WROUGHT IRON PIPE
WM	WATER METER/WATER MAIN
X-SECT	CROSS SECTION



PAVEMENT NOTES

PROPOSED HMA MILL & OVERLAY

SURFACE: 1 1/4" SUPERPAVE SURFACE COURSE - 12.5 (SSC - 12.5) OVER VARIABLE DEPTH SUPERPAVE LEVELING COURSE - 9.5 (SLC - 9.5) (AS REQUIRED TO MEET PROPOSED GRADES SHOWN ON CROSS SECTIONS) OVER VARIABLE DEPTH PAVEMENT MICROMILLING (SEE GENERAL PAVEMENT NOTE 5)

PROPOSED CEMENT CONCRETE SIDEWALKS / WHEELCHAIR RAMPS

SURFACE: 4" CEMENT CONCRETE (AIR ENTRAINED, 4000 PSI, 3/4", 610)
BASE: 8" GRAVEL BORROW, TYPE b

PROPOSED FULL DEPTH PAVEMENT LESS THAN 4 FEET WIDE

SURFACE: 1 1/4" SUPERPAVE SURFACE - 12.5 (SSC - 12.5) OVER 1 1/4" SUPERPAVE INTERMEDIATE COURSE - 12.5 (SIC - 12.5)
BASE: 6" HIGH EARLY STRENGTH CEMENT CONCRETE BASE COURSE
SUBBASE: 8" GRAVEL BORROW, TYPE b

PROPOSED FULL DEPTH PAVEMENT

SURFACE: 1 1/4" SUPERPAVE SURFACE - 12.5 (SSC - 12.5) OVER 1 1/4" SUPERPAVE INTERMEDIATE COURSE - 12.5 (SIC - 12.5)
BASE: 3 1/2" SUPERPAVE INTERMEDIATE COURSE - 19.0 (SIC - 19.0)
SUBBASE: 4" DENSE GRADED CRUSHED STONE OVER 8" GRAVEL BORROW, TYPE b

PROPOSED PERMANENT PAVEMENT TRENCH PATCH

SURFACE: 1 1/4" SUPERPAVE SURFACE COURSE - 12.5 (SSC - 12.5) OVER VARIABLE DEPTH HMA FOR PATCHING (COMPACTED IN 2" (MAX) LIFTS TO MATCH EXIST PAVEMENT THICKNESS)
BASE: 8" GRAVEL BORROW, TYPE b
SUBBASE: EXISTING MATERIAL SUITABLE FOR RE-USE (SEE VARIOUS TRENCH DETAILS)

PROPOSED HMA DRIVEWAY (TO MATCH EXISTING)

SURFACE: 1 1/2" SUPERPAVE SURFACE COURSE - 9.5 (SSC - 9.5) OVER 2 1/2" SUPERPAVE INTERMEDIATE COURSE - 12.5 (SIC - 12.5)
BASE: 8" GRAVEL BORROW, TYPE b (SEE PAVEMENT NOTE 4 BELOW)

PROPOSED CEMENT CONCRETE SIDEWALK THROUGH DRIVEWAY

SURFACE: 6" CEMENT CONCRETE (AIR ENTRAINED, 4000 PSI, 3/4", 610)
BASE: 8" GRAVEL BORROW, TYPE b

PROPOSED TEMPORARY PAVEMENT TRENCH PATCH

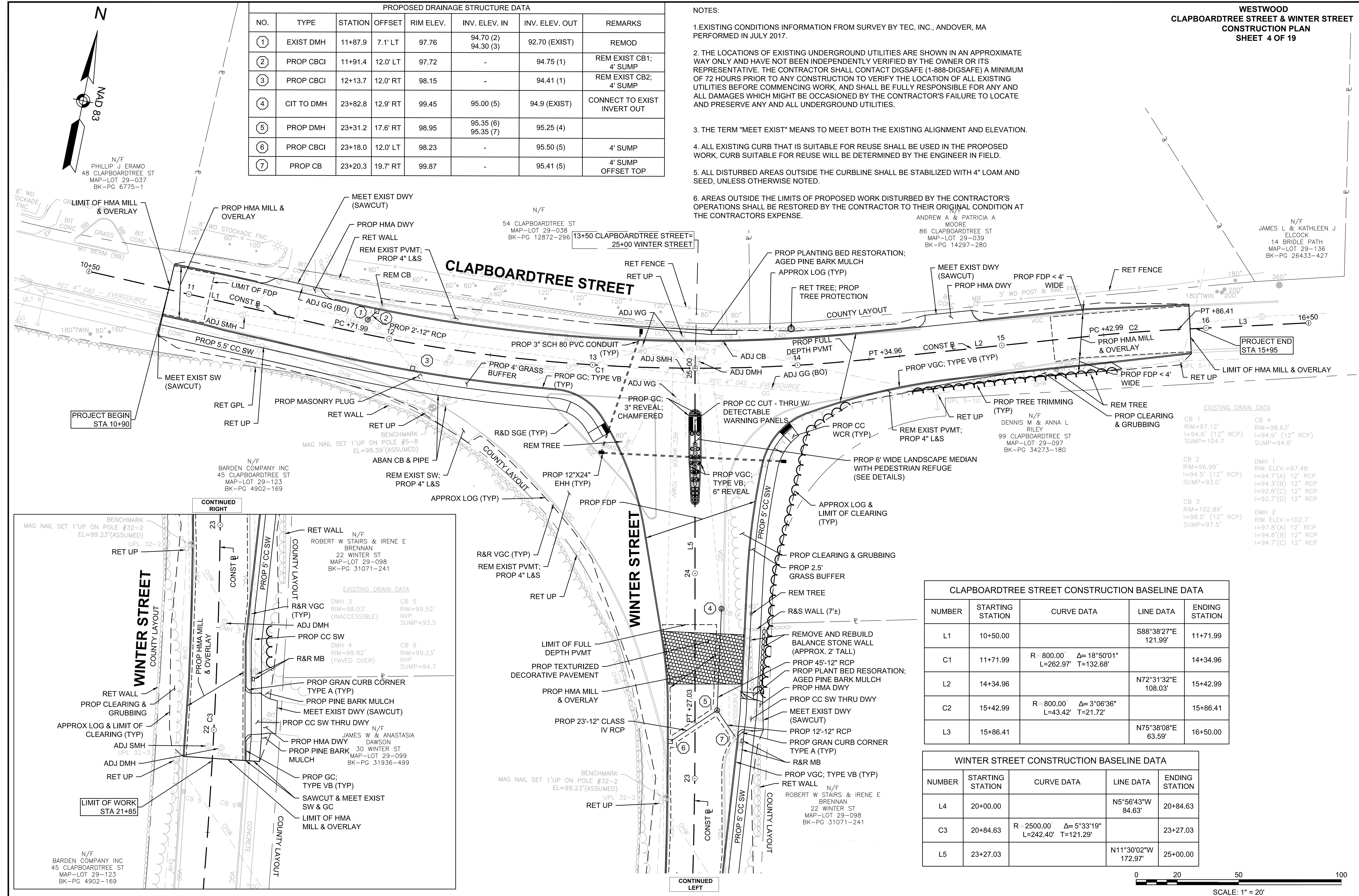
SURFACE: 2 1/2" HMA FOR TEMPORARY WORK
BASE: EXISTING MATERIAL SUITABLE FOR RE-USE (SEE VARIOUS TRENCH DETAILS)

GENERAL PAVEMENT NOTES:

1. 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.
2. ASPHALT EMULSION FOR TACK COAT SHALL BE RS-1H TO RESIST TRACKING OF TACK BY HAUL VEHICLES.
3. HMA FOR DRIVEWAYS SHALL BE IN ACCORDANCE WITH SECTION 700.
4. ALL GRAVEL BORROW MEETING SPECIFICATION SHALL BE RETAINED IN PLACE, COMPACTED, AND LEVELED AS REQUIRED.
5. VARIABLE DEPTH MILLING AS REQUIRED TO MEET PROPOSED LINES AND GRADES WITH RESURFACING OVERLAY.

PROPOSED DRAINAGE STRUCTURE DATA							
NO.	TYPE	STATION	OFFSET	RIM ELEV.	INV. ELEV. IN	INV. ELEV. OUT	REMARKS
①	EXIST DMH	11+87.9	7.1' LT	97.76	94.70 (2) 94.30 (3)	92.70 (EXIST)	REMOD
②	PROP CBCI	11+91.4	12.0' LT	97.72	-	94.75 (1)	REM EXIST CB1; 4' SUMP
③	PROP CBCI	12+13.7	12.0' RT	98.15	-	94.41 (1)	REM EXIST CB2; 4' SUMP
④	CIT TO DMH	23+82.8	12.9' RT	99.45	95.00 (5)	94.9 (EXIST)	CONNECT TO EXIST INVERT OUT
⑤	PROP DMH	23+31.2	17.6' RT	98.95	95.35 (6) 95.35 (7)	95.25 (4)	
⑥	PROP CBCI	23+18.0	12.0' LT	98.23	-	95.50 (5)	4' SUMP
⑦	PROP CB	23+20.3	19.7' RT	99.87	-	95.41 (5)	4' SUMP OFFSET TOP

- NOTES:
- EXISTING CONDITIONS INFORMATION FROM SURVEY BY TEC, INC., ANDOVER, MA PERFORMED IN JULY 2017.
 - 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.
 - THE TERM "MEET EXIST" MEANS TO MEET BOTH THE EXISTING ALIGNMENT AND ELEVATION.
 - ALL EXISTING CURB THAT IS SUITABLE FOR REUSE SHALL BE USED IN THE PROPOSED WORK. CURB SUITABLE FOR REUSE WILL BE DETERMINED BY THE ENGINEER IN FIELD.
 - ALL DISTURBED AREAS OUTSIDE THE CURBLINE SHALL BE STABILIZED WITH 4" LOAM AND SEED, 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 CONTRACTOR'S EXPENSE.



EXISTING DRAIN DATA

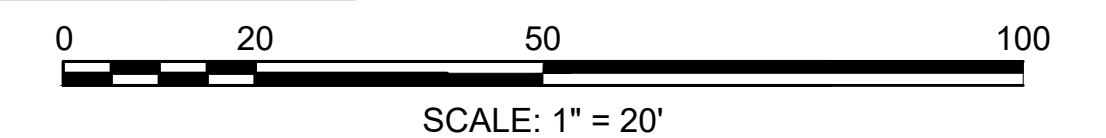
CB 1 RIM=97.12' I=94.6" (12" RCP) SUMP=104.7	CB 4 RIM=98.63' I=94.9" (12" RCP) SUMP=94.8'
CB 2 RIM=96.99' I=94.5" (12" RCP) SUMP=93.0'	DMH 1 RIM ELEV.=97.48 I=94.7"(A) 12" RCP I=94.3"(B) 12" RCP I=92.8"(C) 12" RCP I=92.7"(D) 12" RCP
CB 3 RIM=102.89' I=98.0" (12" RCP) SUMP=97.5'	DMH 2 RIM ELEV.=102.7' I=97.8"(A) 12" RCP I=94.8"(B) 12" RCP I=94.7"(C) 12" RCP

CLAPBOARDTREE STREET CONSTRUCTION BASELINE DATA

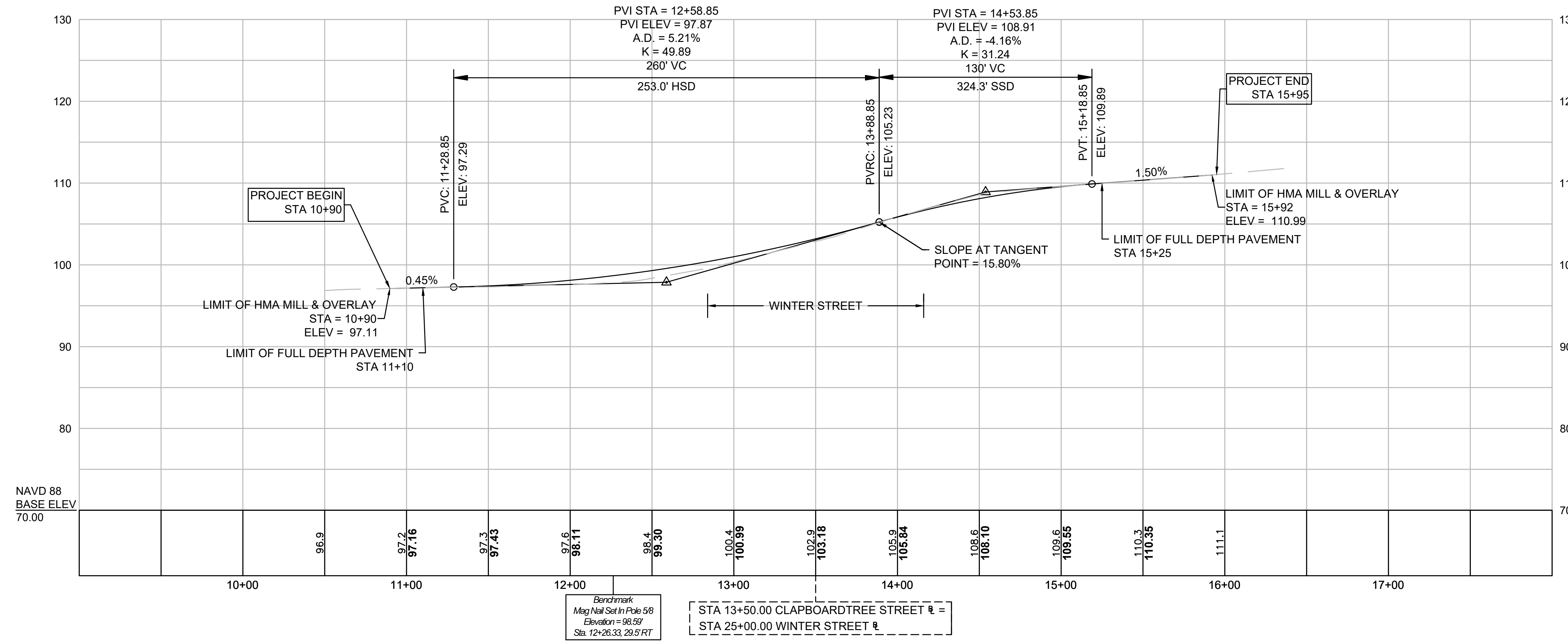
NUMBER	STARTING STATION	CURVE DATA	LINE DATA	ENDING STATION
L1	10+50.00		S88°38'27"E 121.99'	11+71.99
C1	11+71.99	R=800.00' Δ=18°50'01" L=262.97' T=132.68'		14+34.96
L2	14+34.96		N72°31'32"E 108.03'	15+42.99
C2	15+42.99	R=800.00' Δ=3°06'36" L=43.42' T=21.72'		15+86.41
L3	15+86.41		N75°38'08"E 63.59'	16+50.00

