

PEDESTRIAN SAFETY IMPROVEMENT PROJECT

WESTFORD
PLAIN ROAD SIDEWALK
TITLE SHEET & INDEX
SHEET 1 OF 26

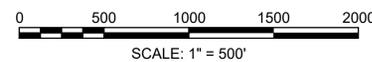
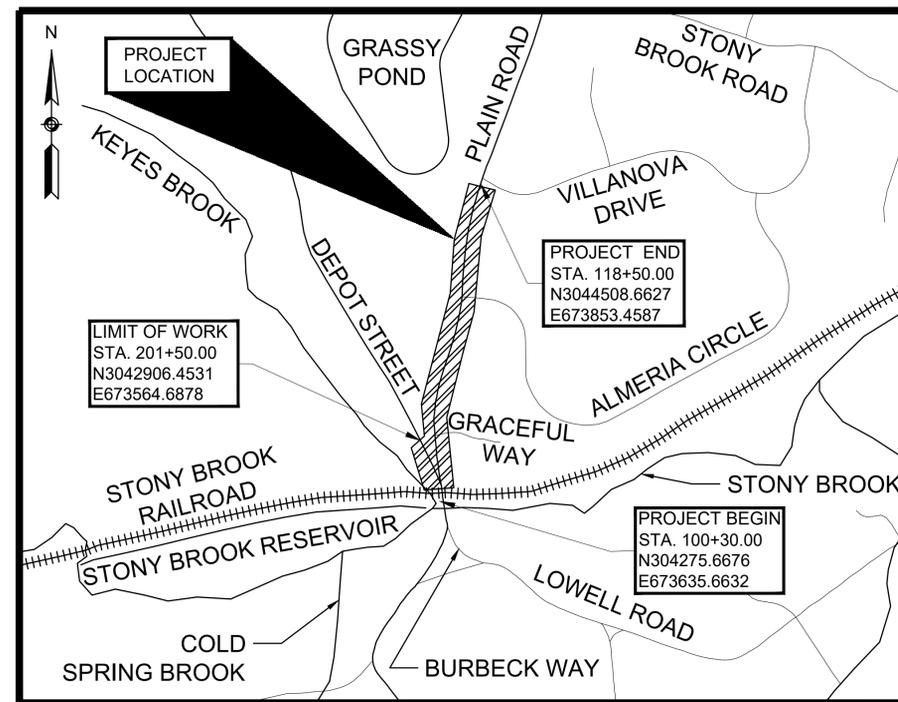
PLAN OF PLAIN ROAD SIDEWALK (PHASE 2)

IN THE TOWN OF
WESTFORD
MIDDLESEX COUNTY

THESE PLANS ARE SUPPLEMENTED BY THE 2023 MASSDOT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, 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.

50% SUBMITTAL

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LENGTH OF PROJECT = 18,000.00 FEET = 3.41 MILES

DATE	DESCRIPTION	REV #
5/08/2023	50% DESIGN SUBMITTAL	1

TEC
The Engineering Corp.

TEC, Inc.

282 Merrimack Street 2nd Floor Lawrence, MA 01843 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
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www.TheEngineeringCorp.com

GENERAL SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
		JERSEY BARRIER
		CATCH BASIN
		CATCH BASIN 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
		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
		GUARD RAIL - DOUBLE FACE - STEEL POSTS
		GUARD RAIL - DOUBLE FACE - WOOD POSTS
		CHAIN LINK OR METAL FENCE
		WOOD FENCE
		SEDIMENT CONTROL BARRIER
		TREE LINE
		SAWCUT LINE
		TOP OR BOTTOM OF SLOPE
		LIMIT OF EDGE OF PAVEMENT OR COLD PLANE 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 PHASE ACTUATED
		TRAFFIC SIGNAL HEAD (SIZE AS NOTED)
		WIRE LOOP DETECTOR (6' x 6' TYP UNLESS OTHERWISE SPECIFIED)
		VIDEO DETECTION CAMERA
		MICROWAVE DETECTOR
		PEDESTRIAN PUSH BUTTON, SIGN (DIRECTIONAL ARROW AS SHOWN) AND SADDLE
		EMERGENCY PREEMPTION CONFIRMATION STROBE LIGHT
		VEHICULAR SIGNAL HEAD
		VEHICULAR SIGNAL HEAD, OPTICALLY PROGRAMMED
		FLASHING BEACON
		PEDESTRIAN SIGNAL HEAD, (TYPE AS NOTED OR AS SPECIFIED)
		RAILROAD SIGNAL
		SIGNAL POST AND BASE (ALPHA-NUMERIC DESIGNATION NOTED)
		MAST ARM, SHAFT AND BASE (ARM LENGTH AS NOTED)
		HIGH MAST POLE OR TOWER
		SIGN AND POST
		SIGN AND POST (2 POSTS)
		MAST ARM WITH LUMINAIRE
		OPTICAL PRE-EMPTION DETECTOR
		CONTROL CABINET, GROUND MOUNTED
		CONTROL CABINET, POLE MOUNTED
		FLASHING BEACON CONTROL AND METER PEDESTAL
		LOAD CENTER ASSEMBLY
		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
		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
LP	LIGHT POLE
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
PVT	POINT OF VERTICAL TANGENCY
PVMT	PAVEMENT

**WESTFORD
PLAIN ROAD SIDEWALK
LEGEND & ABBREVIATIONS
SHEET 2 OF 26**

ABBREVIATIONS (cont.)

GENERAL	
PWW	PAVED WATER WAY
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
R&R	REMOVE AND RESET
R&S	REMOVE AND STACK
RT	RIGHT
SB	STONE BOUND
SGC	SLANTED GRANITE CURB
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

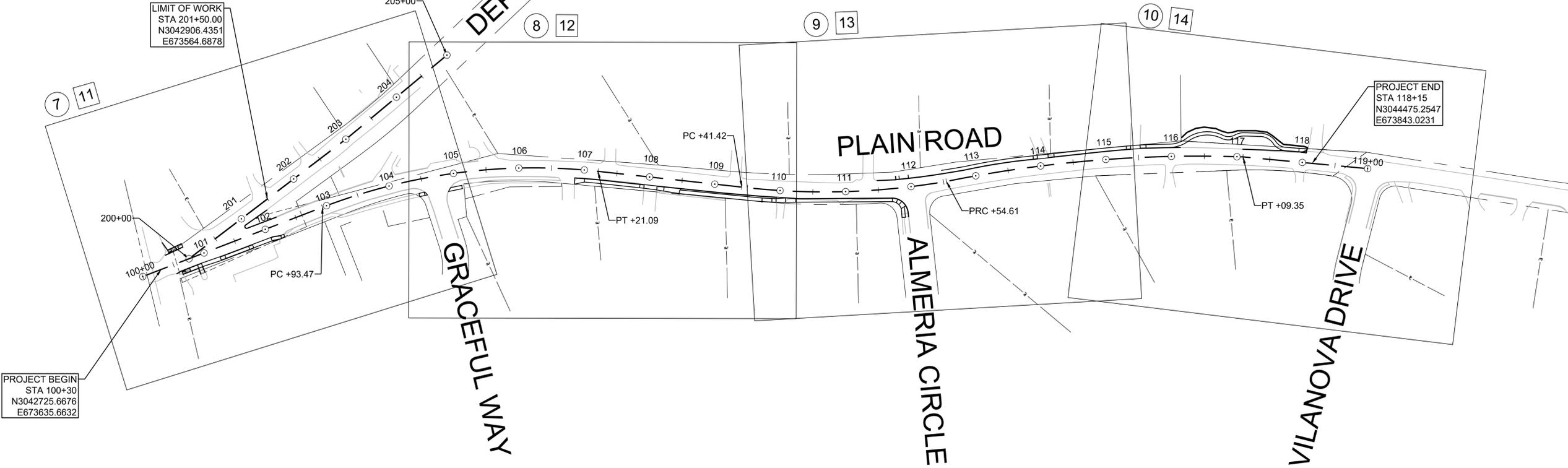
TRAFFIC SIGNAL ABBREVIATIONS

CAB	CABINET
CCVE	CLOSED CIRCUIT VIDEO EQUIPMENT
DW	STEADY UPRAISED HAND
FDW	FLASHING UPRAISED HAND
FR	FLASHING CIRCULAR RED
FRL	FLASHING RED LEFT ARROW
FRR	FLASHING RED RIGHT ARROW
FY	FLASHING CIRCULAR YELLOW
FYL	FLASHING YELLOW LEFT ARROW
FYR	FLASHING YELLOW RIGHT ARROW
G	STEADY CIRCULAR GREEN
GL	STEADY GREEN LEFT ARROW
GR	STEADY GREEN RIGHT ARROW
GSL	STEADY GREEN SLASH LEFT ARROW
GSR	STEADY GREEN SLASH RIGHT ARROW
GV	STEADY GREEN VERTICAL ARROW
OL	OVERLAP
PED	PEDESTRIAN
PTZ	PAN, TILT, ZOOM
R	STEADY CIRCULAR RED
RL	STEADY RED LEFT ARROW
RR	STEADY RED RIGHT ARROW
TR SIG	TRAFFIC SIGNAL
TSC	TRAFFIC SIGNAL CONDUIT
W	STEADY WALKING PERSON
Y	STEADY CIRCULAR YELLOW
YL	STEADY YELLOW LEFT ARROW

GENERAL NOTES:

1. EXISTING CONDITIONS INFORMATION COMPILED FROM SURVEY BY HANCOCK ASSOCIATES, BOSTON, MA PERFORMED IN OCTOBER & NOVEMBER 2022.

THE HORIZONTAL DATUM FOR THIS SURVEY IS THE MASSACHUSETTS COORDINATE SYSTEM, NAD 1983, MAINLAND ZONE. THE VERTICAL DATUM FOR THIS SURVEY IS THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). SAID DATUMS WERE ESTABLISHED VIA GPS OBSERVATIONS UTILIZING REALIZATION NAD83(2011) AND GEOID 12A.
2. 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 RECORD INFORMATION AND THEIR EXACT LOCATION ARE NOT GUARANTEED.
3. THE LIMIT OF BORDERING VEGETATED WETLANDS SHOWN HEREON WAS DELINEATED BY AND LOCATED VIA FIELD SURVEY BY HANCOCK ASSOCIATES.
4. 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.
5. GAS MAINS SHOWN HEREON ARE APPROXIMATE AND INTENDED ONLY TO INDICATE THE EXISTENCE OF A MAIN IN THE AREA. NOT ENOUGH PHYSICAL INFORMATION WAS FOUND DURING THE SURVEY TO DETERMINE THE ACTUAL LOCATION RELATIVE TO THE STREET. RECORDS OF GAS LINE CONTINUING TO THE INTERSECTION WERE NOT ACCESSIBLE.
6. UNDERGROUND TELEPHONE CONDUIT SHOWN BETWEEN MANHOLES ARE APPROXIMATE AND INTENDED ONLY TO INDICATE EXISTENCE OF UNDERGROUND CONDUIT IN THE AREA. NOT ENOUGH PHYSICAL INFORMATION WAS FOUND DURING THE SURVEY TO DETERMINE THE ACTUAL LOCATION RELATIVE TO THE STREET.
7. UNDERGROUND WATER MAINS SHOWN HERE ON WERE COMPILED FROM A GIS PRINT PROVIDED BY THE TOWN. LOCATIONS OF SAID MAINS SHOULD BE CONSIDERED APPROXIMATE.
8. 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.
9. 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.
10. 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.
11. ALL DISTURBED AREAS OUTSIDE THE CURBLINE SHALL BE STABILIZED WITH 4" LOAM AND SEED, UNLESS OTHERWISE NOTED.
12. THE TERM "PROPOSED" (PROP) MEANS WORK TO BE CONSTRUCTED USING NEW MATERIALS OR, WHERE APPLICABLE, RE-USING EXISTING MATERIALS IDENTIFIED AS "REMOVE AND RESET" (R&R), AS APPROVED BY THE ENGINEER.
13. THE TERM "MEET EXIST" MEANS TO MEET BOTH THE EXISTING ALIGNMENT AND ELEVATION.
14. ALL EXISTING TREES WITHIN THE PROJECT LIMITS SHALL BE RETAINED UNLESS INDICATED OTHERWISE ON THE DRAWINGS. ALL PROVIDED DIMENSIONS REFER TO THE DIAMETER AT BREST HEIGHT.
15. AN UNOBSTRUCTED PATH OF TRAVEL WITH A MINIMUM WIDTH OF 3'-0" (EXCLUDING THE WIDTH OF CURB) SHALL BE MAINTAINED PAST ALL VERTICAL OBSTRUCTIONS (UTILITY POLES, LIGHT POLES, SIGNS, MAILBOXES, ETC.)
12. DETECTABLE WARNING PANELS ARE REQUIRED ON ALL PROPOSED PEDESTRIAN CURB RAMPS AND SHALL BE INSTALLED IN ACCORDANCE WITH MASSDOT CONSTRUCTION STANDARDS. DETECTABLE WARNING PANELS COLOR SHALL BE APPROVED BY THE WESTFORD DPW.
16. ALL EXISTING GRANITE CURB THAT MEETS SPECIFICATIONS SHALL BE RE-USED WITHIN THE PROPOSED WORK, EXCEPT CURVED STONES OF A DIFFERENT RADIUS THAN THAT PROPOSED.
17. IN INSTANCES WHERE AN EXISTING MANHOLE, HANDHOLE, OR OTHER "SURFACE" TYPE STRUCTURE THAT CANNOT BE REMOVED OR RESET IS WITHIN THE PROPOSED OR EXISTING (IF RECIPROCAL OR WITHIN PROJECT LIMITS) ACCESSIBLE SURFACE, THE STRUCTURE SHALL BE CAREFULLY ADJUSTED SUCH THAT THE TOPMOST SURFACES OR THE STRUCTURE COVER SHALL BE FLUSH WITH THE CURB RAMP SURFACE.
18. THE CONTRACTOR SHALL NOTE THE EXISTING CONDITION OF ADJACENT PRIVATELY-OWNED FEATURES PRIOR TO THE START OF CONSTRUCTION. PRE-CONSTRUCTION PHOTOS AND VIDEOS SHALL BE REQUIRED AND SUBMITTED TO THE TOWN PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO THE EXISTING PRIVATELY-OWNED FEATURES BY CONSTRUCTION ACTIVITIES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
19. ALL EXISTING SIGNS WITHIN THE PROJECT LIMITS SHALL BE RETAINED UNLESS INDICATED OTHERWISE ON THE DRAWINGS. ALL SIGNS THAT ARE TO BE REMOVED AND RESET SHALL BE RESET WITH A NEW P5 POST.
20. RETAIN ALL PAVEMENT MARKINGS EXCEPT THOSE IN CONFLICT WITH PROPOSED PAVEMENT MARKINGS, WHICH SHALL BE REMOVED BY APPROVED METHODS.
21. ALL PROPOSED PAVEMENT MARKINGS WITHIN THE LIMITS OF WORK SHALL THERMOPLASTIC MATERIALS.
22. A MINIMUM SIDEWALK 3'-0" PATH OF TRAVEL CLEARANCE, EXCLUDING CURB, IS REQUIRED WHEN PLACING SIGNS.
23. 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.
24. IN AREAS OF EXISTING ROADWAY / SIDEWALK WHERE LOAM AND SEED IS PROPOSED, THE CONTRACTOR SHALL REMOVE EXISTING ROADWAY / SIDEWALK AND SUBBASE, AND REPLACE WITH SUITABLE EXCAVATED MATERIAL AND PROPOSED 4" LOAM AND SEED TO MEET FINAL GRADE.



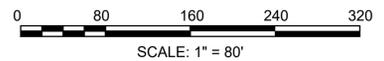
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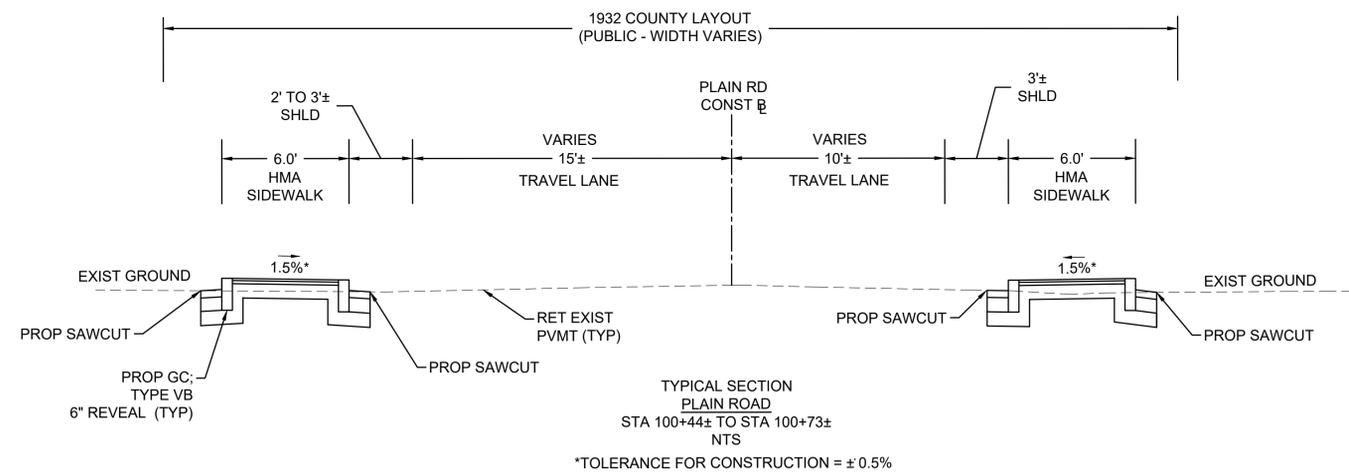
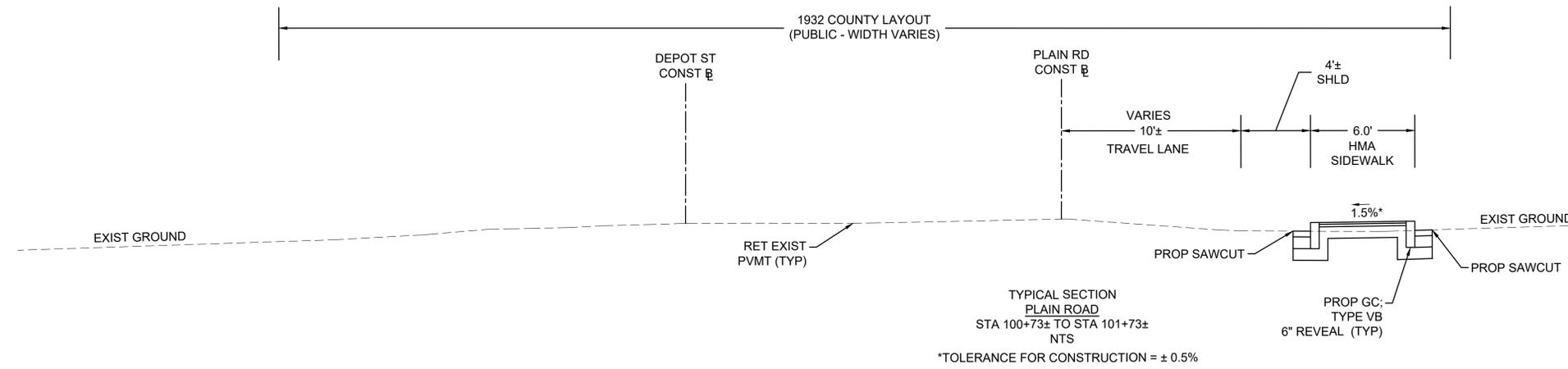
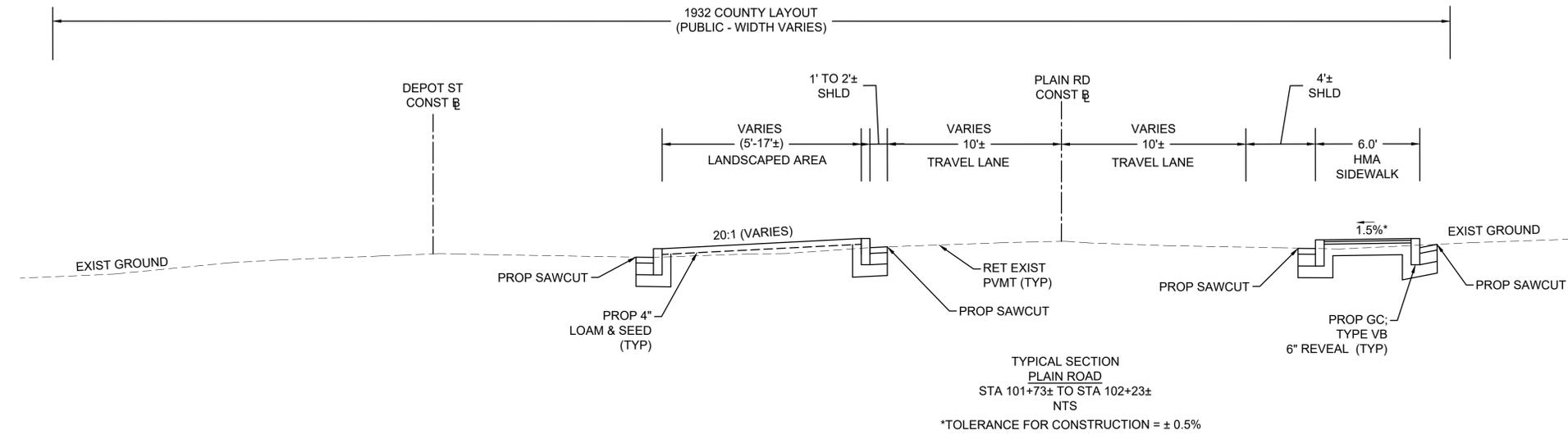
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LEGEND

- (X) CONSTRUCTION PLAN
- (X) TRAFFIC SIGN & PAVEMENT MARKING PLAN





PAVEMENT NOTES

PROPOSED CEMENT CONCRETE CURB RAMPS

SURFACE: 4" CEMENT CONCRETE (AIR ENTRAINED, 4000 PSI, 3/4", 610)

BASE: 8" GRAVEL BORROW, TYPE b

PROPOSED HMA SIDEWALK

SURFACE: 1 1/4" SUPERPAVE SURFACE COURSE - 9.5 (SSC - 9.5) OVER
1 3/4" SUPERPAVE SURFACE COURSE - 12.5 (SSC - 12.5) OVER

BASE: 8" GRAVEL BORROW, TYPE b

PROPOSED HMA DRIVEWAY (TO MATCH EXISTING)

SURFACE: 1 1/2" SUPERPAVE SURFACE COURSE 9.5 (SSC - 9.5) OVER
2 1/2" SUPERPAVE SURFACE COURSE 12.5 (SSC - 12.5) OVER

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

PROPOSED FULL DEPTH PAVEMENT <4'