WINTER STREET CONSTRUCTION BASELINE DATA

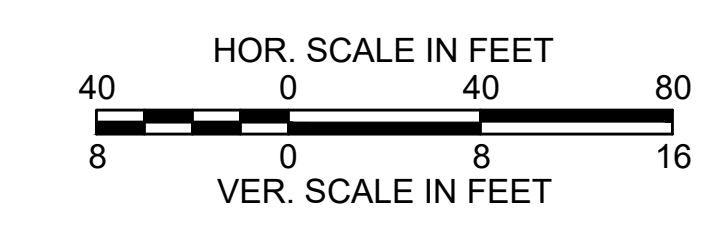
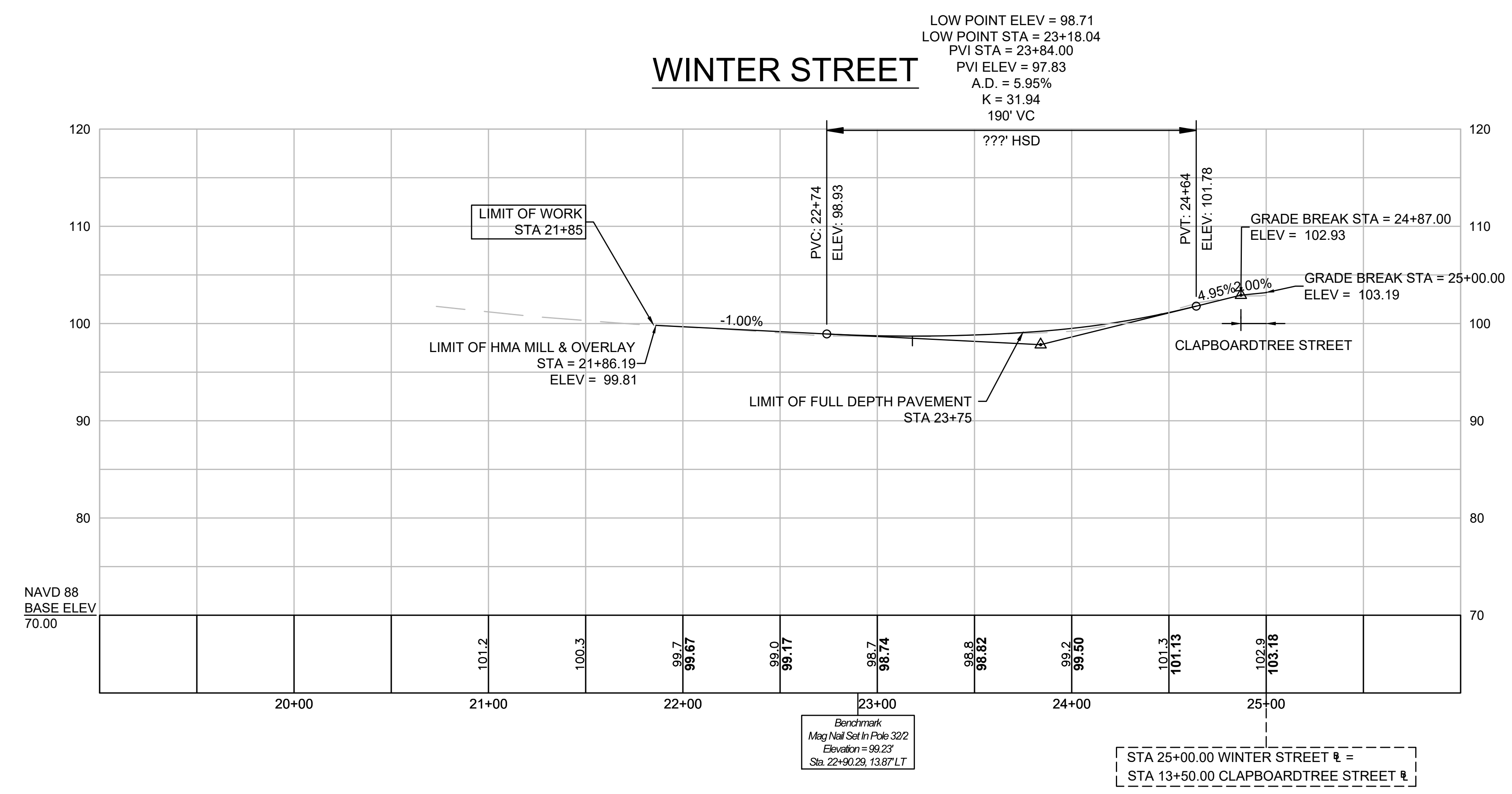
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L4	20+00.00		N5°56'43"W 84.63'	20+84.63
C3	20+84.63	R=2500.00' Δ=5°33'19" L=242.40' T=121.29'		23+27.03
L5	23+27.03		N11°30'02"W 172.97'	25+00.00



CLAPBOARDTREE STREET



WINTER STREET

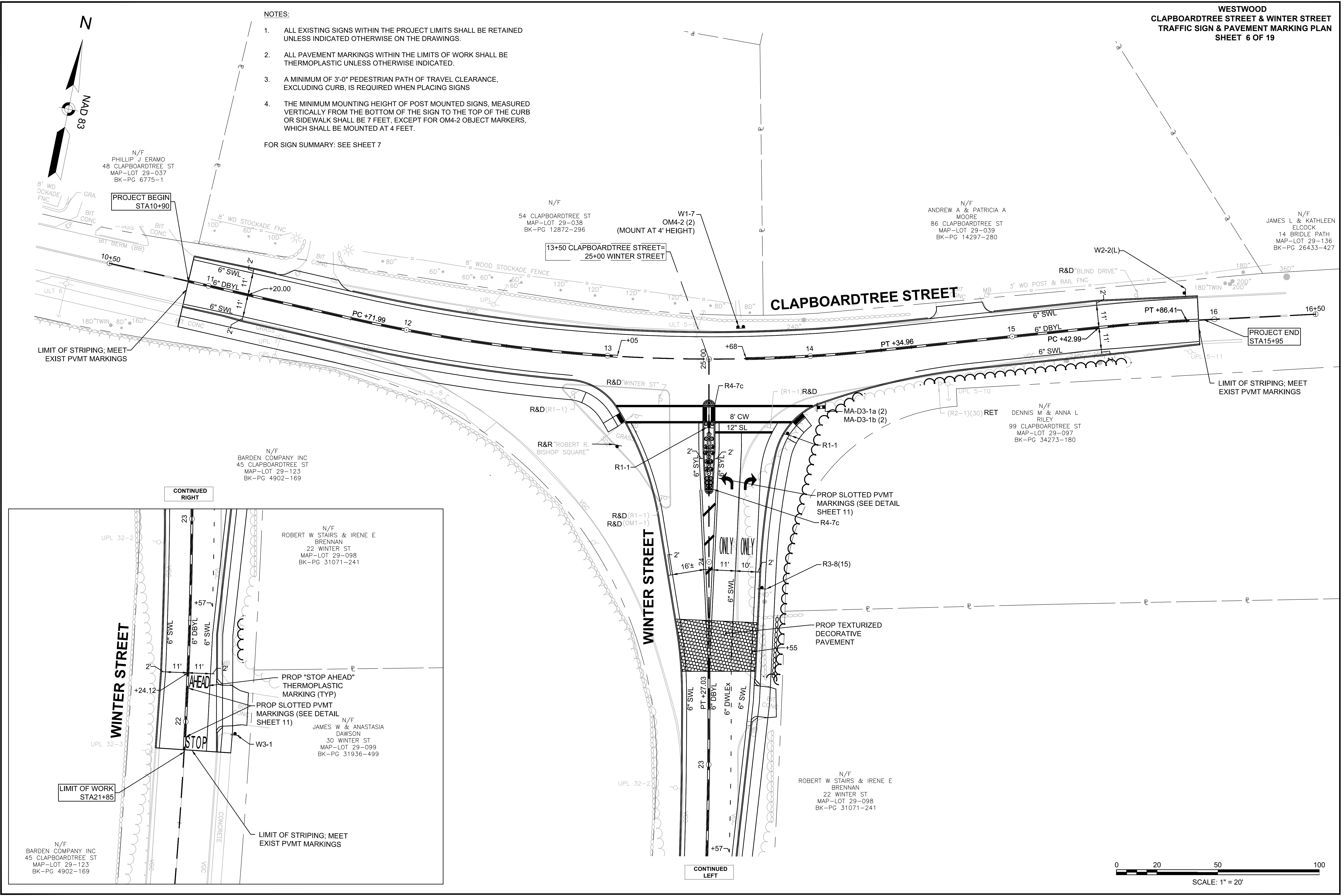
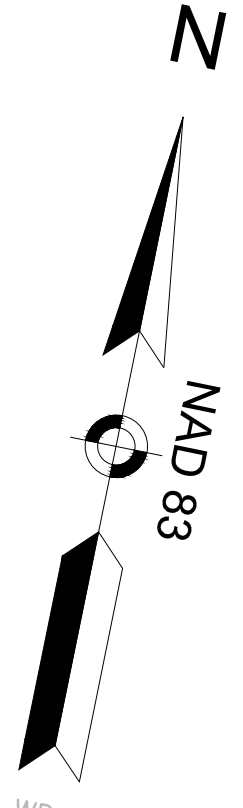


FOR CONSTRUCTION PLAN: SEE SHEET NO. 4

NOTES:

1. ALL EXISTING SIGNS WITHIN THE PROJECT LIMITS SHALL BE RETAINED UNLESS INDICATED OTHERWISE ON THE DRAWINGS.
2. ALL PAVEMENT MARKINGS WITHIN THE LIMITS OF WORK SHALL BE THERMOPLASTIC UNLESS OTHERWISE INDICATED.
3. A MINIMUM OF 3'-0" PEDESTRIAN PATH OF TRAVEL CLEARANCE, EXCLUDING CURB, IS REQUIRED WHEN PLACING SIGNS
4. 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, EXCEPT FOR OM4-2 OBJECT MARKERS, WHICH SHALL BE MOUNTED AT 4 FEET.

FOR SIGN SUMMARY: SEE SHEET 7



N/F
PHILLIP J. ERAMO
48 CLAPBOARDTREE ST
MAP-LOT 29-037
BK-PG 6775-1

N/F
54 CLAPBOARDTREE ST
MAP-LOT 29-038
BK-PG 12872-296

N/F
ANDREW A & PATRICIA A
MOORE
86 CLAPBOARDTREE ST
MAP-LOT 29-039
BK-PG 14297-280

N/F
JAMES L & KATHLEEN
ELCOCK
14 BRIDLE PATH
MAP-LOT 29-136
BK-PG 26433-427

N/F
BARDEN COMPANY INC
45 CLAPBOARDTREE ST
MAP-LOT 29-123
BK-PG 4902-169

N/F
DENNIS M & ANNA L
RILEY
99 CLAPBOARDTREE ST
MAP-LOT 29-097
BK-PG 34273-180

N/F
ROBERT W STAIRS & IRENE E
BRENNAN
22 WINTER ST
MAP-LOT 29-098
BK-PG 31071-241

N/F
JAMES W & ANASTASIA
DAWSON
30 WINTER ST
MAP-LOT 29-099
BK-PG 31936-499

N/F
ROBERT W STAIRS & IRENE E
BRENNAN
22 WINTER ST
MAP-LOT 29-098
BK-PG 31071-241

WINTER STREET

WINTER STREET

CLAPBOARDTREE STREET

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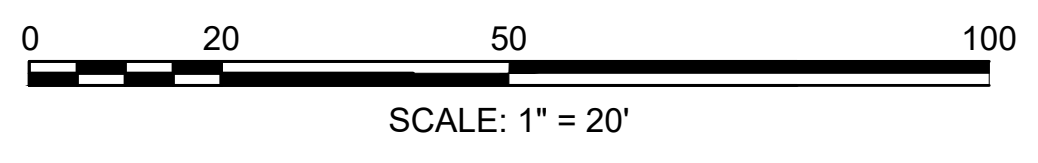
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LIMIT OF WORK
STA21+85

PROJECT END
STA15+95

PROJECT BEGIN
STA10+90

13+50 CLAPBOARDTREE STREET=
25+00 WINTER STREET



NOTES:

1. SEE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS FOR TEXT AND LEGEND DIMENSIONS.
2. THE MINIMUM MOUNTING HEIGHT OF POST-MOUNTED SIGNS, MEASURED VERTICALLY FROM THE BOTTOM OF THE SIGN TO THE TOP OF CURB OR SIDEWALK, OR THE ELEVATION OF THE NEAR EDGE OF TRAVEL WAY, SHALL BE 7 FEET UNLESS OTHERWISE SPECIFIED.
3. A MINIMUM OF 3'-0" PATH OF TRAVEL CLEARANCE, EXCLUDING CURB, IS REQUIRED WHEN PLACING SIGNS.

TRAFFIC SIGN SUMMARY													
IDENTIFICATION NUMBER	SIZE OF SIGN (in)		LEGEND	TEXT DIMENSIONS (in)			NUMBER OF SIGNS REQUIRED	COLOR			SIZE AND NUMBER OF POSTS REQUIRED	UNIT AREA (SF)	TOTAL AREA (SF)
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR		BACK-GROUND	LEGEND	BORDER			
OM4-2	18	18			1		2	BLACK	RED REFLECTORS	-	0 MOUNT W/ W1-7	2.25	4.50
R1-1	30	30					2	RED	WHITE	WHITE	P5 2	6.25	12.50
R3-8(15)	30	30					1	WHITE	BLACK	BLACK	P5 1	6.25	6.25
R4-7c	18	30					2	WHITE	BLACK	BLACK	P5 2	3.75	7.50
W1-7	48	24					1	YELLOW	BLACK	BLACK	P5 2	8.00	8.00
W2-2(L)	30	30					1	YELLOW	BLACK	BLACK	P5 1	6.25	6.25
W3-1	30	30					1	YELLOW	BLACK/ RED	BLACK	P5 1	6.25	6.25
MA-D3-1a	69	12	SEE RIGHT	6C / 4C	2.75 3.25	6" TOWN SEAL	2	GREEN	WHITE	WHITE	P5 2	PAID FOR UNDER ITEM 874.	
MA-D3-1b	45	12	SEE RIGHT	6C / 4C	3 3	6" TOWN SEAL	2	GREEN	WHITE	WHITE	0 MOUNT W/ MA-D3-1a	PAID FOR UNDER ITEM 874.	



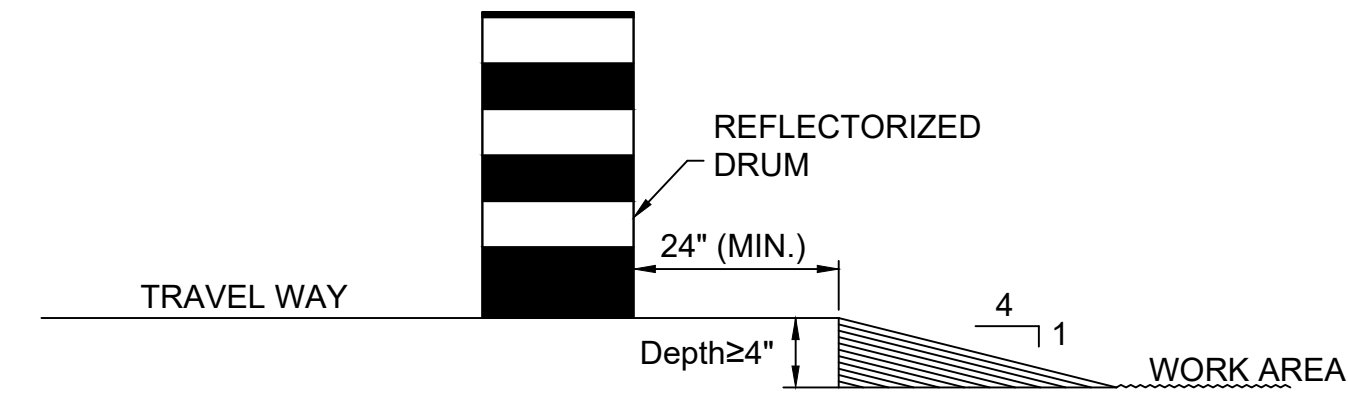
MA-D3-1a



MA-D3-1b

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 TYPE A SEQUENTIAL WARNING 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 10 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.



LATERAL DROP-OFF DETAIL
NOT TO SCALE

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

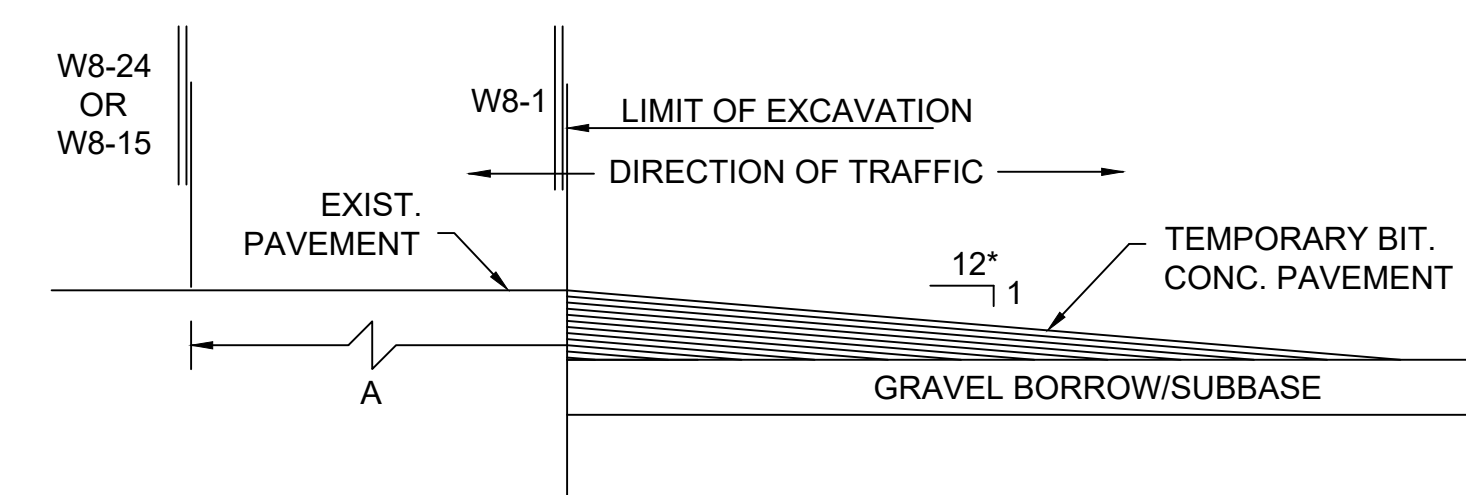
S = POSTED SPEED LIMIT, OR OFF-PEAK 85TH-PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED IN MPH

LEGEND:

- REFLECTORIZED PLASTIC DRUM OR 36" CONE
- ▨ WORK ZONE
- 🚚 WORK VEHICLE
- P/F POLICE/FLAGGER DETAIL
- ➔ DIRECTION OF TRAFFIC
- 🚚 TRUCK MOUNTED ATTENUATOR
- ▨ TYPE III BARRICADE
- 🚦 IMPACT ATTENUATOR
- 🚦 TRAFFIC OR PEDESTRIAN SIGNAL
- 📄 CHANGEABLE MESSAGE SIGN
- 🚧 MEDIAN BARRIER
- SIGN
- 📄 ARROW BOARD
- 🚧 MEDIAN BARRIER WITH WARNING LIGHTS

SUGGESTED WORK ZONE WARNING SIGN SPACING

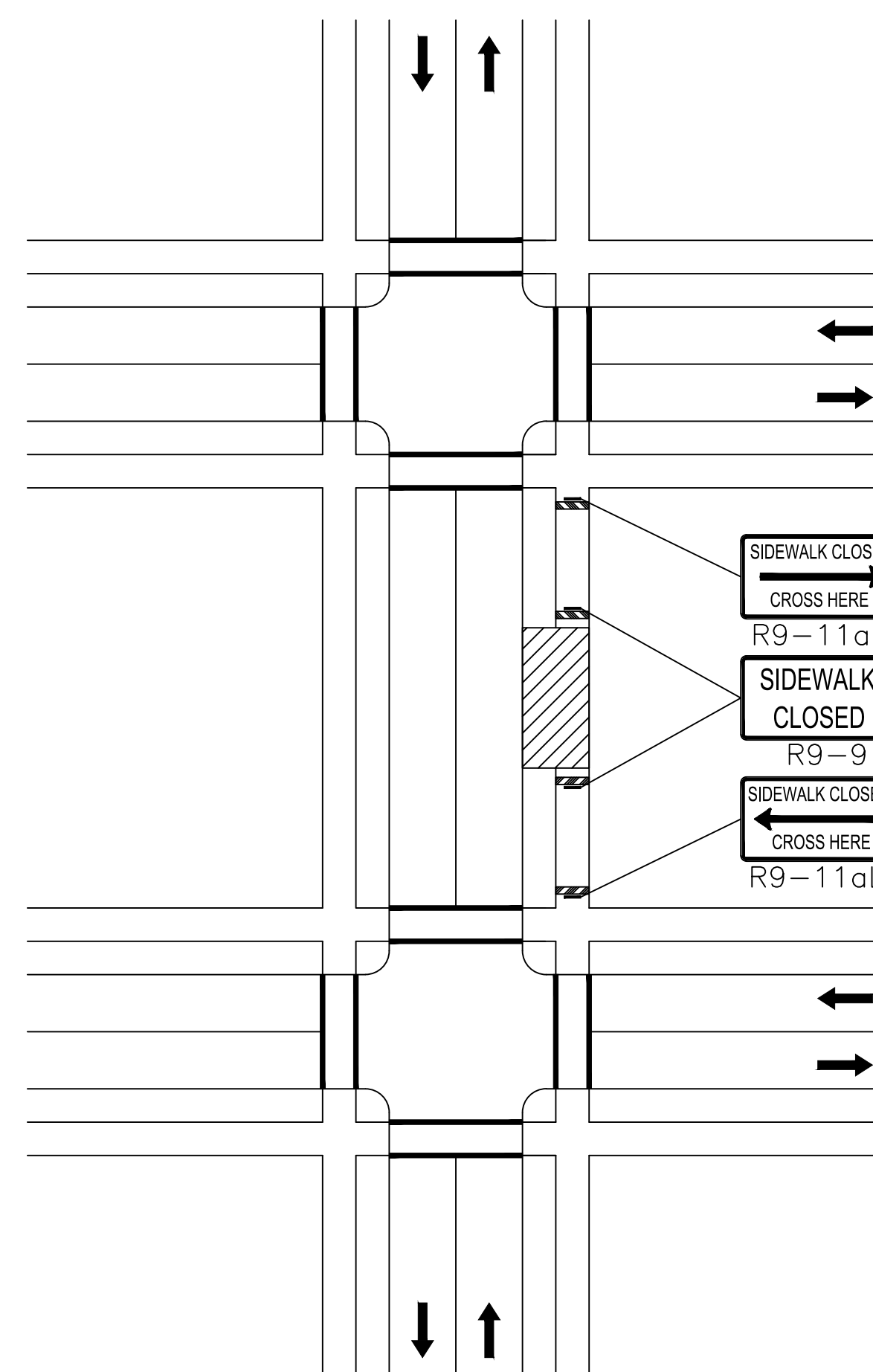
ROAD TYPE	DISTANCE BETWEEN SIGNS (FEET)		
	A	B	C
LOCAL OR LOW VOLUME ROADWAYS	350	350	350
MOST OTHER ROADWAYS	500	500	500
FREEWAYS AND EXPRESSWAYS	1,000	1,500	2,640



LONGITUDINAL DROP-OFF DETAIL
NOT TO SCALE

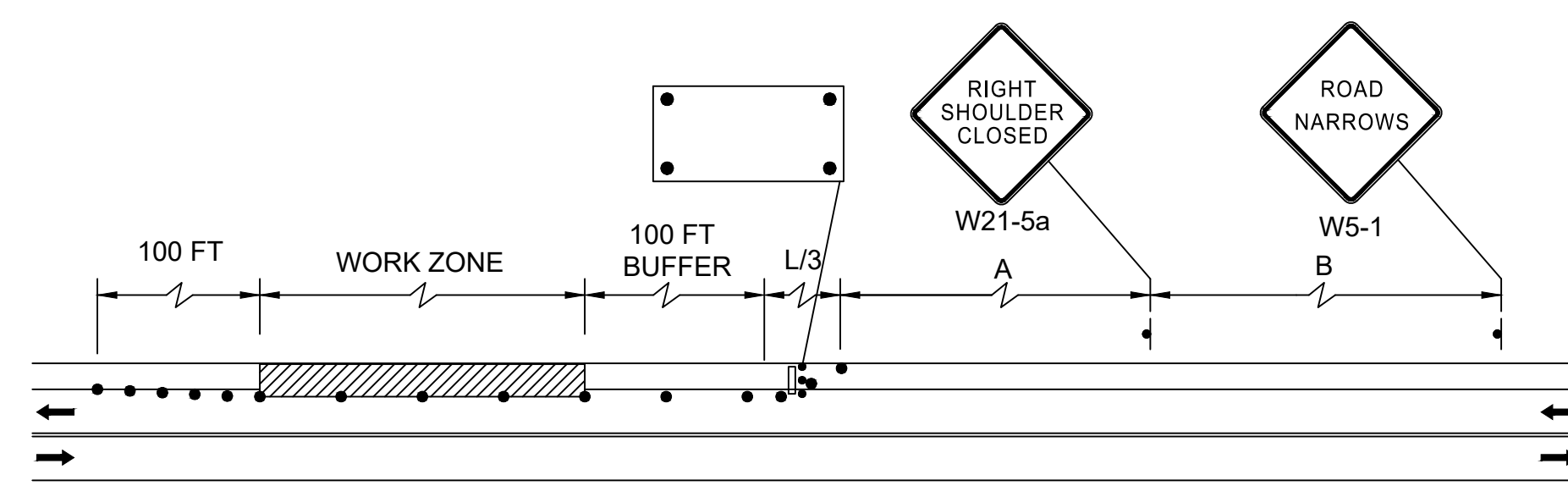
* - INCREASE SLOPE RATIO FOR HIGHER SPEEDS

LONGITUDINAL DROP-OFF DETAIL

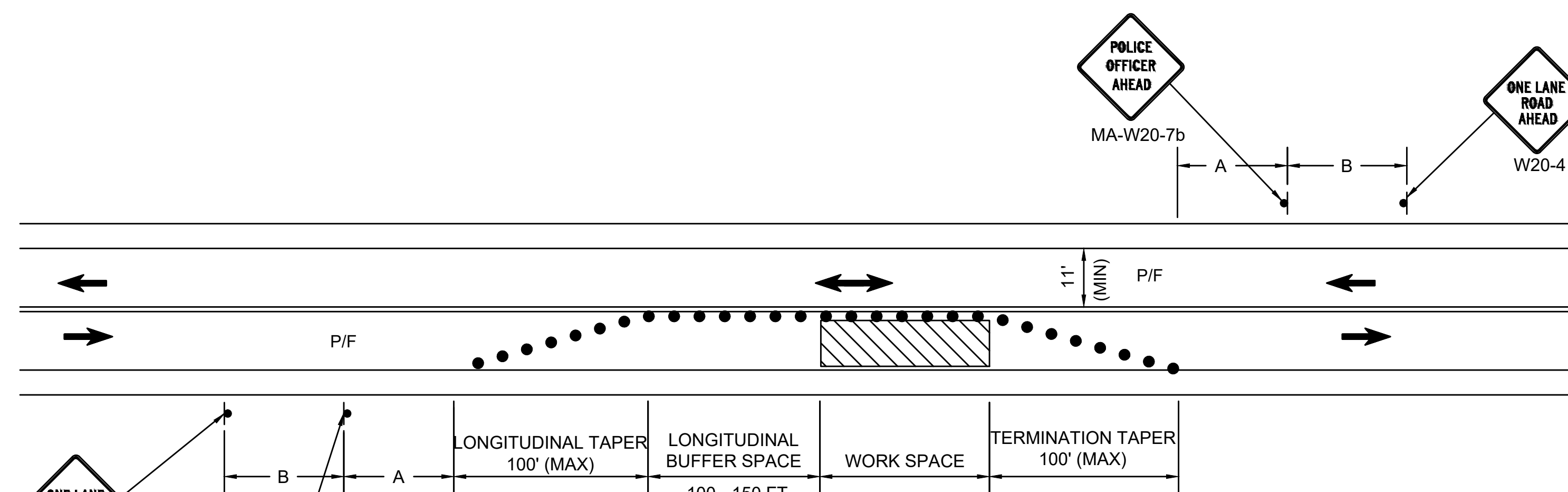


NOTE: IF A MINIMUM WIDTH OF 48" OF SOLID SMOOTH UNOBSTRUCTED SURFACE REMAINS ALONG THE WORK AREA THEN THE DETAIL CAN BE DISREGARDED. DELINEATION OF THE WORK AREA WILL STILL BE REQUIRED. ALL PEDESTRIAN DETOUR ROUTES SHALL BE ADA/MAAB COMPLIANT IN THEIR ENTIRETY.