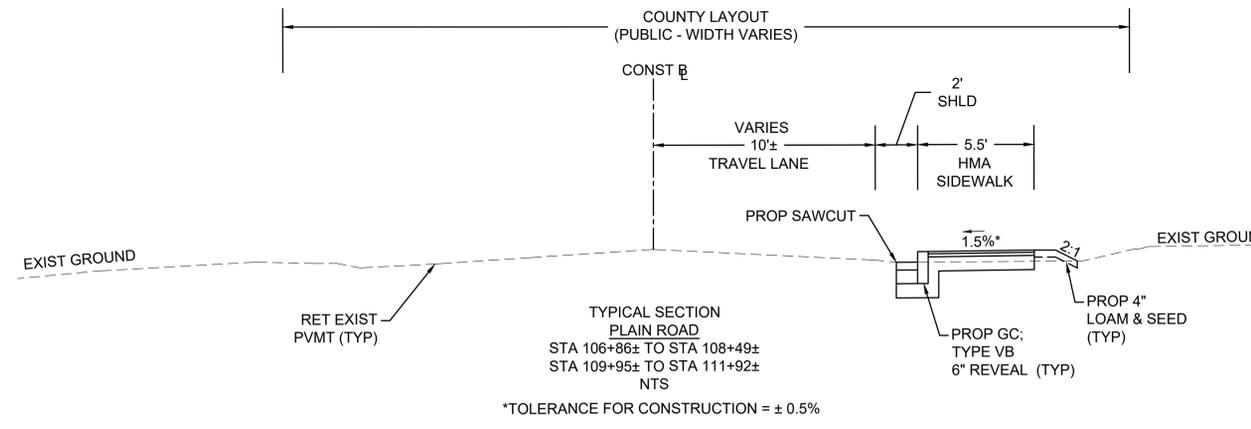
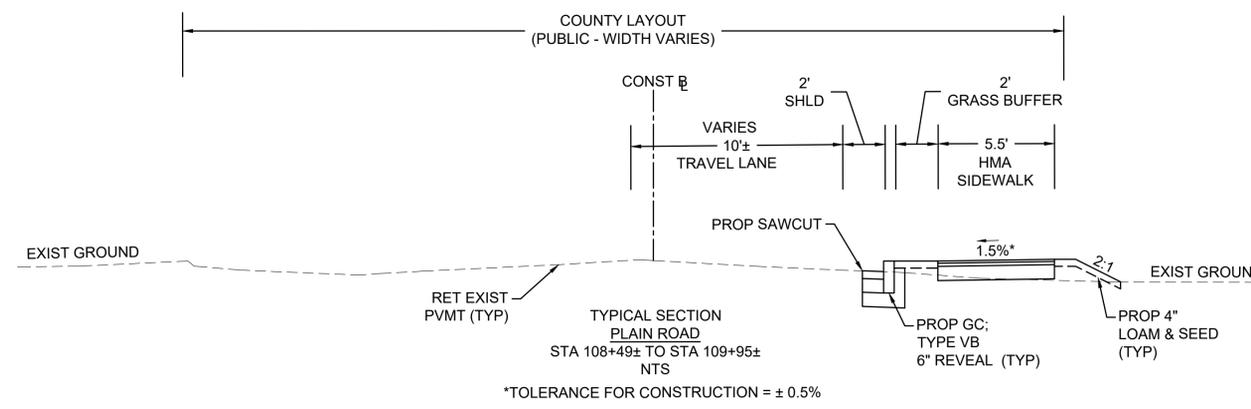
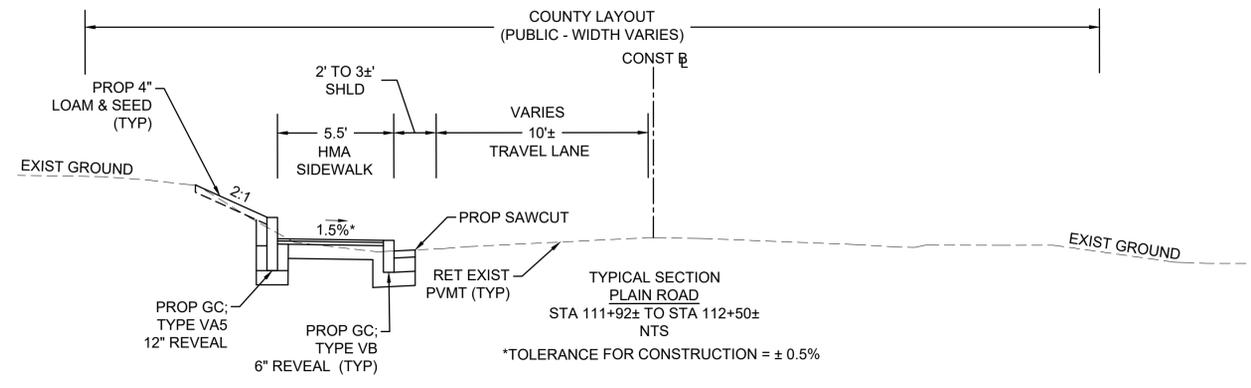
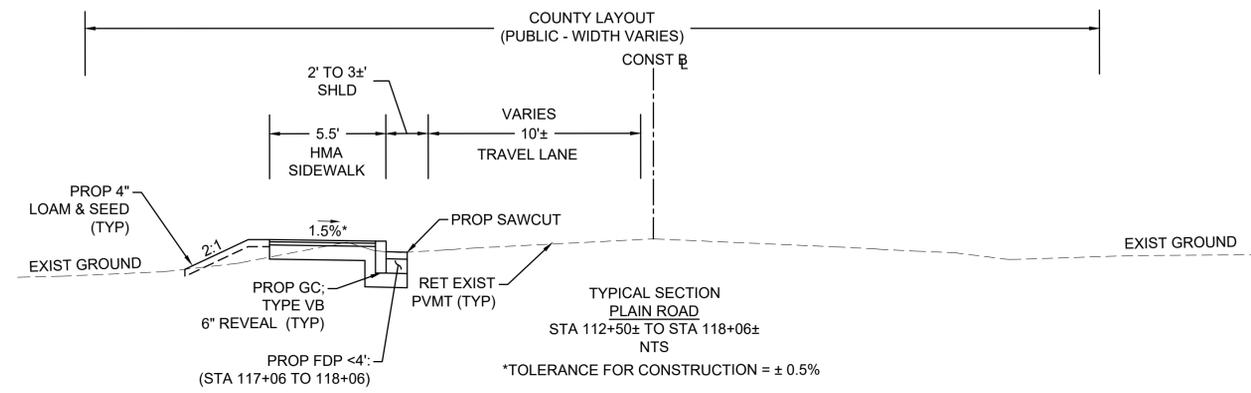
SURFACE: 1 3/4" SUPERPAVE SURFACE COURSE 12.5 (SSC - 12.5) OVER
1 3/4" SUPERPAVE INTERMEDIATE COURSE 12.5 (SIC - 12.5) OVER

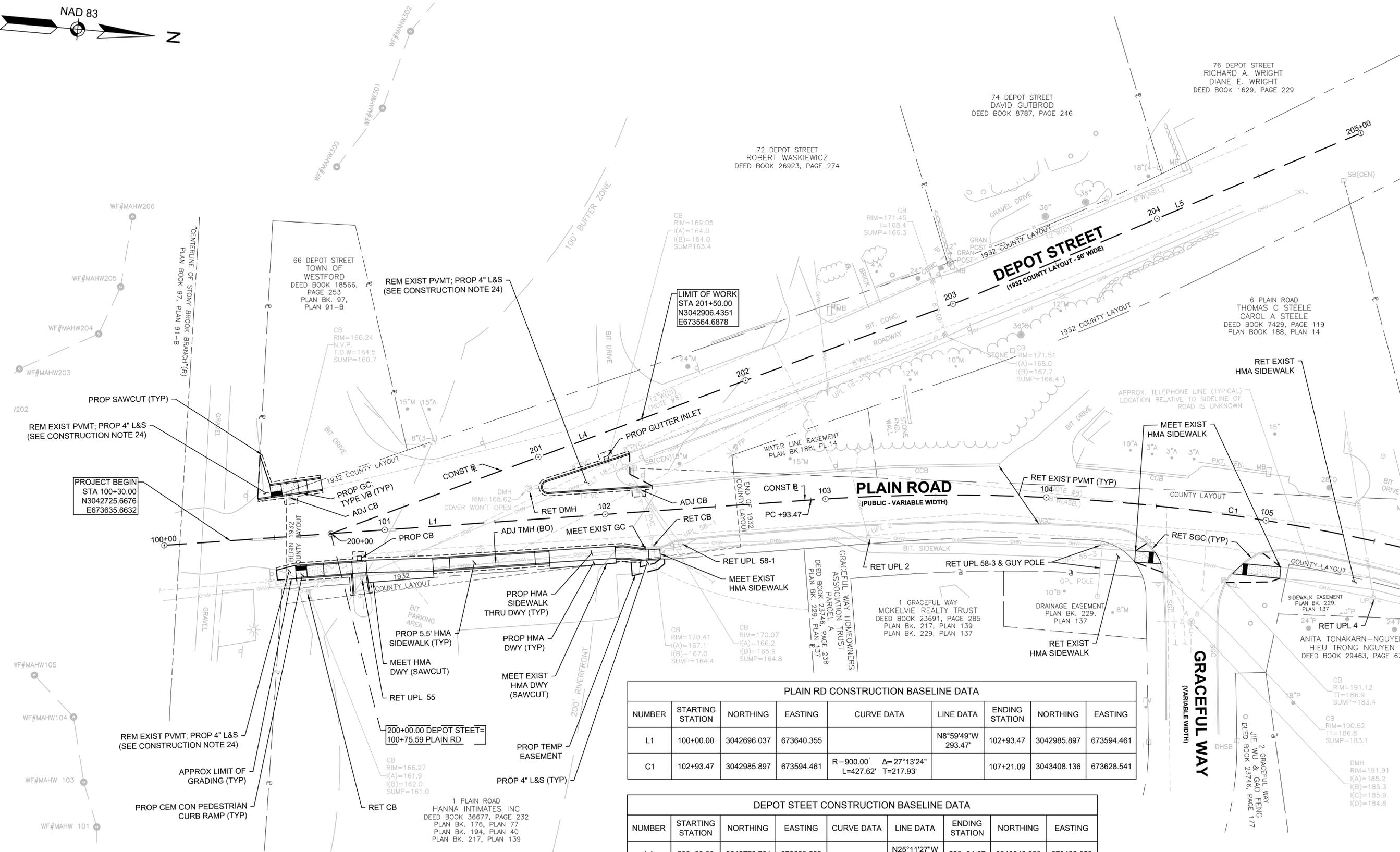
BASE: 6" HIGH EARLY STRENGTH CEMENT CONCRETE BASE COURSE OVER

SUBBASE: 8" GRAVEL BORROW, TYPE b

GENERAL PAVEMENT NOTES:

1. ASPHALT EMULSION FOR TACK COAT SHALL BE APPLIED BETWEEN ALL ASPHALT SURFACES AND HMA JOINT SEALANT SHALL BE APPLIED ON 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 IN ACCORDANCE WITH SUBSECTION 450.43. ALL SURFACES SHALL BE CLEAN OF ALL ORGANICS, DEBRIS, AND SAND PRIOR TO PAVING.
2. ALL HMA SHALL BE IN ACCORDANCE WITH SUBSECTION 460.
3. ASPHALT EMULSION FOR TACK COAT SHALL BE ANIONIC EMULSION GRADE RS-1H TO RESIST TRACKING OF TACK BY HAUL VEHICLES.
4. HMA FOR WALKS AND DRIVEWAYS SHALL BE IN ACCORDANCE WITH SUBSECTION 700.
5. ALL GRAVEL BORROW MEETING SPECIFICATION SHALL BE RETAINED IN PLACE, COMPACTED, AND LEVELED. CONTRACTOR SHALL PROVIDE TEST RESULT SUBMITTALS TO THE ENGINEER FOR APPROVAL.





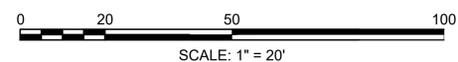
PROJECT BEGIN
STA 100+30.00
N3042725.6676
E673635.6632

LIMIT OF WORK
STA 201+50.00
N3042906.4351
E673564.6878

200+00.00 DEPOT STREET=
100+75.59 PLAIN RD

PLAIN RD CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L1	100+00.00	3042696.037	673640.355		N8°59'49"W 293.47'	102+93.47	3042985.897	673594.461
C1	102+93.47	3042985.897	673594.461	R=900.00' Δ=27°13'24" L=427.62' T=217.93'		107+21.09	3043408.136	673628.541

DEPOT STEET CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L4	200+00.00	3042770.701	673628.533		N25°11'27"W 304.67'	203+04.67	3043046.399	673498.853
L5	203+04.67	3043046.399	673498.853		N27°40'37"W 195.33'	205+00.00	3043219.376	673408.127

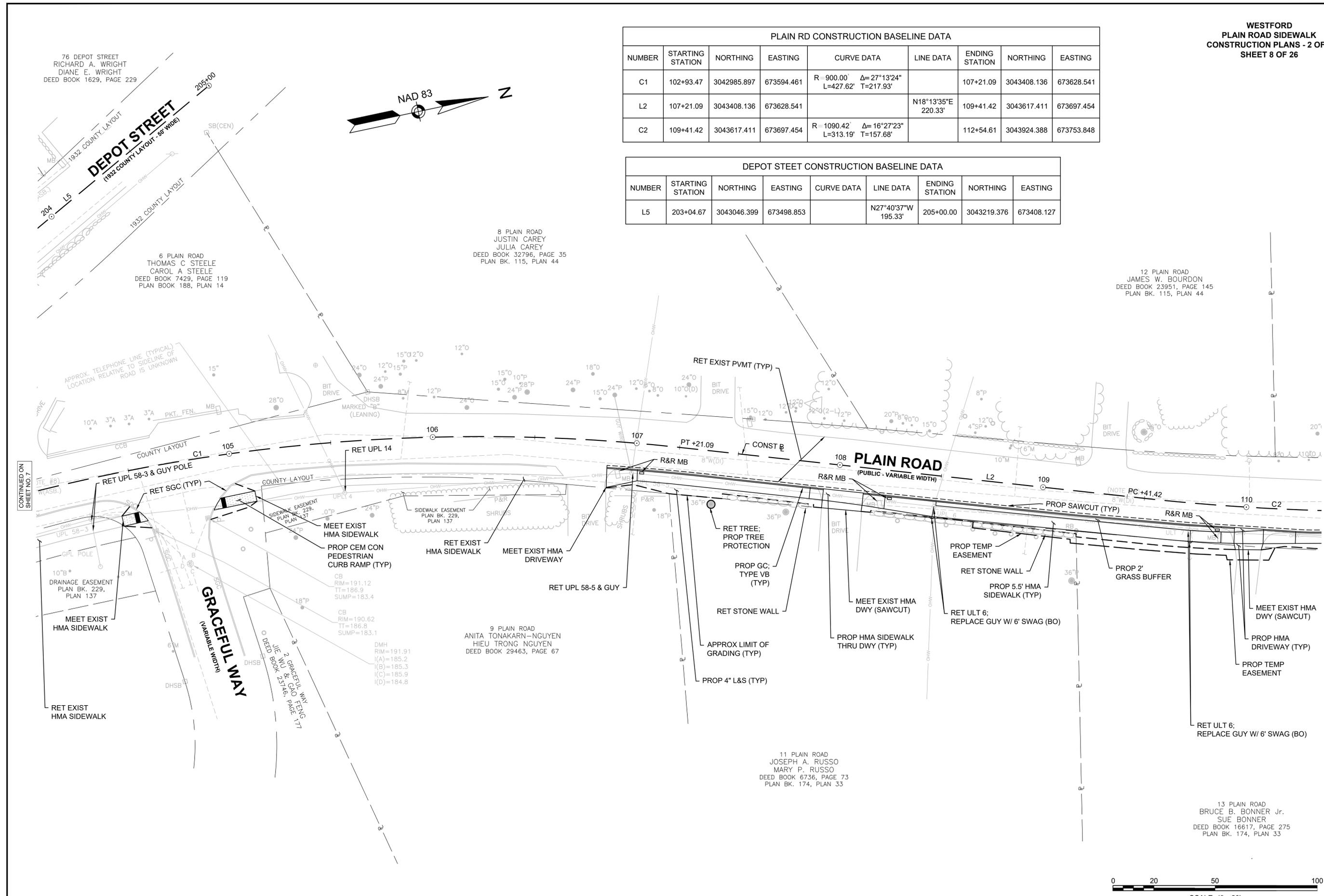


CONTINUED ON
SHEET NO. 7

WESTFORD
PLAIN ROAD SIDEWALK
CONSTRUCTION PLANS - 2 OF 4
SHEET 8 OF 26

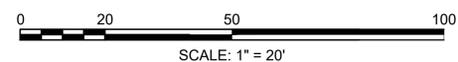
PLAIN RD CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
C1	102+93.47	3042985.897	673594.461	R=900.00' Δ=27°13'24" L=427.62' T=217.93'		107+21.09	3043408.136	673628.541
L2	107+21.09	3043408.136	673628.541		N18°13'35"E 220.33'	109+41.42	3043617.411	673697.454
C2	109+41.42	3043617.411	673697.454	R=1090.42' Δ=16°27'23" L=313.19' T=157.68'		112+54.61	3043924.388	673753.848