SIDEWALK CLOSED WITHOUT DETOUR
N.T.S.



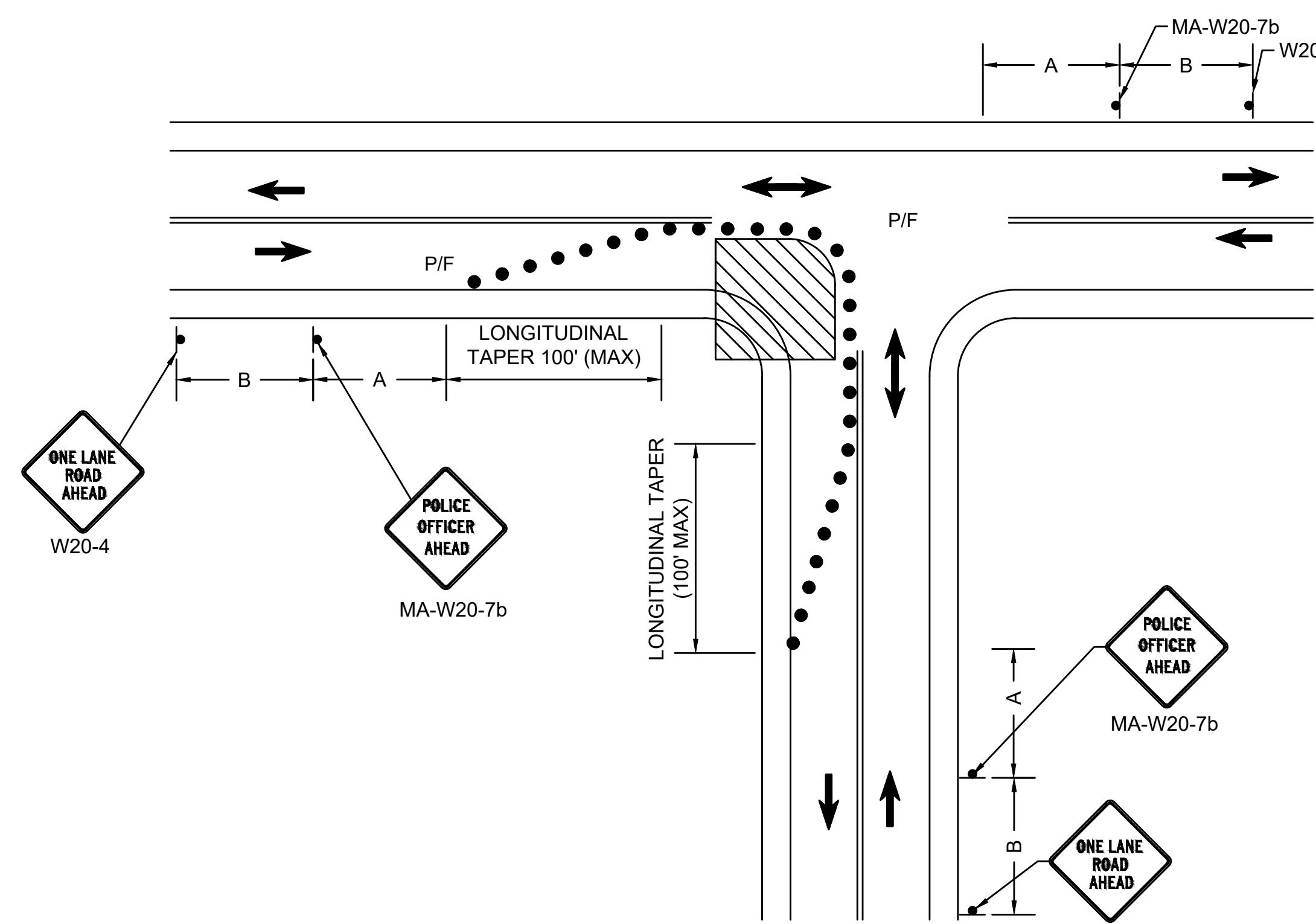
TWO LANE ROAD SHOULDER CLOSED
N.T.S.



NOTES:

1. DRUM SPACING FOR LONGITUDINAL TAPER SECTION SHALL NOT EXCEED A DISTANCE IN FEET EQUAL TO THE POSTED SPEED.
2. DRUM SPACING FOR TANGENT SECTION SHALL NOT EXCEED A DISTANCE IN FEET EQUAL TO TWICE THE POSTED SPEED.
3. DRUM SPACING FOR TERMINATION TAPER SECTION SHALL NOT EXCEED 20 FEET.

TYPICAL LANE CLOSURE ON TWO-LANE ROAD
N.T.S.

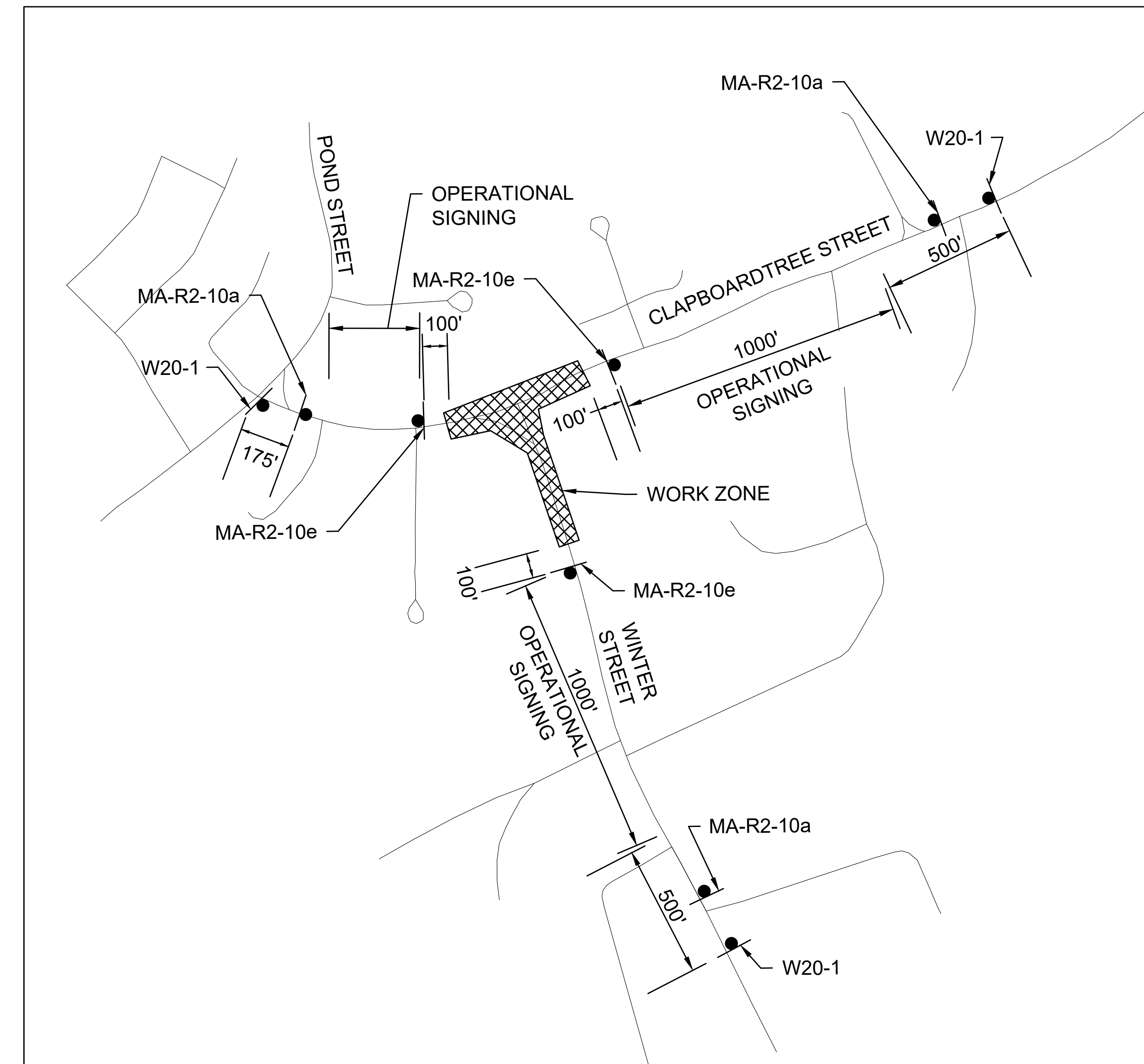


TYPICAL LANE CLOSURE AT INTERSECTION
N.T.S.

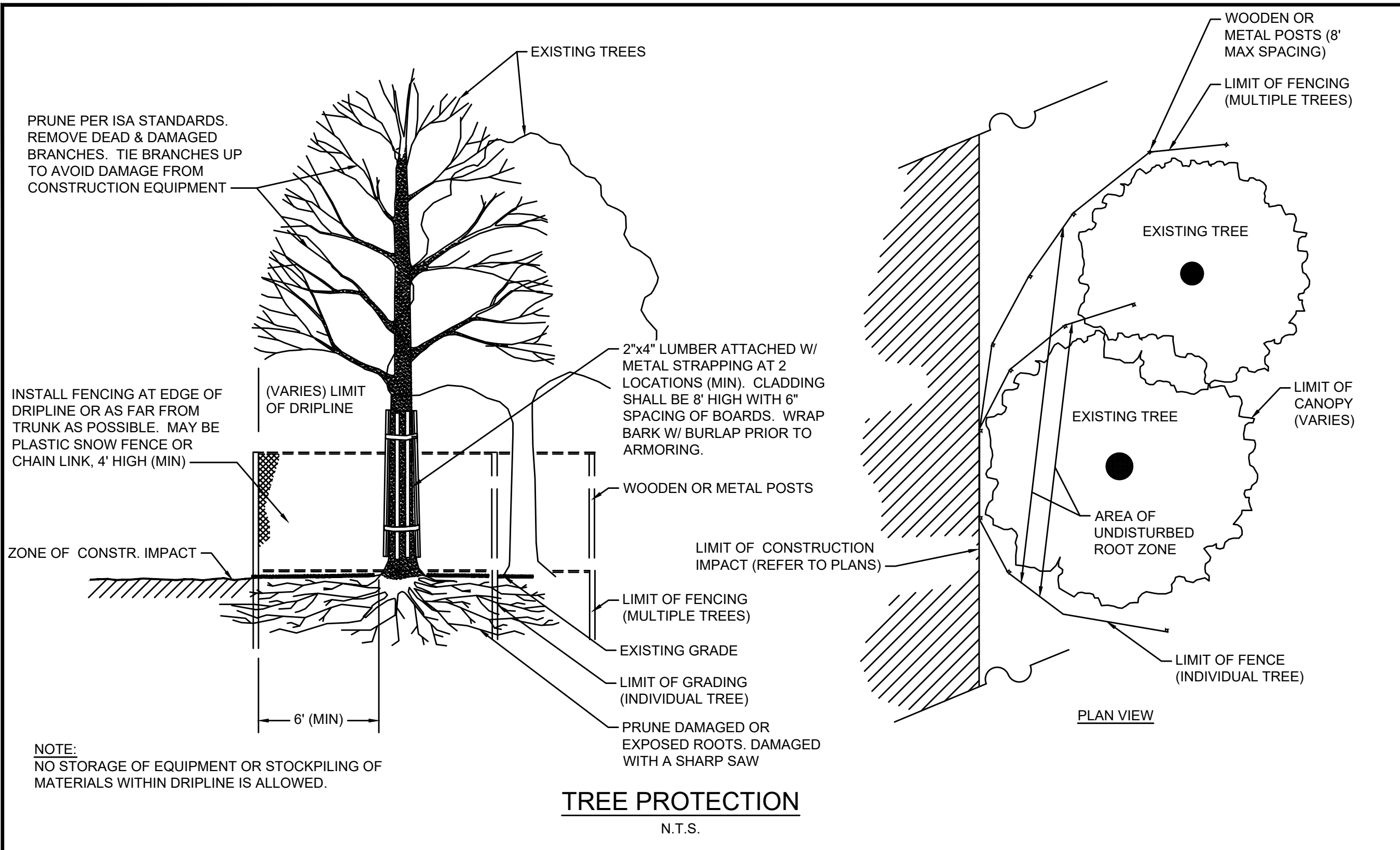
NOTES:

1. DRUM SPACING FOR LONGITUDINAL TAPER SECTION SHALL NOT EXCEED A DISTANCE IN FEET EQUAL TO THE POSTED SPEED.
2. DRUM SPACING FOR TANGENT SECTION SHALL NOT EXCEED A DISTANCE IN FEET EQUAL TO TWICE THE POSTED SPEED.
3. DRUM SPACING FOR TERMINATION TAPER SECTION SHALL NOT EXCEED 20 FEET.