DEPOT STEET CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L5	203+04.67	3043046.399	673498.853		N27°40'37"W 195.33'	205+00.00	3043219.376	673408.127



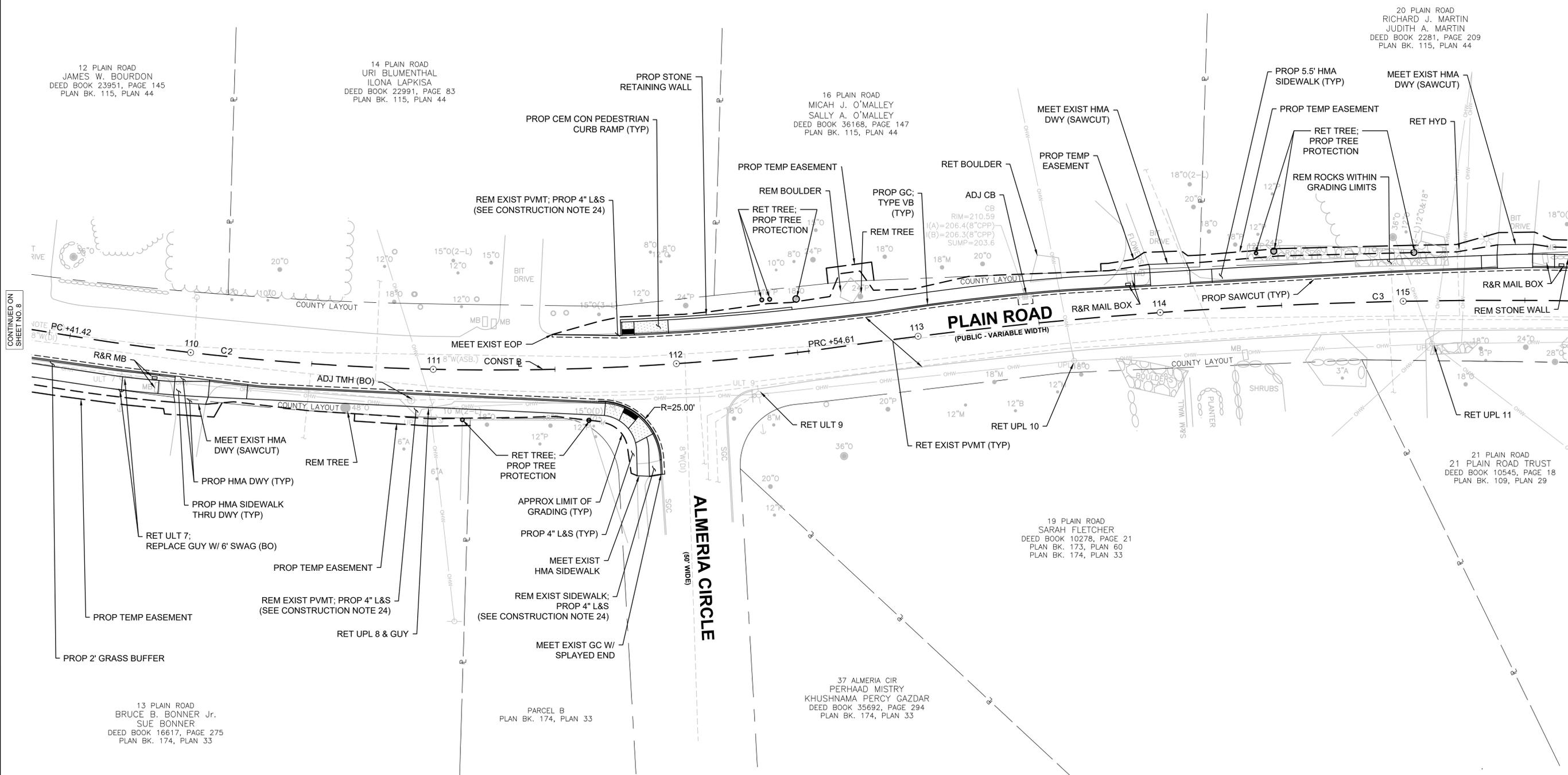
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SHEET NO. 7

CONTINUED ON
SHEET NO. 9



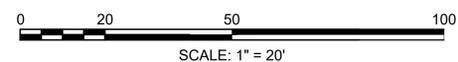


PLAIN RD CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
C2	109+41.42	3043617.411	673697.454	R = 1090.42' Δ= 16°27'23" L=313.19' T=157.68'		112+54.61	3043924.388	673753.848
C3	112+54.61	3043924.388	673753.848	R = 1945.66' Δ= 13°23'28" L=454.73' T=228.41'		117+09.35	3044374.408	673811.522

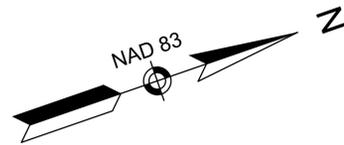


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CONTINUED ON SHEET NO. 10



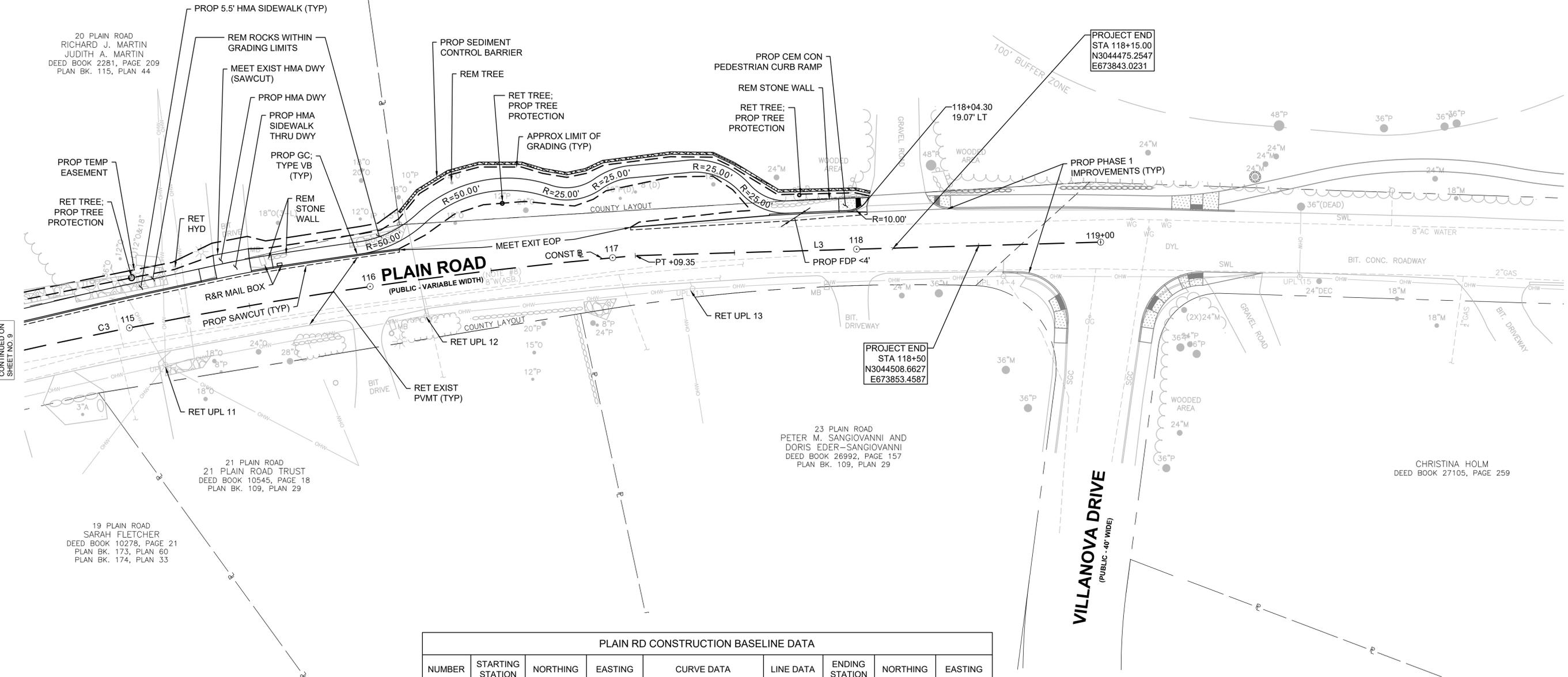
GRASSY POND



TOWN OF WESTFORD
DEED BOOK 1991, PAGE 161

PROJECT END
STA 118+15.00
N3044475.2547
E673843.0231

PROJECT END
STA 118+50
N3044508.6627
E673853.4587



CONTINUED ON
SHEET NO. 9

20 PLAIN ROAD
RICHARD J. MARTIN
JUDITH A. MARTIN
DEED BOOK 2281, PAGE 209
PLAN BK. 115, PLAN 44

21 PLAIN ROAD
21 PLAIN ROAD TRUST
DEED BOOK 10545, PAGE 18
PLAN BK. 109, PLAN 29

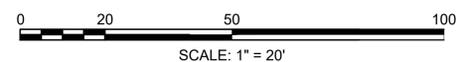
19 PLAIN ROAD
SARAH FLETCHER
DEED BOOK 10278, PAGE 21
PLAN BK. 173, PLAN 60
PLAN BK. 174, PLAN 33

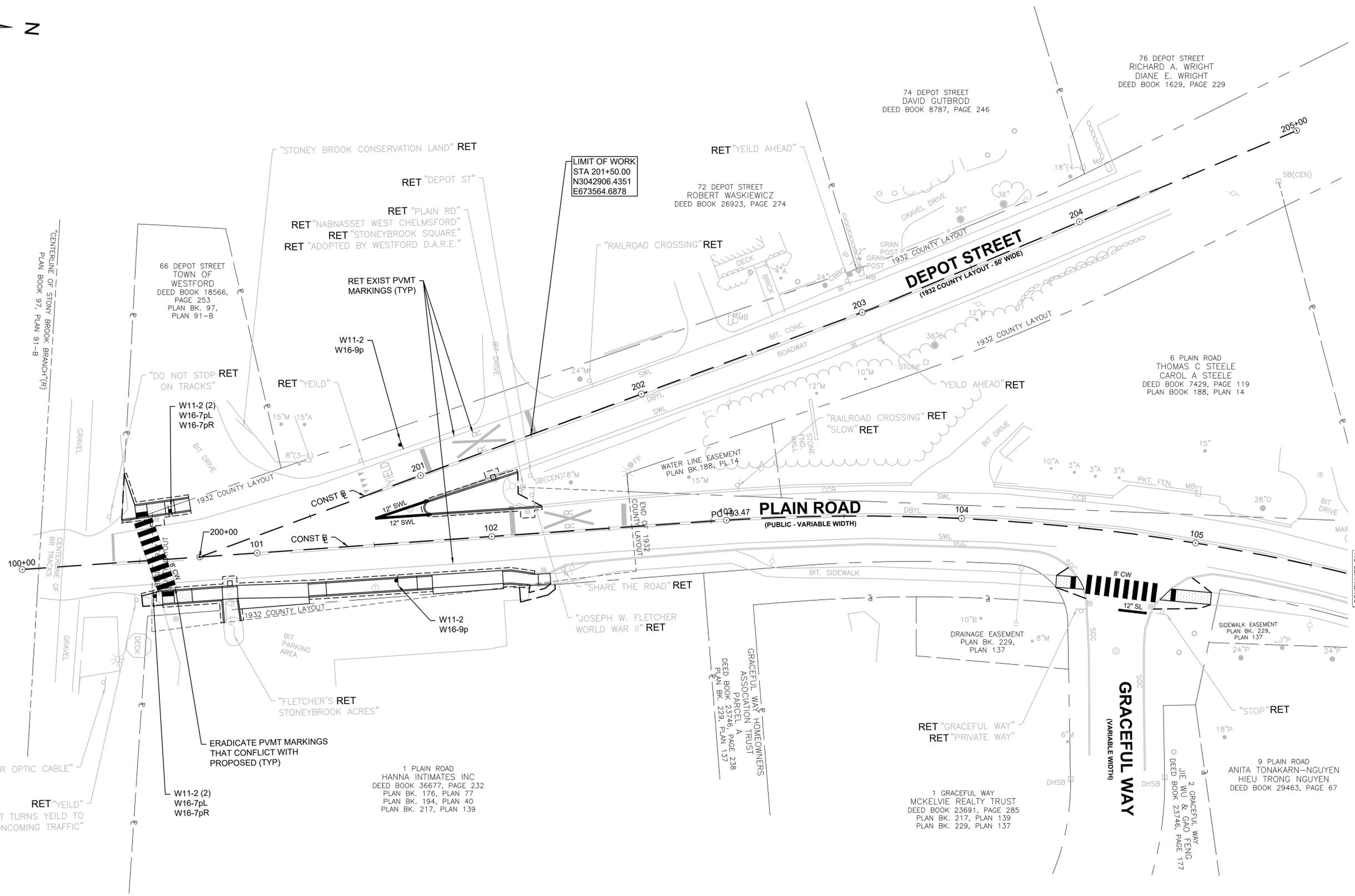
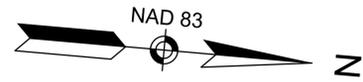
21 PLAIN ROAD
21 PLAIN ROAD TRUST
DEED BOOK 10545, PAGE 18
PLAN BK. 109, PLAN 29

23 PLAIN ROAD
PETER M. SANGIOVANNI AND
DORIS EDER-SANGIOVANNI
DEED BOOK 26992, PAGE 157
PLAN BK. 109, PLAN 29

CHRISTINA HOLM
DEED BOOK 27105, PAGE 259

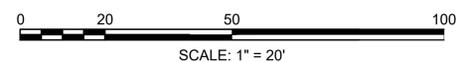
PLAIN RD CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
C3	112+54.61	3043924.388	673753.848	R = 1945.66' Δ = 13°23'28" L = 454.73' T = 228.41'		117+09.35	3044374.408	673811.522
L3	117+09.35	3044374.408	673811.522		N17°20'50"E 190.65'	119+00.00	3044556.388	673868.367





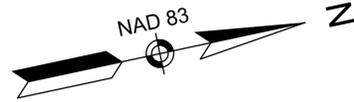
LIMIT OF WORK
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E673564.6878

CONTINUED ON
SHEET NO. 12



76 DEPOT STREET
 RICHARD A. WRIGHT
 DIANE E. WRIGHT
 DEED BOOK 1629, PAGE 229

DEPOT STREET
 (1932 COUNTY LAYOUT - 58' WIDE)



8 PLAIN ROAD
 JUSTIN CAREY
 JULIA CAREY
 DEED BOOK 32796, PAGE 35
 PLAN BK. 115, PLAN 44

6 PLAIN ROAD
 THOMAS C STEELE
 CAROL A STEELE
 DEED BOOK 7429, PAGE 119
 PLAN BOOK 188, PLAN 14

12 PLAIN ROAD
 JAMES W. BOURDON
 DEED BOOK 23951, PAGE 145
 PLAN BK. 115, PLAN 44

RET EXIST PVMT
 MARKINGS (TYP)

PLAIN ROAD
 (PUBLIC - VARIABLE WIDTH)

CONTINUED ON
 SHEET NO. 11

CONTINUED ON
 SHEET NO. 13

10' B *
 DRAINAGE EASEMENT
 PLAN BK. 229,
 PLAN 137

GRACEFUL WAY
 (VARIABLE WIDTH)

RET "GRACEFUL WAY"
 "PRIVATE WAY"

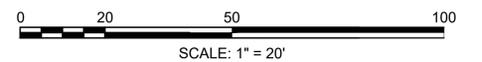
9 PLAIN ROAD
 ANITA TONAKARN-NGUYEN
 HIEU TRONG NGUYEN
 DEED BOOK 29463, PAGE 67

PROP TEMP EASEMENT

PROP TEMP EASEMENT

11 PLAIN ROAD
 JOSEPH A. RUSSO
 MARY P. RUSSO
 DEED BOOK 6736, PAGE 73
 PLAN BK. 174, PLAN 33

13 PLAIN ROAD
 BRUCE B. BONNER Jr.
 SUE BONNER
 DEED BOOK 16617, PAGE 275
 PLAN BK. 174, PLAN 33





20 PLAIN ROAD
 RICHARD J. MARTIN
 JUDITH A. MARTIN
 DEED BOOK 2281, PAGE 209
 PLAN BK. 115, PLAN 44

12 PLAIN ROAD
 JAMES W. BOURDON
 DEED BOOK 23951, PAGE 145
 PLAN BK. 115, PLAN 44

14 PLAIN ROAD
 URI BLUMENTHAL
 ILONA LAPKISA
 DEED BOOK 22991, PAGE 83
 PLAN BK. 115, PLAN 44

16 PLAIN ROAD
 MICAH J. O'MALLEY
 SALLY A. O'MALLEY
 DEED BOOK 36168, PAGE 147
 PLAN BK. 115, PLAN 44

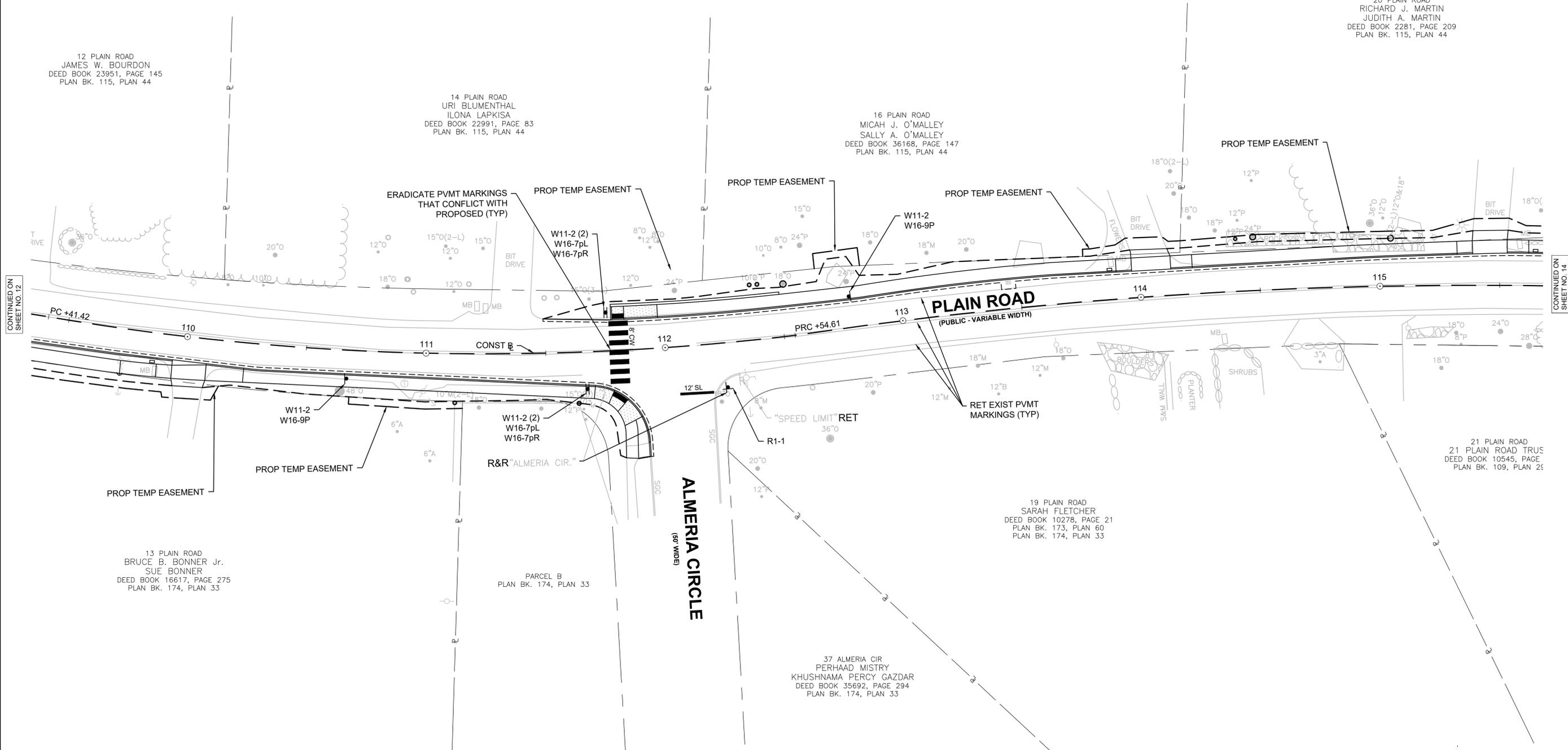
21 PLAIN ROAD
 21 PLAIN ROAD TRUS
 DEED BOOK 10545, PAGE
 PLAN BK. 109, PLAN 25

19 PLAIN ROAD
 SARAH FLETCHER
 DEED BOOK 10278, PAGE 21
 PLAN BK. 173, PLAN 60
 PLAN BK. 174, PLAN 33

37 ALMERIA CIR
 PERHAAD MISTRY
 KHUSHNAMA PERCY GAZDAR
 DEED BOOK 35692, PAGE 294
 PLAN BK. 174, PLAN 33

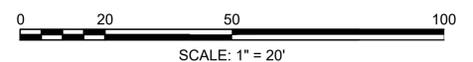
13 PLAIN ROAD
 BRUCE B. BONNER Jr.
 SUE BONNER
 DEED BOOK 18617, PAGE 275
 PLAN BK. 174, PLAN 33

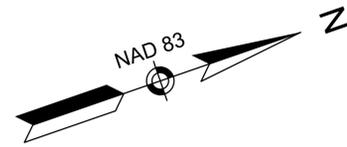
PARCEL B
 PLAN BK. 174, PLAN 33



CONTINUED ON SHEET NO. 12

CONTINUED ON SHEET NO. 14

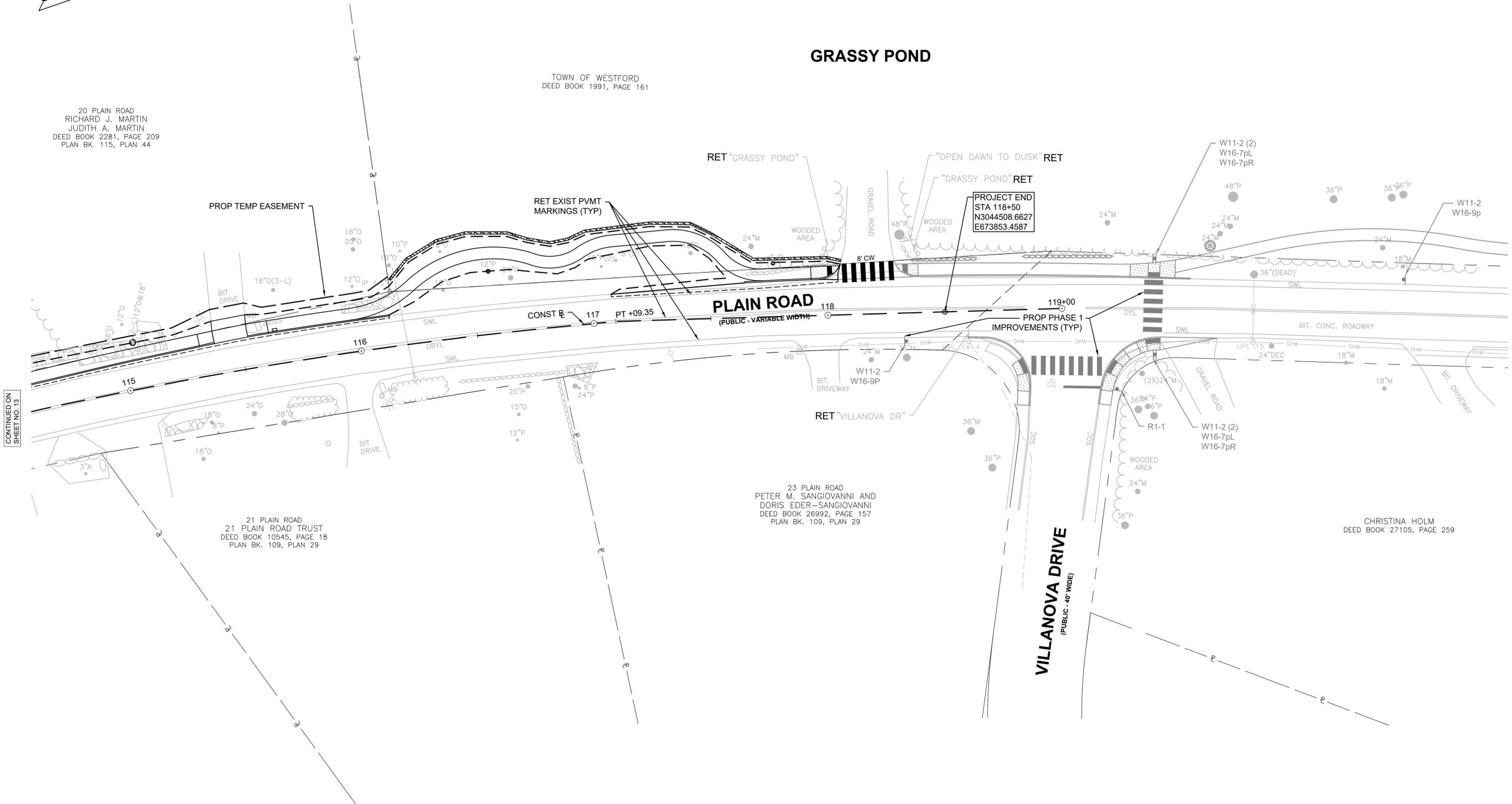




20 PLAIN ROAD
 RICHARD J. MARTIN
 JUDITH A. MARTIN
 DEED BOOK 2281, PAGE 209
 PLAN BK. 115, PLAN 44

TOWN OF WESTFORD
 DEED BOOK 1991, PAGE 161

GRASSY POND

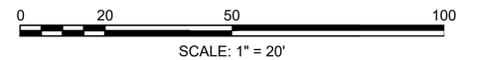


CONTINUED ON
 SHEET NO. 13

21 PLAIN ROAD
 21 PLAIN ROAD TRUST
 DEED BOOK 10545, PAGE 18
 PLAN BK. 109, PLAN 29

23 PLAIN ROAD
 PETER M. SANGIOVANNI AND
 DORIS EDER-SANGIOVANNI
 DEED BOOK 26992, PAGE 157
 PLAN BK. 109, PLAN 29

CHRISTINA HOLM
 DEED BOOK 27105, PAGE 259



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			
R1-1	30	30			①		1	RED	WHITE	WHITE	P5 1	6.25	6.25
W11-2	30	30					13	FL. YELLOW-GREEN	BLACK	BLACK	P5 13	6.25	81.25
W16-7pL	24	12					4	FL. YELLOW-GREEN	BLACK	BLACK	MOUNT W/ W11-2 (4)	2.00	8.00
W16-7pR	24	12					4	FL. YELLOW-GREEN	BLACK	BLACK	MOUNT W/ W11-2 (4)	2.00	8.00
W16-9p	24	12					5	FL. YELLOW-GREEN	BLACK	BLACK	MOUNT W/ W11-2 (5)	2.00	10.00