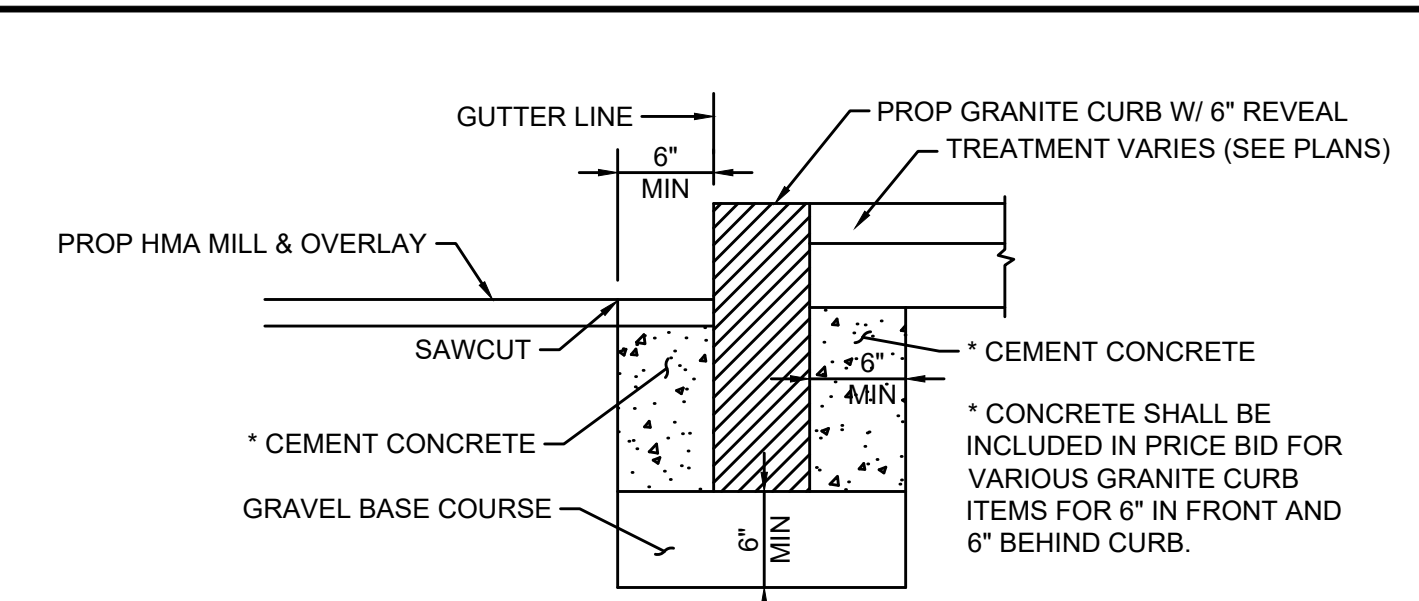
TRAFFIC SIGN SUMMARY												
IDENTIFICATION NUMBER	SIZE OF SIGN (in)		LEGEND	TEXT DIMENSIONS (in)			NUMBER OF SIGNS REQUIRED	COLOR			UNIT AREA (SF)	TOTAL AREA (SF)
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR		BACK-GROUND	LEGEND	BORDER		
MA-R2-10a	48	36		MASSDOT STANDARD SIGN			3	FL ORANGE WHITE	BLACK BLACK	BLACK BLACK	12.00	36.00
MA-R2-10e	36	48		↓			3	FL ORANGE WHITE	BLACK BLACK	BLACK BLACK	12.00	36.00
R9-9	24	12		SEE 2009 MUTCD			2	WHITE	BLACK	BLACK	2.00	4.00
R9-11aL	24	12					1	WHITE	BLACK	BLACK	2.00	2.00
R9-11aR	24	12					1	WHITE	BLACK	BLACK	2.00	2.00
W5-1	36	36					3	FL ORANGE	BLACK	BLACK	9.00	27.00
W8-1	36	36					3	FL ORANGE	BLACK	BLACK	9.00	27.00
W8-15	36	36					3	FL ORANGE	BLACK	BLACK	9.00	27.00
W8-24	36	36					1	FL ORANGE	BLACK	BLACK	9.00	9.00
W20-1	36	36					3	FL ORANGE	BLACK	BLACK	9.00	27.00
W20-4	36	36		↓			3	FL ORANGE	BLACK	BLACK	9.00	27.00
MA-W20-7b	36	36		MASSDOT STANDARD SIGN			3	FL ORANGE	BLACK	BLACK	9.00	27.00
W21-5a	36	36		SEE 2009 MUTCD			3	FL ORANGE	BLACK	BLACK	9.00	27.00



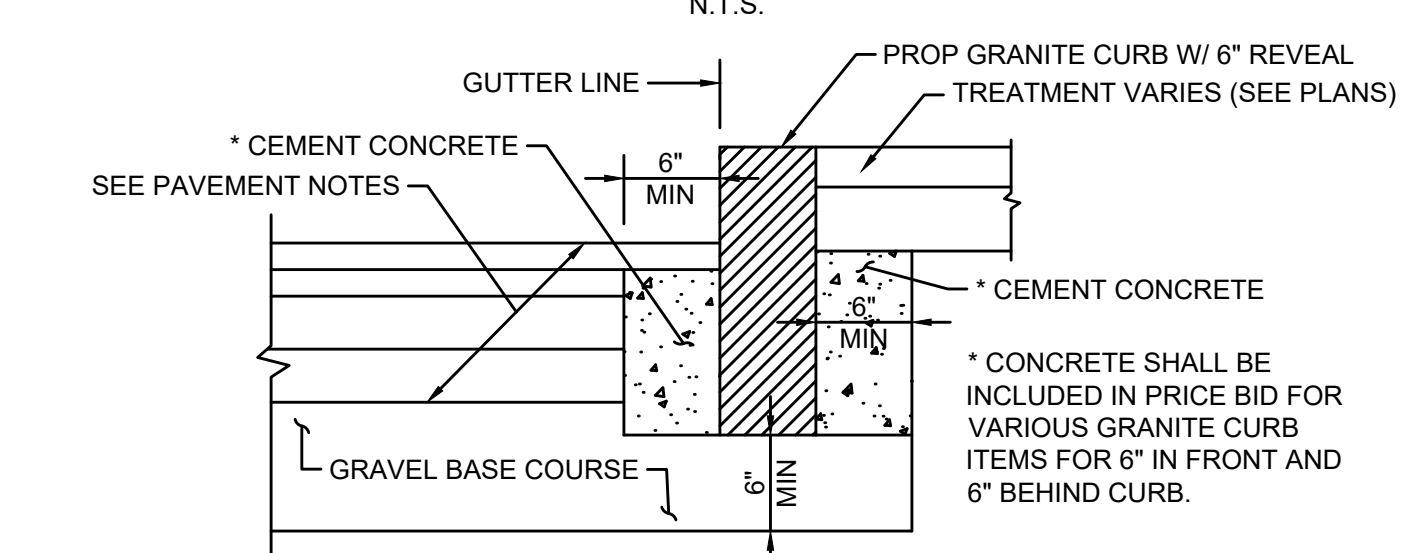
ADVANCE WARNING SIGN MAP
N.T.S.



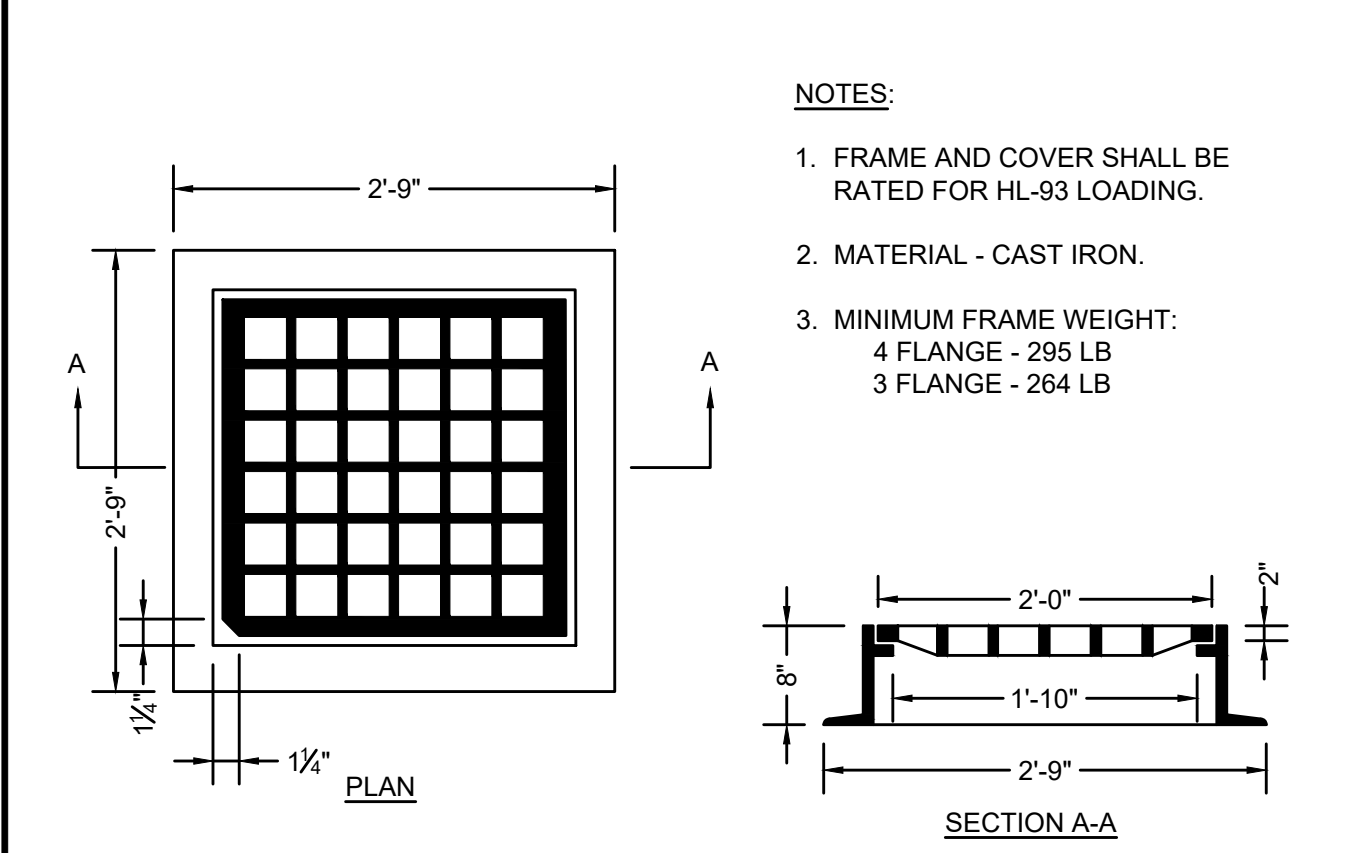
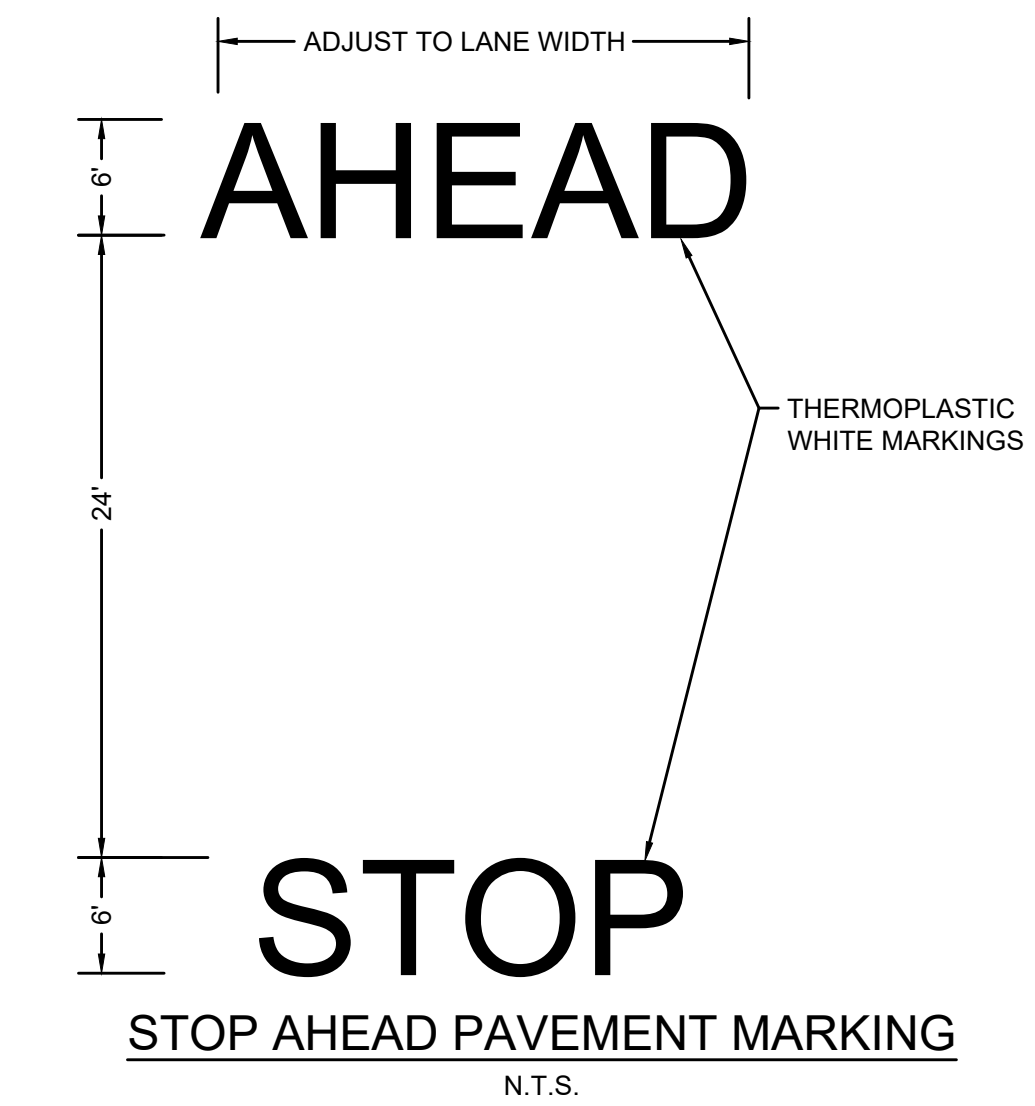
TREE PROTECTION
N.T.S.



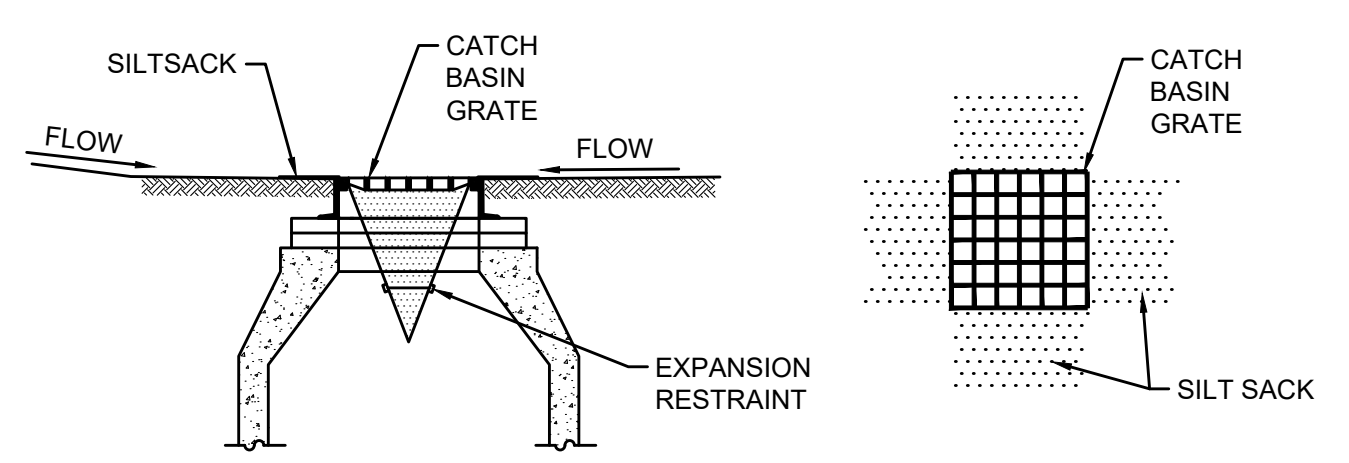
GRANITE CURB IN HMA MILL & OVERLAY
N.T.S.



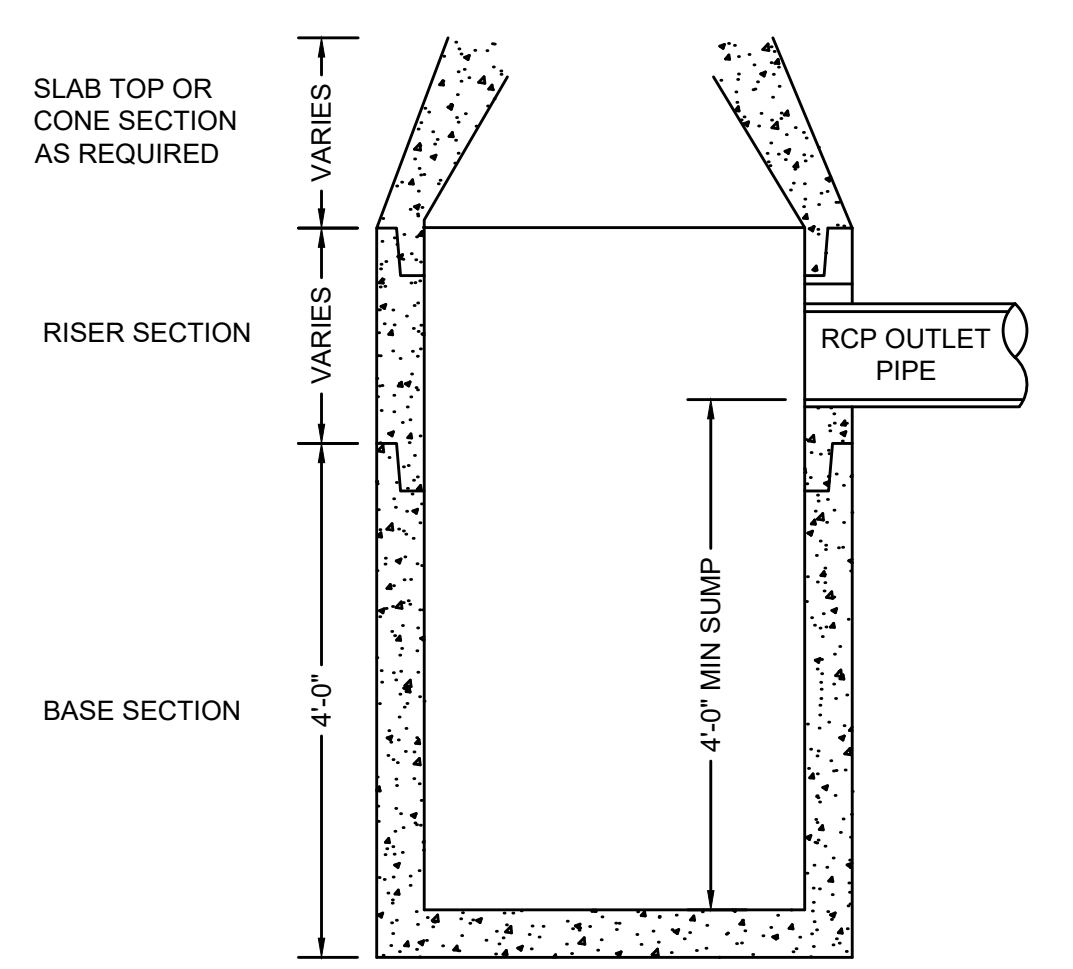
GRANITE CURB IN FULL DEPTH PAVEMENT
N.T.S.



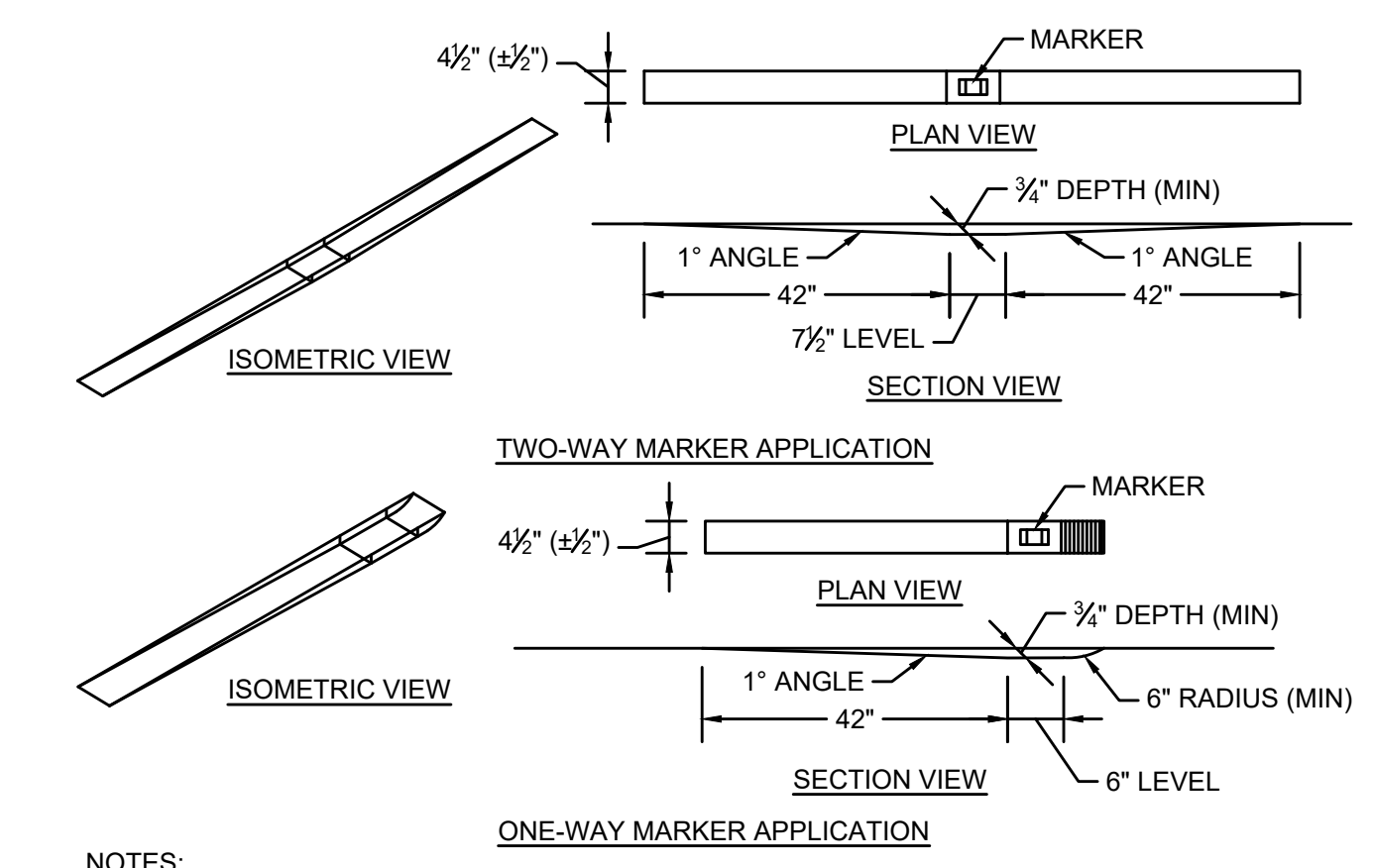
CATCH BASIN FRAME & GRATE (MUNICIPAL STANDARD)
N.T.S.



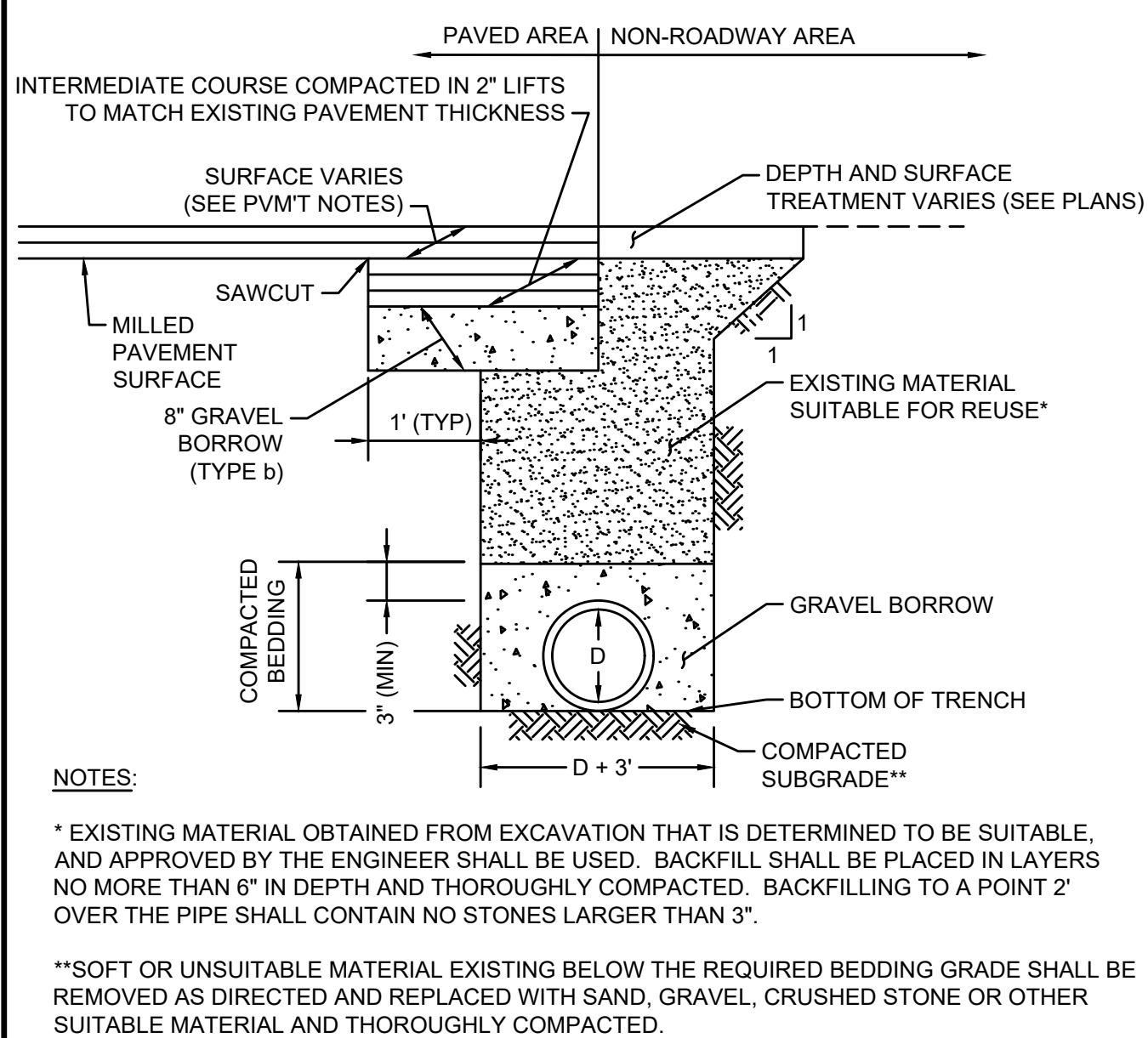
INLET PROTECTION SILT SACK IN CATCH BASIN
N.T.S.



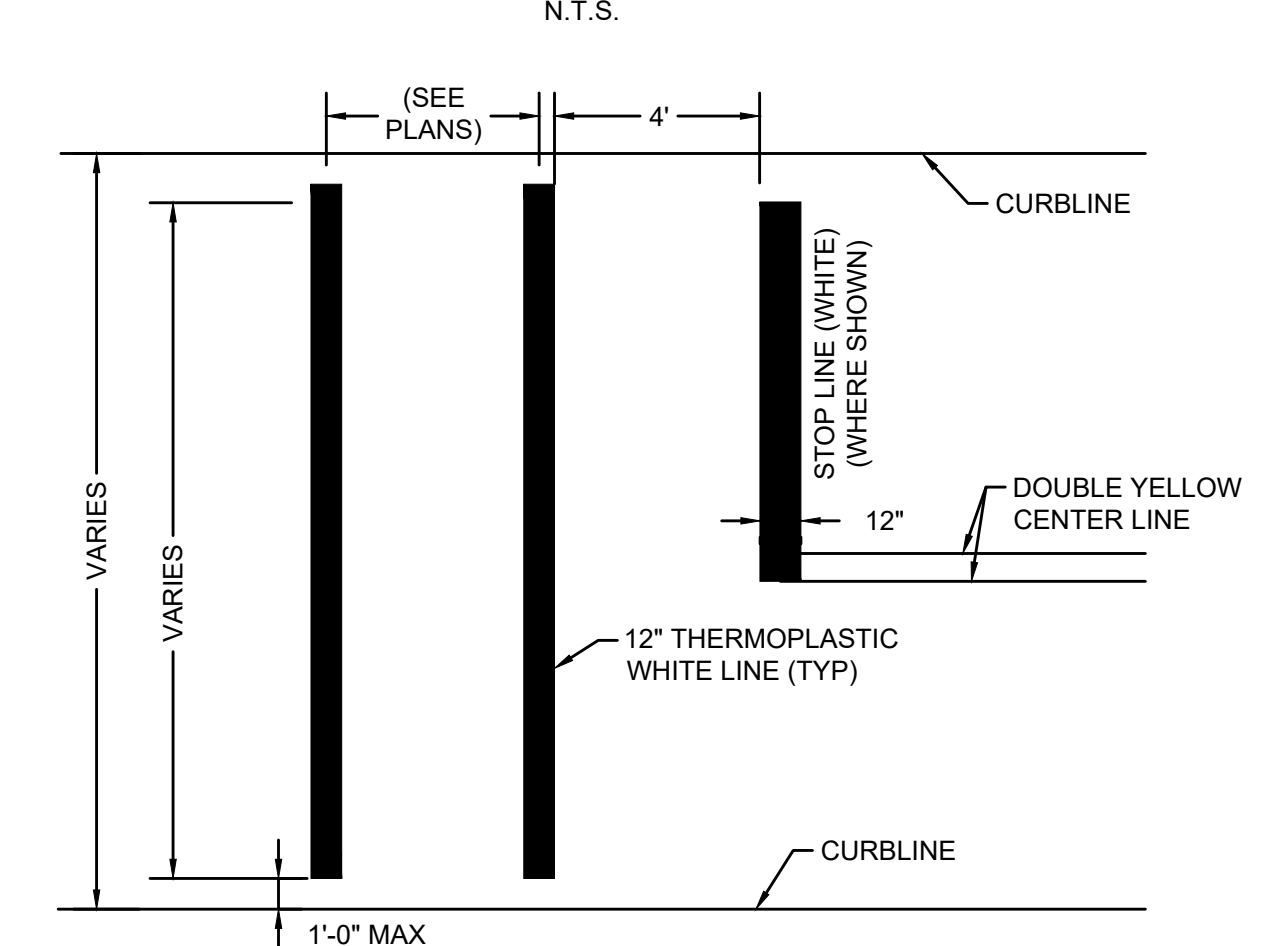
DEEP SUMP CATCH BASIN
N.T.S.