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 NCHRP REPORT 350. "RECOMMENDED PROCEDURES FOR THE SAFETY PERFORMANCE EVALUATION OF HIGHWAY FEATURES" AND/OR "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.

SUGGESTED WORK ZONE WARNING SIGN SPACING

ROAD TYPE	DISTANCE BETWEEN SIGNS **		
	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

* ROAD TYPE TO BE DETERMINED BY MASSDOT OFFICE OF TRANSPORTATION PLANNING.

** DISTANCES ARE SHOWN IN FEET. THE COLUMN HEADINGS A, B, AND C ARE THE DIMENSIONS SHOWN IN THE DETAIL/TYPICAL SETUP FIGURES. THE A DIMENSION IS THE DISTANCE FROM THE TRANSITION OR POINT OF RESTRICTION TO THE FIRST SIGN. THE B DIMENSION IS THE DISTANCE BETWEEN THE FIRST AND SECOND SIGNS. THE C DIMENSION IS THE DISTANCE BETWEEN THE SECOND AND THIRD SIGNS. (THE "THIRD" SIGN IS THE FIRST ONE TYPICALLY ENCOUNTERED BY A DRIVER APPROACHING A TEMPORARY TRAFFIC CONTROL (TTC) ZONE.)

THE "THIRD" SIGN ABOVE IS TYPICALLY REFERRED TO AS AN "ADVANCE WARNING" SIGN ON THE TTCP SETUPS. THESE ADVANCE WARNING SIGNS ARE LOCATED PRIOR TO THE PROJECT LIMITS ON ALL APPROACHES (I.E. THE W20-1 SERIES (ROAD WORK XX FT) SIGNS), AND USUALLY REMAIN FOR THE DURATION OF THE PROJECT. ADDITIONAL SIGNS (I.E. "RIGHT LANE CLOSED 1 MILE" AND "LEFT LANE CLOSED 1 MILE") HAVE BEEN SHOWN IN SOME FIGURES AS EXAMPLES OF REINFORCEMENT SIGN PLACEMENT BUT ARE USED IN RARE OCCASIONS.

THE FIRST AND SECOND WARNING SIGNS ABOVE ARE REFERRED TO AS THE OPERATIONAL (DAY-TO-DAY) WORK ZONE SIGNS AND MAY BE MOVED DEPENDING ON WHERE THE SPECIFIC ROADWAY WORK FOR THAT DAY IS LOCATED.

R2-10a SIGNS SHALL BE PLACED BETWEEN THE SECOND AND THIRD SIGNS AS DESCRIBED ABOVE.

R2-10a, R2-10e, AND W20-1 SERIES SIGNS ARE TO BE INCLUDED ON ALL DETAILS/TYPICAL SETUPS.

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

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

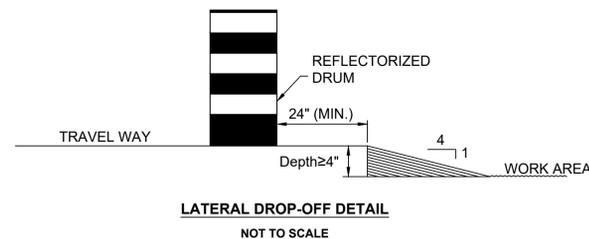
FORMULAS FOR DETERMINING TAPER LENGTHS

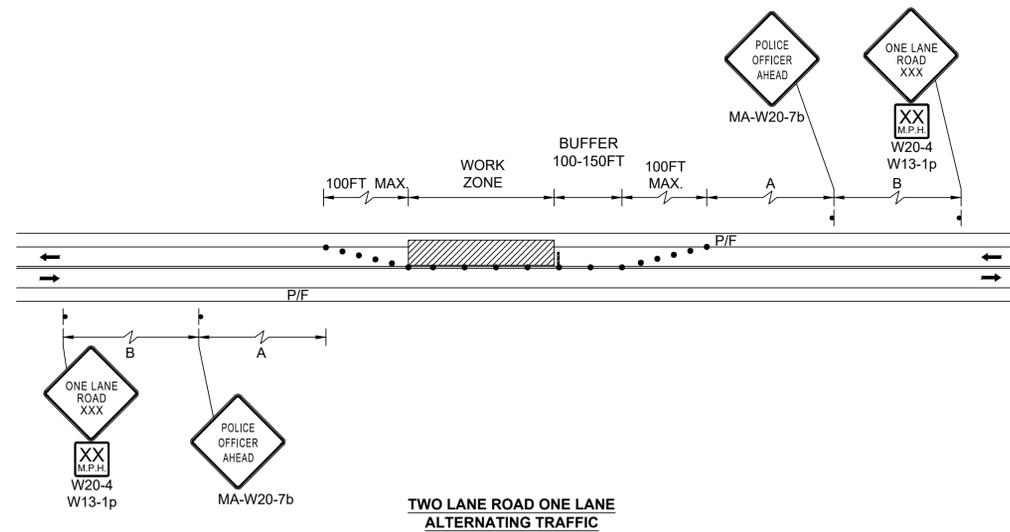
SPEED LIMIT (S)	TAPER LENGTH (L) FEET
40 MPH OR LESS	$L = \frac{WS^2}{60}$
45 MPH OR MORE	$L = WS$

WHERE: L = TAPER LENGTH IN FEET

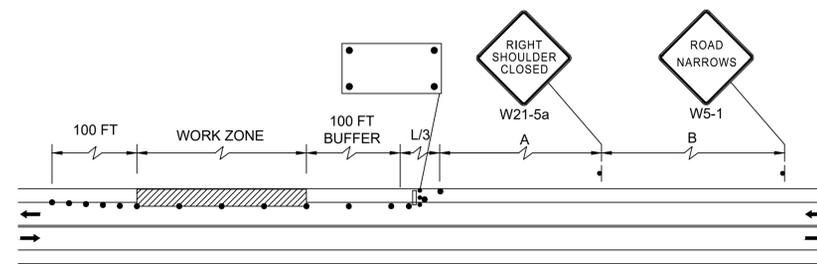
W = WIDTH OF OFFSET IN FEET

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

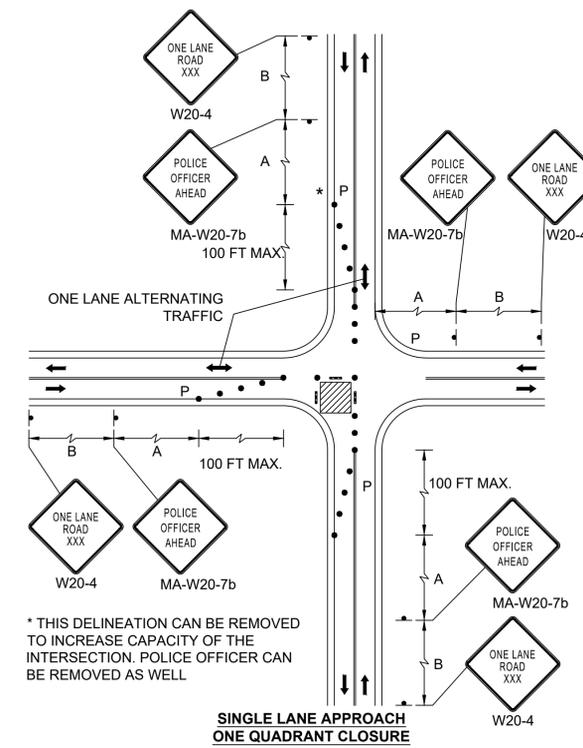




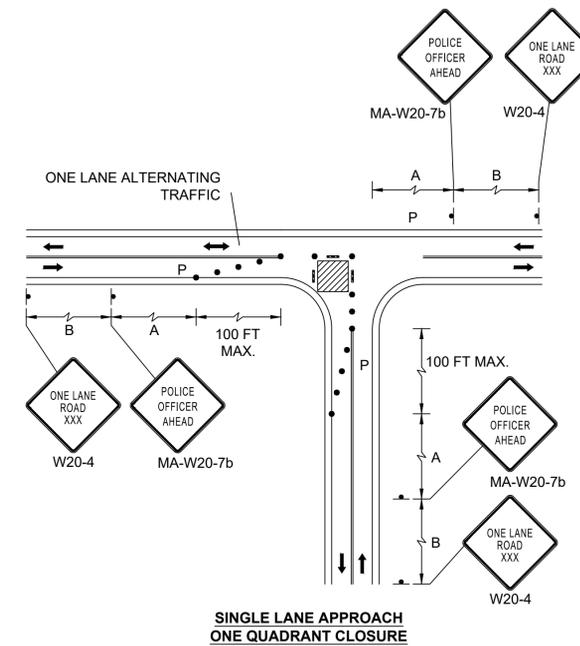
TWO LANE ROAD ONE LANE ALTERNATING TRAFFIC