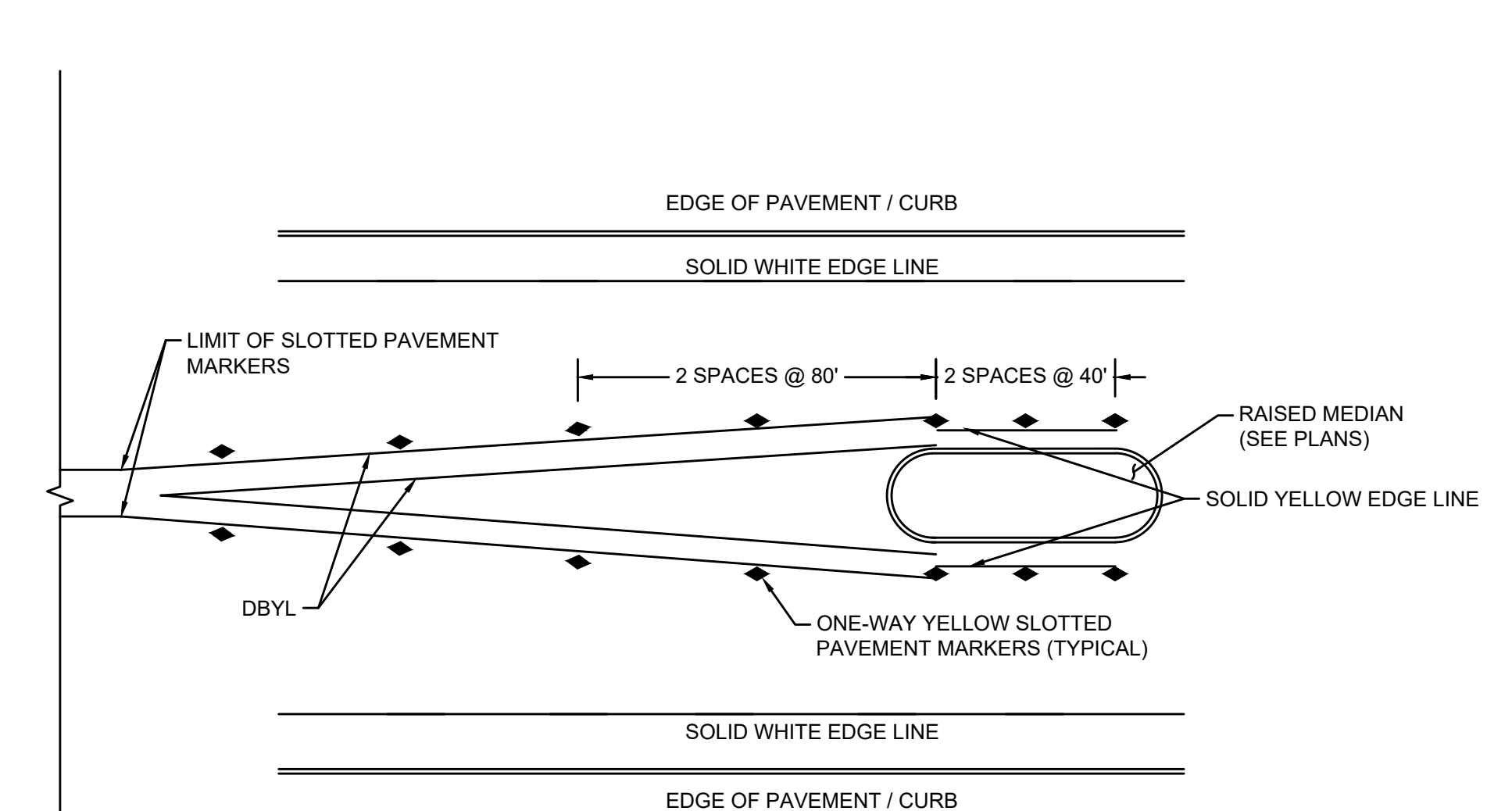
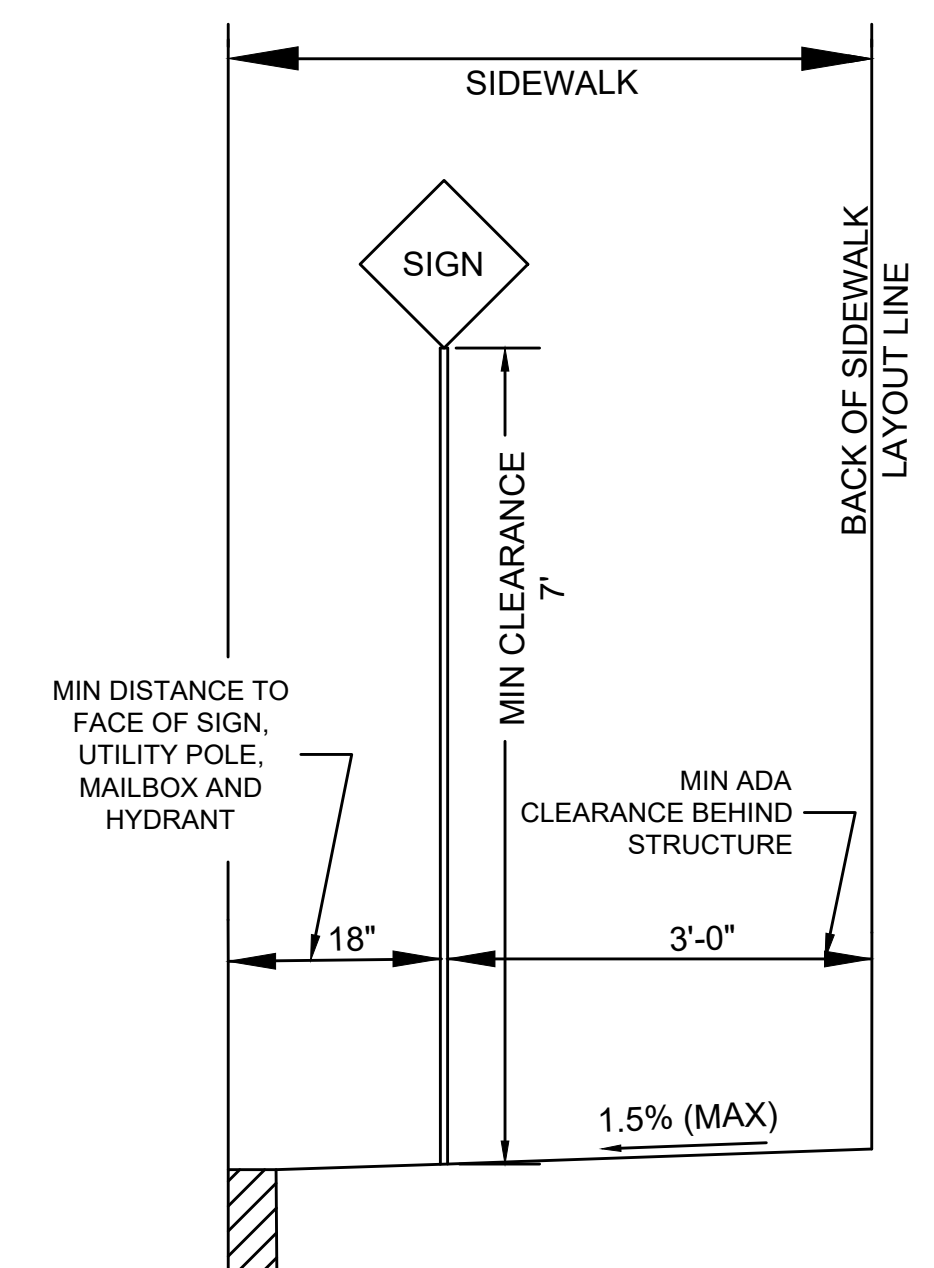
SLOTTED PAVEMENT MARKER - RECESSED GROOVE
N.T.S.



UTILITY TRENCH
N.T.S.



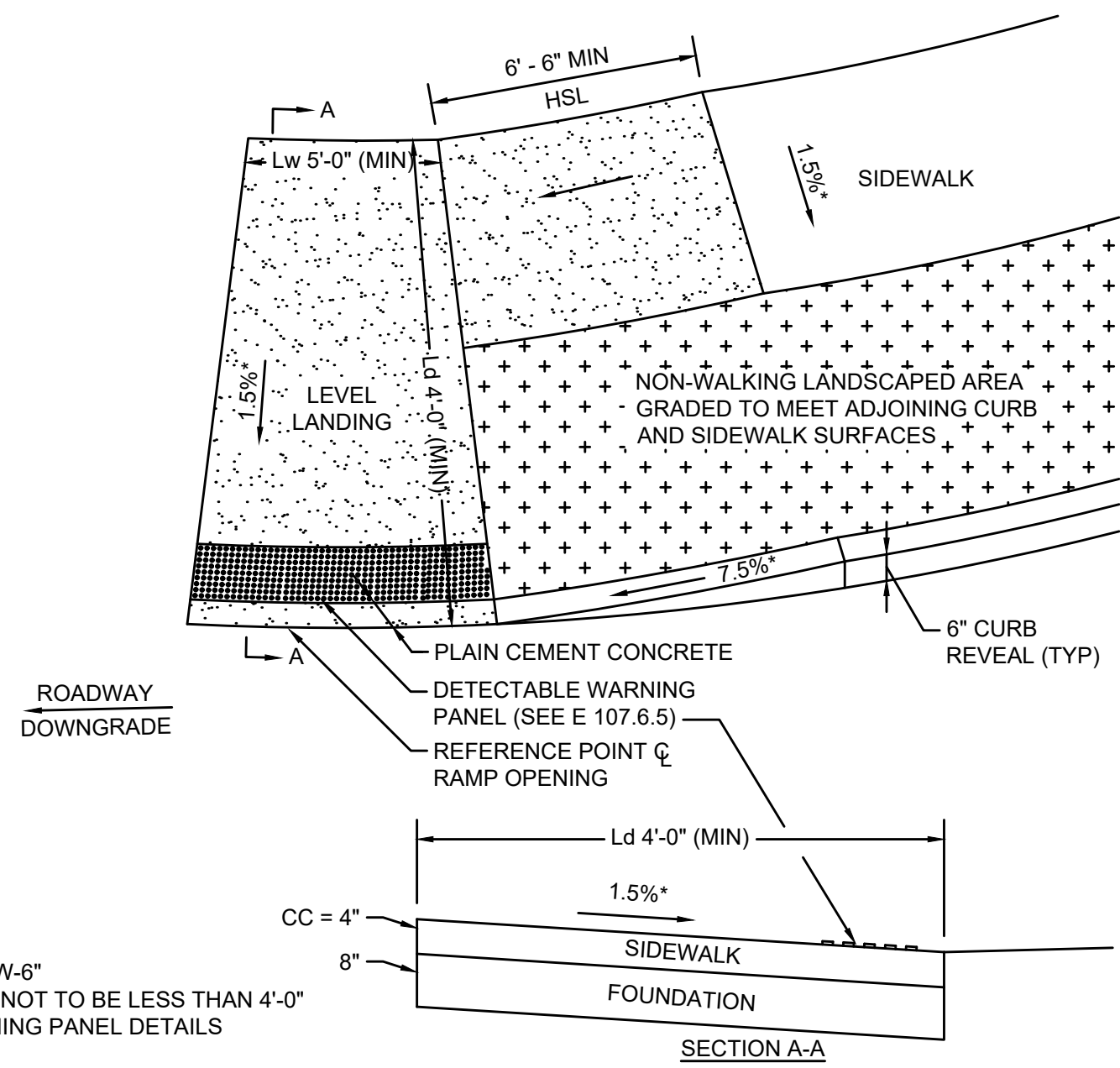
CROSSWALK PAVEMENT MARKING
N.T.S.



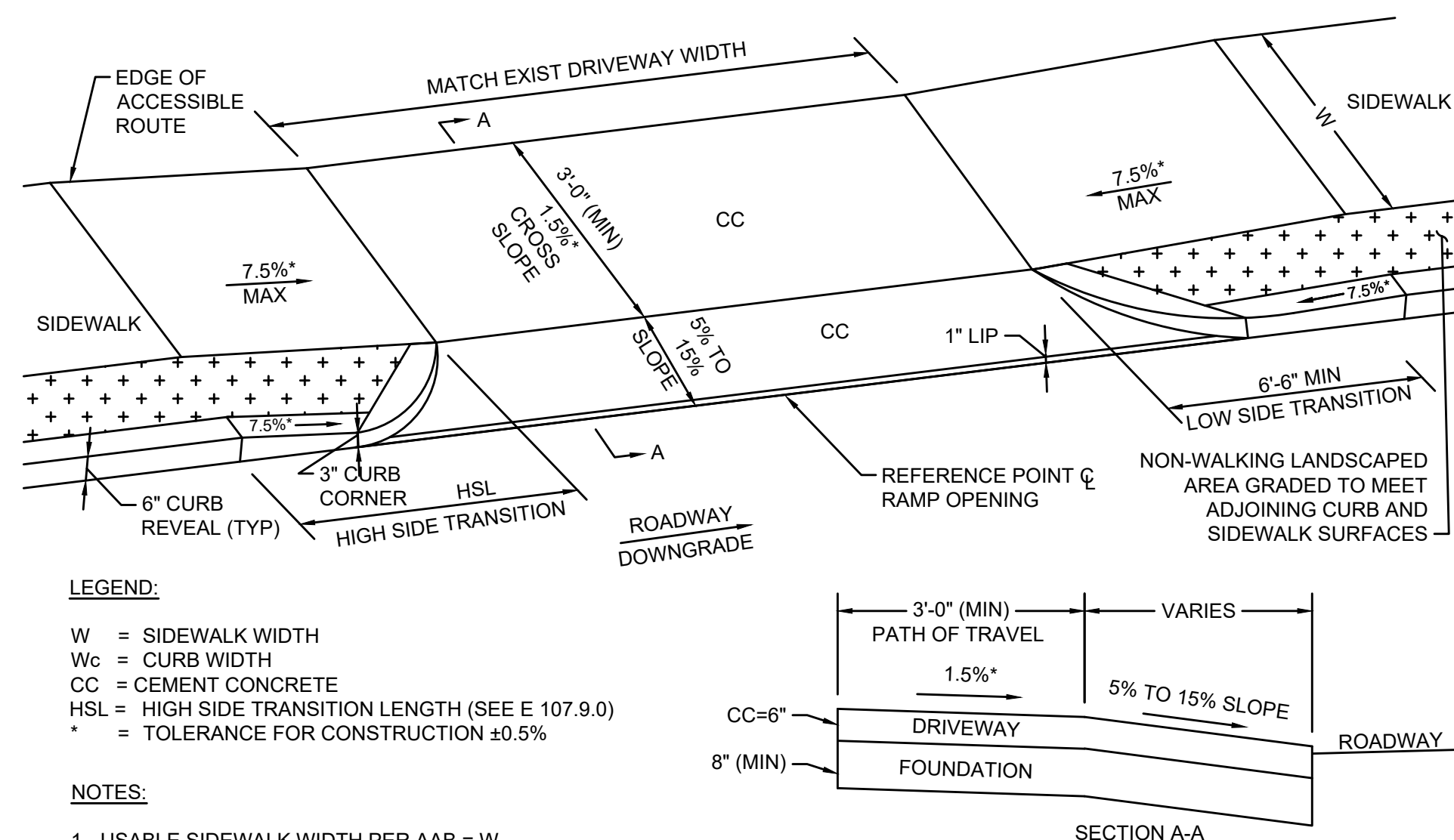
SLOTTED PAVEMENT MARKER - LAYOUT AT MEDIAN
N.T.S.