TWO LANE ROAD SHOULDER CLOSED

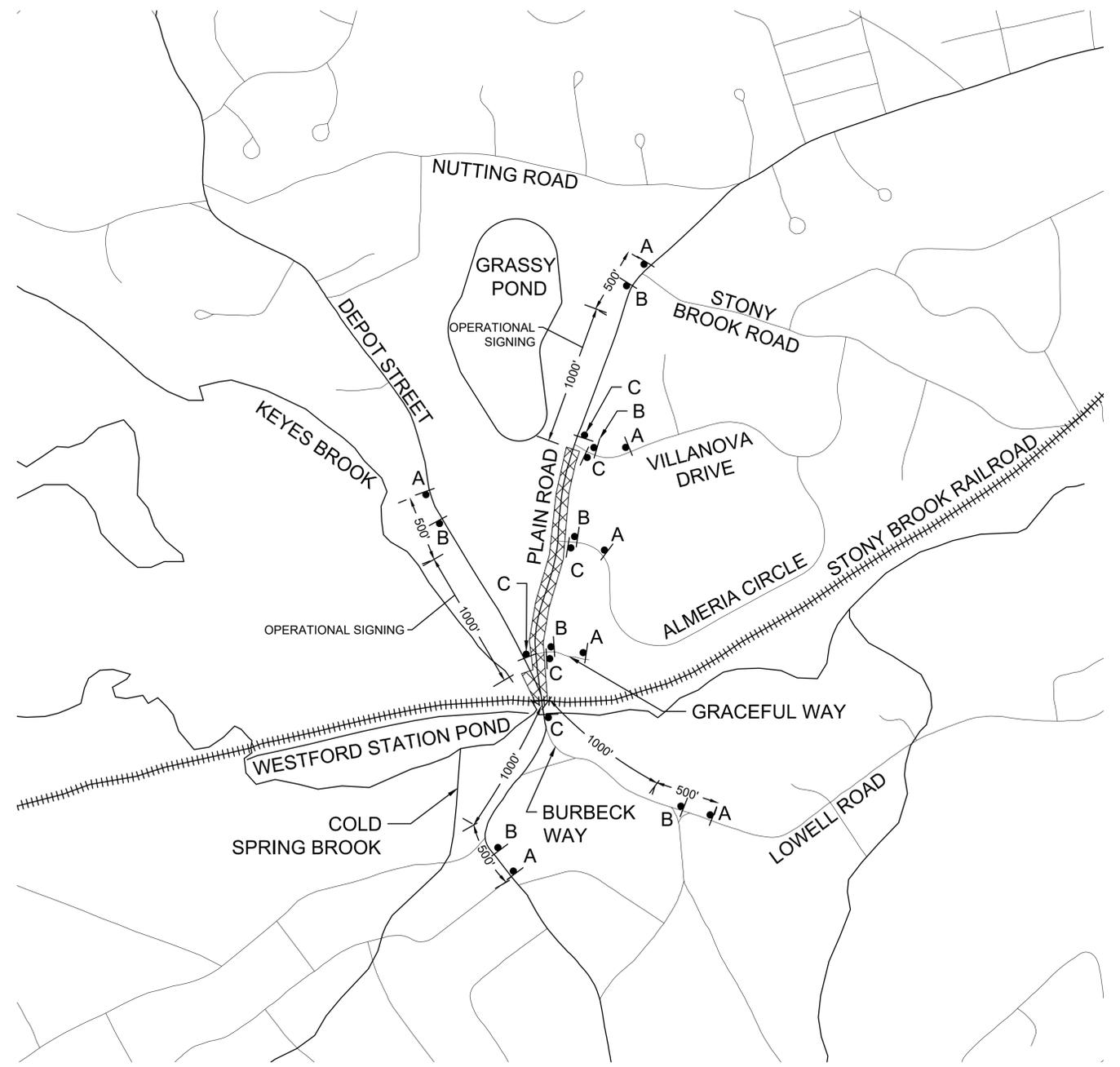


SINGLE LANE APPROACH ONE QUADRANT CLOSURE



SINGLE LANE APPROACH ONE QUADRANT CLOSURE

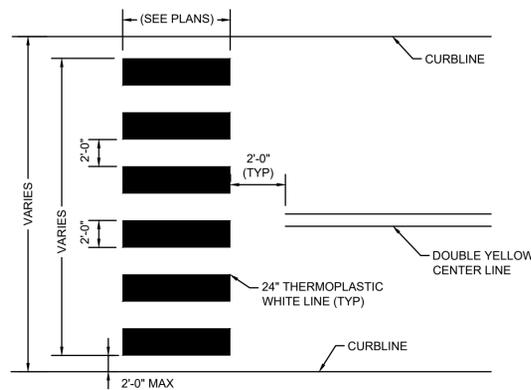
TEMPORARY TRAFFIC CONTROL SIGN SUMMARY												
IDENTIFICATION NUMBER	SIZE OF SIGN (in)		LEGEND	TEXT DIMENSIONS (in)			COLOR			NUMBER OF SIGNS REQUIRED	UNIT AREA (SF)	TOTAL AREA (SF)
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR	BACK-GROUND	LEGEND	BORDER			
MA-R2-10a	48	36		MASSDOT STANDARD SIGN			FL. ORANGE WHITE	BLACK BLACK	BLACK BLACK	7	12.00	84.00
MA-R2-10e	36	48		↓			FL. ORANGE WHITE	BLACK BLACK	BLACK BLACK	6	12.00	72.00
W5-1	36	36		SEE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS			FL. ORANGE	BLACK	BLACK	1	9.00	9.00
W13-1p	24	24		↓			FL. ORANGE	BLACK	BLACK	2	4.00	8.00
W20-1	36	36		↓			FL. ORANGE	BLACK	BLACK	7	9.00	63.00
W20-4	36	36		↓			FL. ORANGE	BLACK	BLACK	8	9.00	72.00
MA-W20-7b	36	36		MASSDOT STANDARD SIGN			FL. ORANGE	BLACK	BLACK	8	9.00	72.00
W21-5a	36	36		SEE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS			FL. ORANGE	BLACK	BLACK	1	9.00	9.00



ADVANCED SIGNING SCHEMATIC
N.T.S.

LEGEND		
A	B	C
W20-1	MA-R2-10a	MA-R2-10e

NOTE: "B" & "C" SIGNS ON SIDE-STREETS SHALL BE PLACED APPROXIMATELY 50' FROM PLAIN ROAD, AND "A" SIGNS SHALL BE PLACED APPROXIMATELY 350' FROM PLAIN ROAD.

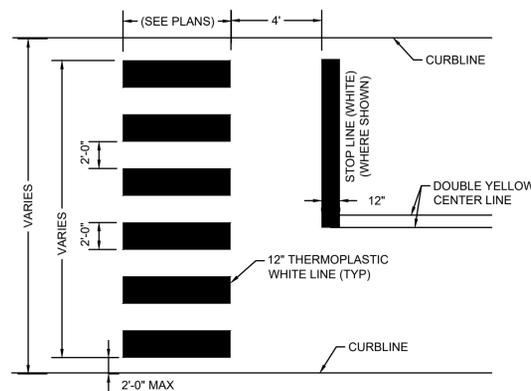


NOTES:

1. ALL 12" LINES SHALL BE APPLIED IN ONE APPLICATION, NO COMBINATION OF LINES (TWO - 6" LINES) WILL BE ACCEPTED. ALL 24" LINES MAY BE EITHER ONE 24" LINE OR A COMBINATION OF TWO - 12" LINES.
2. LAYOUT OF CROSSWALKS SHALL BE APPROVED BY THE ENGINEER PRIOR TO APPLICATION.
3. CROSSWALK BARS SHALL BE PLACED OUTSIDE THE VEHICULAR WHEEL PATH WHEREVER POSSIBLE.

MIBLOCK CROSSWALK PAVEMENT MARKING

N.T.S.

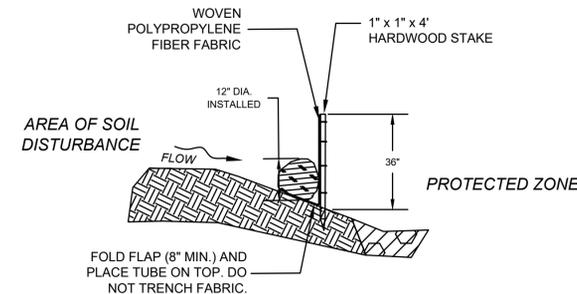


NOTES:

1. ALL 12" LINES SHALL BE APPLIED IN ONE APPLICATION, NO COMBINATION OF LINES (TWO - 6" LINES) WILL BE ACCEPTED. ALL 24" LINES MAY BE EITHER ONE 24" LINE OR A COMBINATION OF TWO - 12" LINES.
2. LAYOUT OF CROSSWALKS SHALL BE APPROVED BY THE ENGINEER PRIOR TO APPLICATION.
3. CROSSWALK BARS SHALL BE PLACED OUTSIDE THE VEHICULAR WHEEL PATH WHEREVER POSSIBLE.

CROSSWALK PAVEMENT MARKING

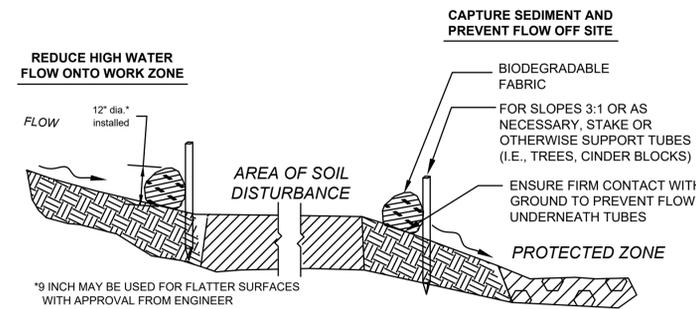
N.T.S.



SECTION

COMPOST FILTER TUBE & SILT FENCE

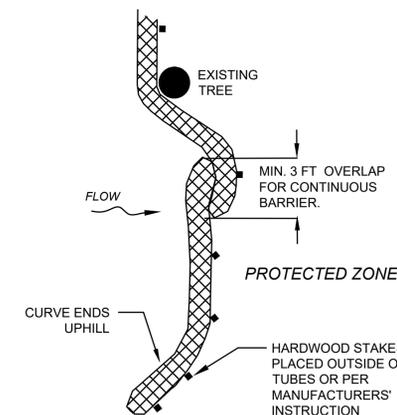
N.T.S.



SECTION

SEDIMENT CONTROL BARRIER

N.T.S.



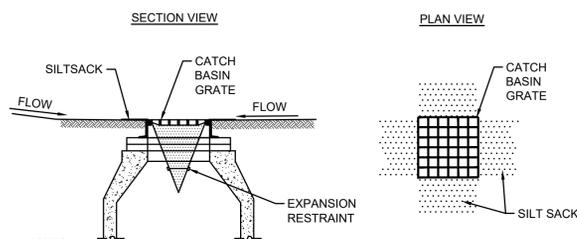
PLAN VIEW

PLACE TUBE ALONG CONTOURS AND PERPENDICULAR TO FLOW.

PLACE AS CLOSE TO LIMIT OF SOIL DISTURBANCE AS POSSIBLE

ADJUST LOCATION AS REQUIRED FOR OPTIMUM EFFECTIVENESS. DO NOT INSTALL IN WATERWAYS.

PLACE STAKES AS NEEDED TO SECURE TUBES IN PLACE.

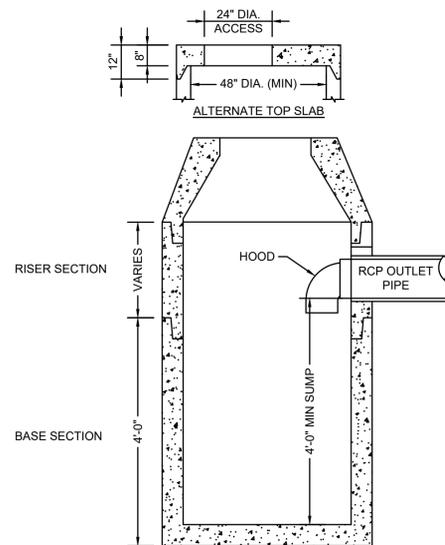


NOTES:

1. 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.
2. GRATE TO BE PLACED OVER SILT SACK.
3. 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.

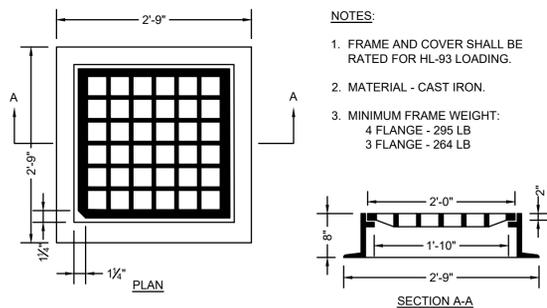


NOTE:

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

DEEP SUMP CATCH BASIN WITH HOOD

N.T.S.

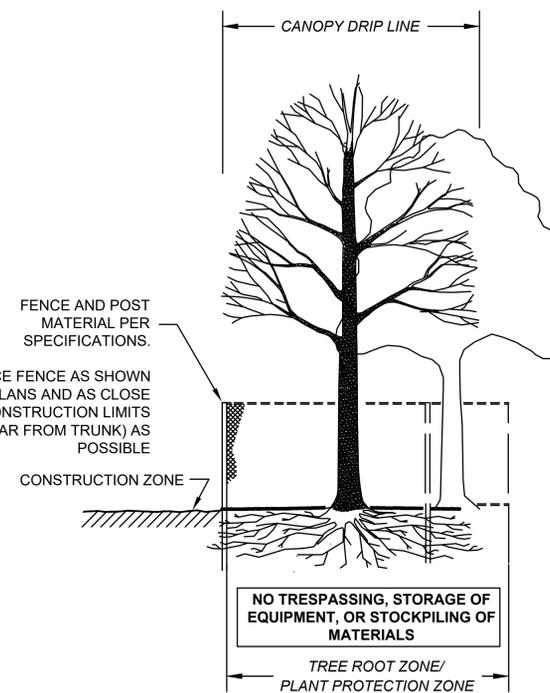


NOTES:

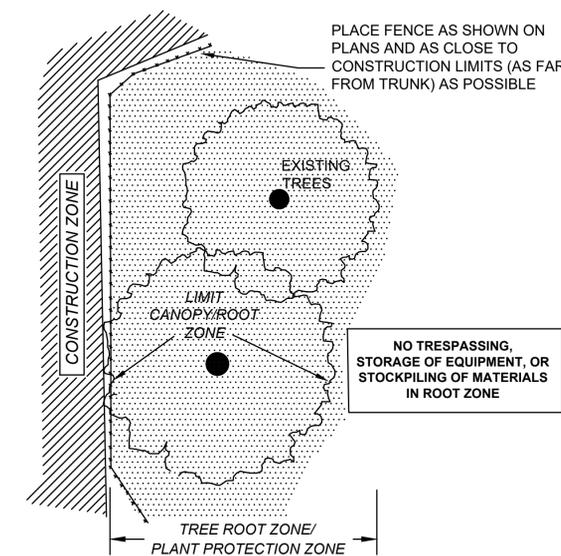
1. FRAME AND COVER SHALL BE RATED FOR HL-93 LOADING.
2. MATERIAL - CAST IRON.
3. MINIMUM FRAME WEIGHT:
4 FLANGE - 295 LB
3 FLANGE - 264 LB

CATCH BASIN FRAME & GRATE (MUNICIPAL STANDARD)

N.T.S.



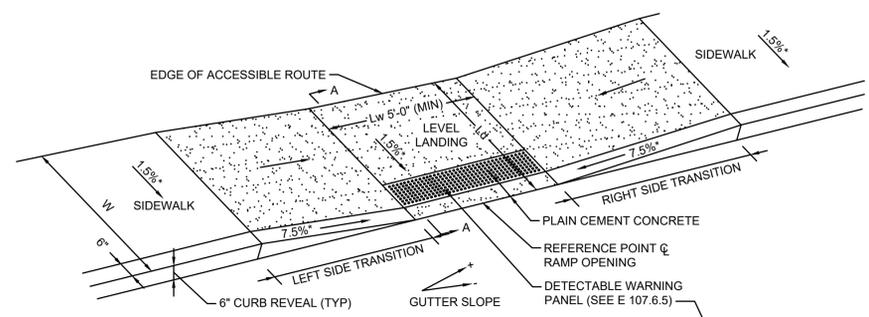
SECTION - FENCE PROTECTION OF ROOT ZONE



PLAN VIEW - FENCE PROTECTION OF ROOT ZONE

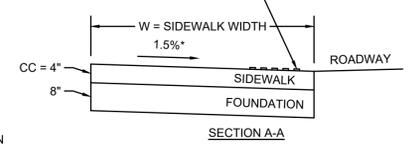
TREE PROTECTION - ROOT ZONE

N.T.S.

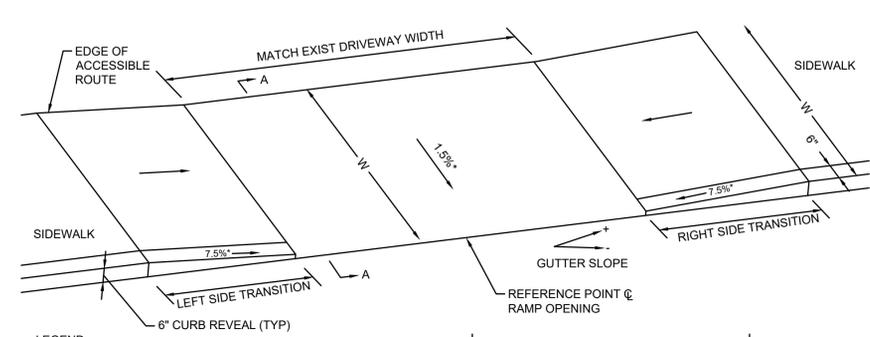


LEGEND:
W = SIDEWALK WIDTH
CC = CEMENT CONCRETE
* = TOLERANCE FOR CONSTRUCTION ±0.5%

- NOTES:**
1. USABLE SIDEWALK WIDTH PER AAB = W-6"
 2. USABLE SIDEWALK WIDTH PER AAB IS NOT TO BE LESS THAN 4'-0"
 3. ROADWAY GUTTER SLOPE MEASURED FROM LEFT TO RIGHT WHEN FACING RAMP OPENING
 4. SEE E 107.6.5 FOR DETECTABLE WARNING PANEL DETAILS
 5. SEE E 107.2.1 FOR ALL OTHER DETAILS

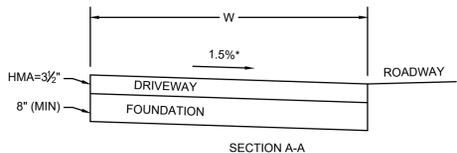


CURB RAMP TYPE A
N.T.S.

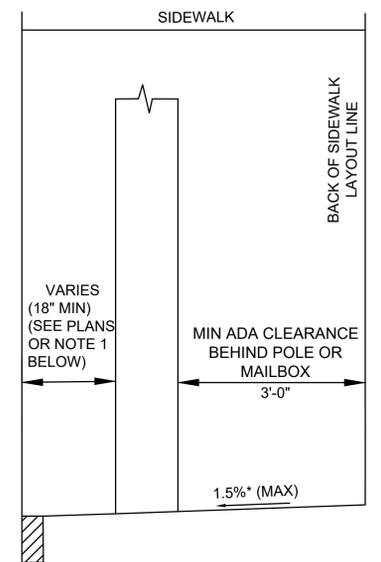


LEGEND:
HSL = HIGH SIDE TRANSITION LENGTH (SEE E 107.9.0)
W = SIDEWALK WIDTH
Wc = CURB WIDTH
HMA = HOT MIX ASPHALT
* = TOLERANCE FOR CONSTRUCTION ±0.5%

- NOTES:**
1. USABLE SIDEWALK WIDTH PER AAB = W-6"
 2. USABLE SIDEWALK WIDTH PER AAB IS NOT TO BE LESS THAN 4'-0"
 3. ROADWAY GUTTER SLOPE MEASURED FROM LEFT TO RIGHT WHEN FACING CURB OPENING
 4. SURFACE TREATMENT VARIES; SEE PLANS



SIDEWALK THROUGH DRIVEWAY TYPE A
N.T.S.



*TOLERANCE FOR CONSTRUCTION ±0.5%

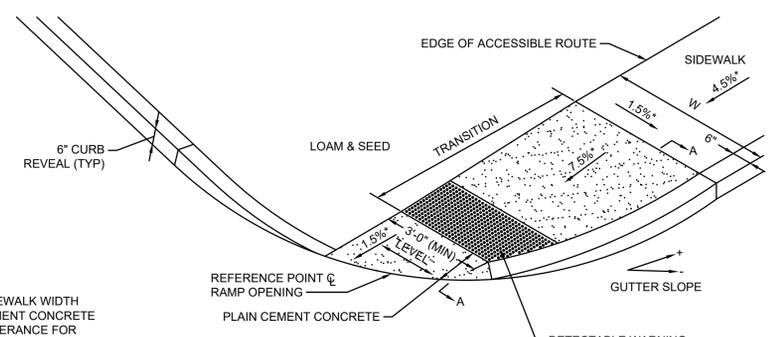
- NOTES:**
1. SEE MASSDOT CONSTRUCTION DETAIL E 504.1.0 FOR POST LOCATIONS FOR RESET MAILBOXES.

MIN CLEARANCE BEHIND VERTICAL STRUCTURE
N.T.S.

CURB RAMP NOTES:

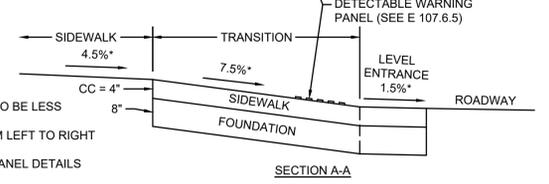
1. MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE EXCLUDING CURB RAMPS SHALL BE DESIGNED TO 4.5% ±0.5% (7.5% ±0.5% FOR CURB RAMPS)
2. A MINIMUM OF 3'-0" CLEAR SHALL BE MAINTAINED AT ANY PERMANENT OBSTACLE IN ACCESSIBLE ROUTE (I.E., HYDRANTS, UTILITY POLES, TREE WELLS, SIGNS, ETC.)
3. CURB TREATMENT VARIES, SEE PLANS FOR CURB TYPE.
4. RAMP, CURB AND ADJACENT PAVEMENTS SHALL BE GRADED TO PREVENT PONDING.
5. WHERE ACCESSIBLE ROUTES ARE LESS THAN 5' IN WIDTH (EXCLUDING CURBING) A 5'x5' PASSING AREA SHALL BE PROVIDED AT INTERVALS NOT TO EXCEED 200 FT.
6. ELIMINATE CURBING AT RAMP WHERE IT ABUTS ROADWAY.
7. DETECTABLE WARNING PANELS ARE REQUIRED ON ALL OF THE PROPOSED CURB RAMPS AND ARE TO BE INSTALLED IN ACCORDANCE WITH CONSTRUCTION STANDARD E 107.6.5 (OCTOBER 2017). CONTRACTOR SHALL PROVIDE 6" BETWEEN DETECTABLE WARNING PANEL AND EDGE OF CONCRETE WHERE IT ABUTS LOAM & SEED.
8. CURB RAMP SLOPES AND CROSS SLOPES SHALL HAVE A CONSTRUCTION TOLERANCE OF ±0.5%.
9. DETECTABLE WARNING PANELS SHALL BE BRICK RED IN COLOR AS APPROVED BY THE WESTFORD DPW.

CURB RAMP NOTES

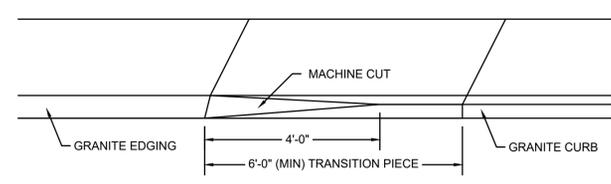


LEGEND:
W = SIDEWALK WIDTH
CC = CEMENT CONCRETE
* = TOLERANCE FOR CONSTRUCTION ±0.5%

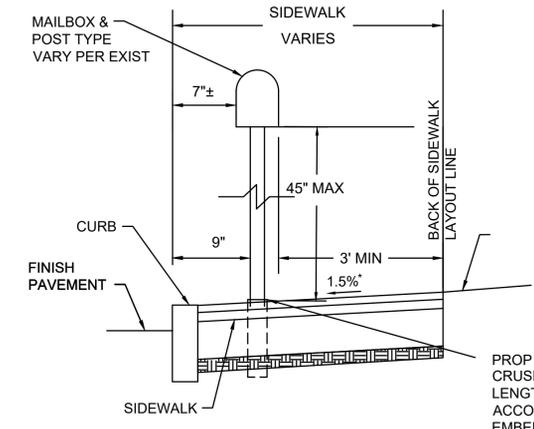
- NOTES:**
1. USABLE SIDEWALK WIDTH PER AAB = W-6"
 2. USABLE SIDEWALK WIDTH PER AAB IS NOT TO BE LESS THAN 4'-0"
 3. ROADWAY GUTTER SLOPE MEASURED FROM LEFT TO RIGHT WHEN FACING RAMP OPENING
 4. SEE E 107.6.5 FOR DETECTABLE WARNING PANEL DETAILS
 5. SEE E 107.6.0 FOR ALL OTHER DETAILS



CURB RAMP TYPE B
N.T.S.



GRANITE CURB SPLAYED END
N.T.S.



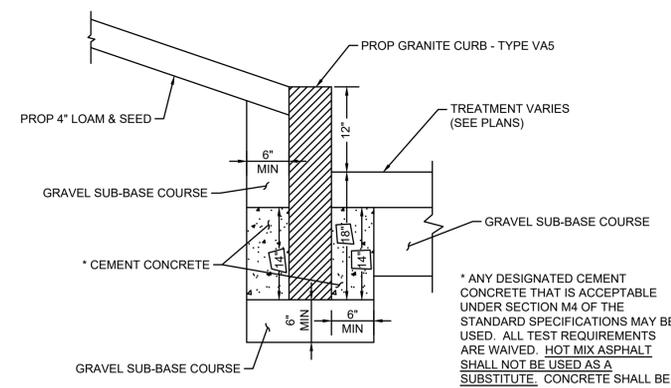
- NOTES:**
1. MINIMUM CLEAR PATH ON ALL SIDEWALK SHALL BE 36" EXCLUDING THE CURB. THE CLEAR PATH SHALL BE MEASURED TO FIRST VERTICAL FACE ENCOUNTERED ON THE MAILBOX OR PAPER TUBE (INCLUDING ALL PROTRUSIONS LESS THAN 6"-8" IN HEIGHT).
 2. CONTRACTOR SHALL VERIFY LOCATION OF ALL MAILBOXES AND PAPER TUBES TO BE SET WITHIN THE SIDEWALK PRIOR TO FINAL PLACEMENT TO PROVIDE A MINIMUM CLEAR PATH OF 36". CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY LOCATION THAT CANNOT MEET THE CLEARANCE REQUIREMENTS.
 3. REFER TO MASSDOT STANDARD DETAIL E504.1.0 FOR ADDITIONAL INFORMATION.

MAILBOX PARALLEL TO CURB
N.T.S.

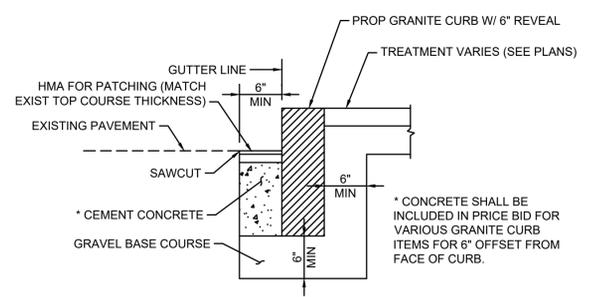
ROADWAY PROFILE GRADE	*HIGH SIDE TRANSITION LENGTH ENGLISH UNITS
%	
0%	6'-6"
>0% TO 1%	7'-8"
>1% TO 2%	9'-0"
>2% TO 3%	11'-0"
>3% TO 4%	14'-0"
>4% TO 5%	15'-0" - MAX

CURB TRANSITION LENGTH FOR PEDESTRIAN CURB RAMPS AND DRIVEWAYS
N.T.S.

NOTE:
* BASED ON A DESIGN SLOPE OF 7.5%* AND A REVEAL OF 6".



GRANITE BACK CURB
N.T.S.



GRANITE CURB IN EXISTING PAVEMENT
N.T.S.