LEGEND:
W = SIDEWALK WIDTH
CC = CEMENT CONCRETE
HSL = HIGH SIDE TRANSITION LENGTH (SEE E 107.9.0)
* = TOLERANCE FOR CONSTRUCTION ±0.5%

NOTES:
1. USABLE SIDEWALK WIDTH PER AAB = W-6"
2. USABLE SIDEWALK WIDTH PER AAB IS NOT TO BE LESS THAN 4'-0"
3. SEE E 107.6.5 FOR DETECTABLE WARNING PANEL DETAILS



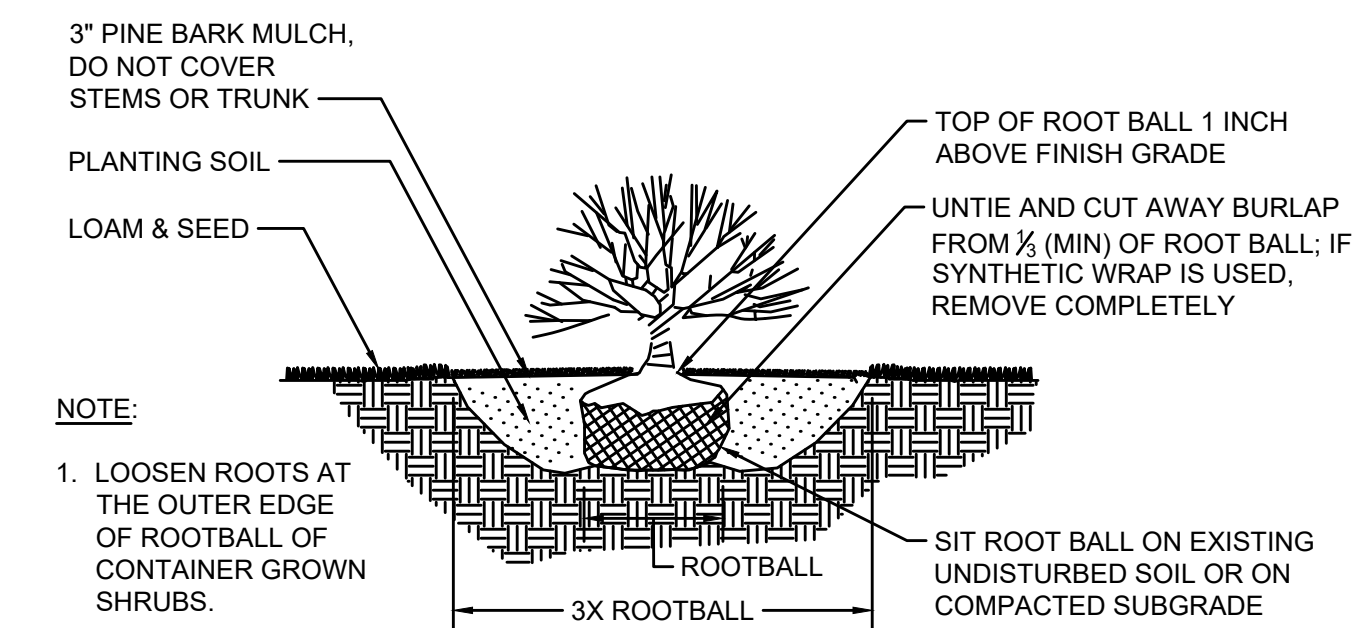
WHEELCHAIR RAMP TYPE A
N.T.S.



LEGEND:
W = SIDEWALK WIDTH
Wc = CURB WIDTH
CC = CEMENT CONCRETE
HSL = HIGH SIDE TRANSITION LENGTH (SEE E 107.9.0)
* = TOLERANCE FOR CONSTRUCTION ±0.5%

NOTES:
1. USABLE SIDEWALK WIDTH PER AAB = W
2. USABLE SIDEWALK WIDTH PER AAB IS NOT TO BE LESS THAN 4'-0"

SIDEWALK THROUGH DRIVEWAY TYPE A
N.T.S.



NOTE:

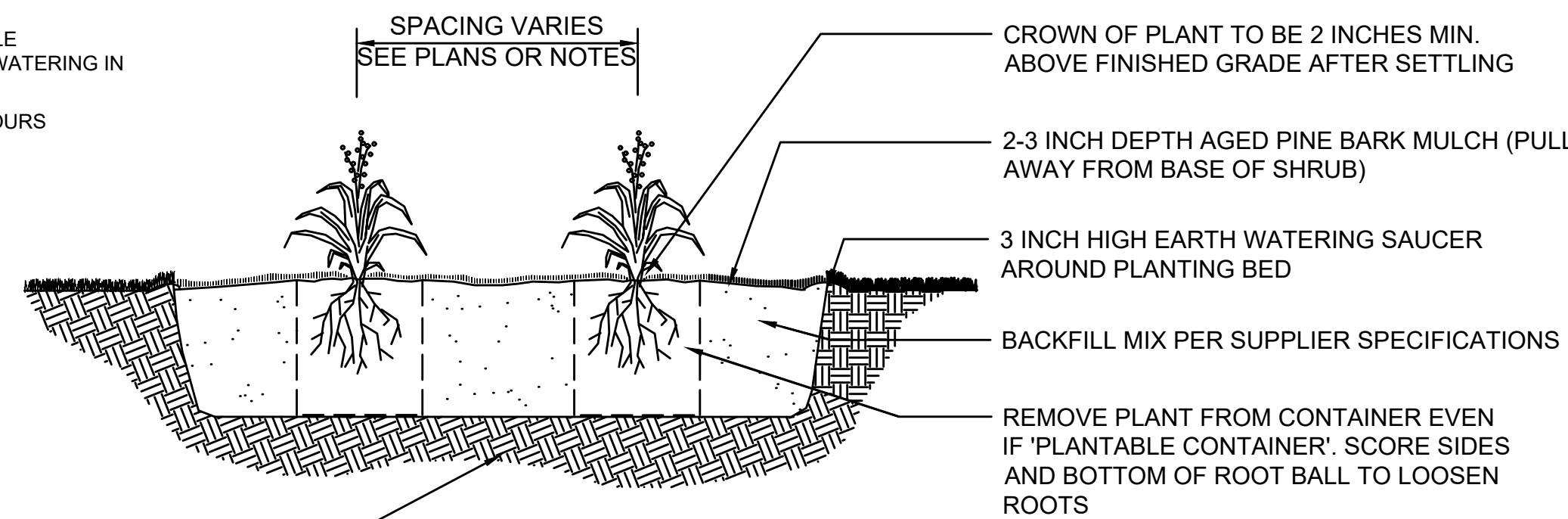
1. LOOSEN ROOTS AT THE OUTER EDGE OF ROOTBALL OF CONTAINER GROWN SHRUBS.
2. SIT ROOT BALL ON EXISTING UNDISTURBED SOIL OR ON COMPACTED SUBGRADE

SHRUB PLANTING
N.T.S.

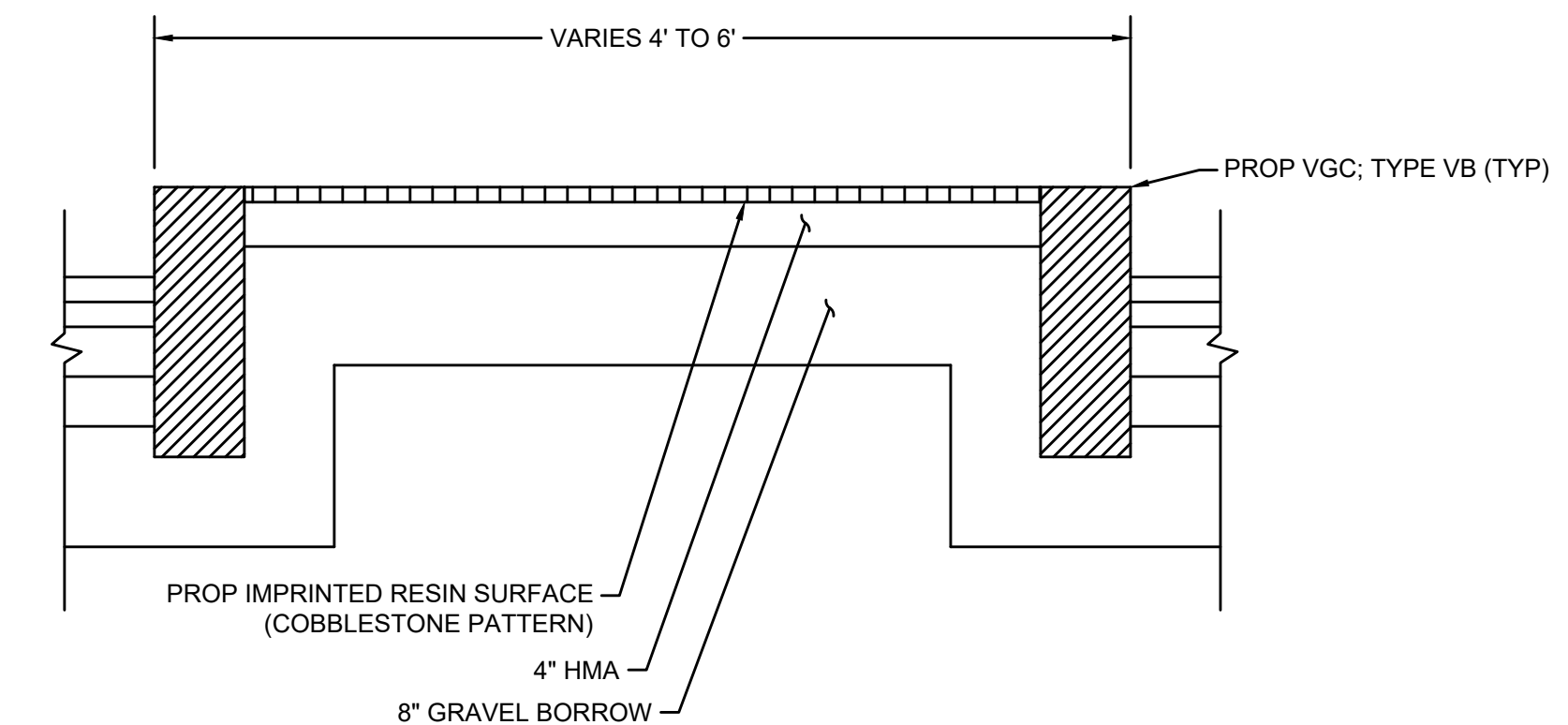
EXCAVATE TO REQUIRED DEPTH AND BACKFILL WITH PLANTING MIX

RAISE AND REPLANT AND PLANTS THAT SETTLE MORE THAN 3 INCHES AFTER PLANTING AND WATERING IN

WATER BY FLOODING TWICE IN FIRST TWO HOURS AFTER PLANTING. WATER & MAINTAIN AS PER STANDARD SPECIFICATIONS

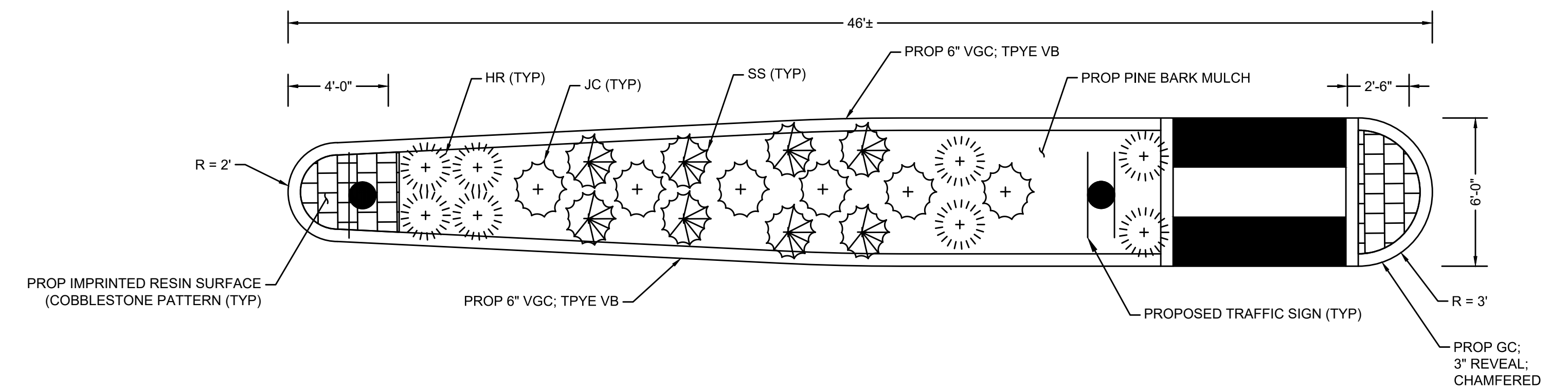


PERENNIAL PLANTING
N.T.S.



MEDIAN COBBLESTONE IMPRINTED RESIN SURFACE DETAIL
N.T.S.

PROPOSED PLANTING TABLE						
SYMBOL	KEY	QTY	BOTANICAL NAME	COMMON NAME	SIZE	COMMENTS
	JC	6	JUNIPERUS CONFERTA 'BLUE PACIFIC'	BLUE PACIFIC JUNIPER	15"-18" CONT.	2' SPACING
	SS	8	SCHIZACHYRIUM SCOPARIUM 'CAROUSEL'	CAROUSEL LITTLE BLUESTEM	#1 CONT.	18" SPACING
	HR	8	HEMERCOLLAS 'RUBYSTELLA'	RUBY STELLA DAYLILY	#1 CONT.	12" SPACING



LANDSCAPED MEDIAN DETAIL
N.T.S.

