TRAFFIC SIGNAL MODIFICATIONS AND INTERSECTION IMPROVEMENTS

PLAN AND PROFILE OF

FOREST STREET

IN THE CITY OF

MEDFORD

MIDDLESEX COUNTY

MEDFORD
FOREST STREET (SALEM ST TO LAWRENCE RD)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		1	26
PROJECT FILE NO.		-	

TITLE SHEET & INDEX

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.

FINAL DESIGN

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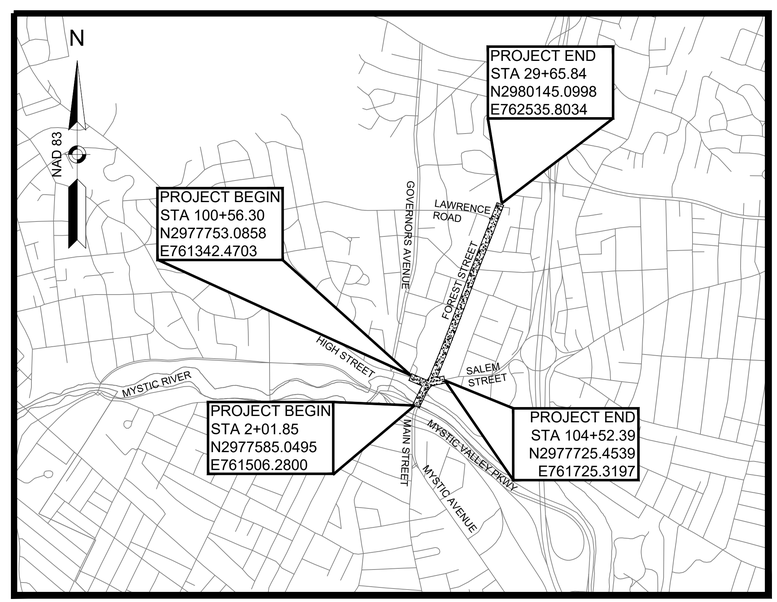

0 1,000 2,000 3,000 4,000

SCALE: 1" = 1,000'

LENGTH OF PROJECT = 3159.08 FEET = 0.60 MILES

DESIGNED BY:

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GENERAL SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
JB	JB	JERSEY BARRIER
CB	CB	CATCH BASIN
		CATCH BASIN CURB INLET
FP	FP	FLAG POLE
GP	GP	GAS PUMP
MB	MB	MAIL BOX
		POST SQUARE
		POST CIRCULAR
WELL	WELL	WELL
EHH	EHH	ELECTRIC HANDHOLE
		FENCE GATE POST
GG	GG	GAS GATE
BHL #	BHL #	BORING HOLE
MW #	MW #	MONITORING WELL
TP #	TP #	TEST PIT
		HYDRANT
		LIGHT POLE
CO.BD.		COUNTY BOUND
		GPS POINT
		CABLE MANHOLE
		DRAINAGE MANHOLE
		ELECTRIC MANHOLE
		GAS MANHOLE
		MISC MANHOLE
		SEWER MANHOLE
		TELEPHONE MANHOLE
		WATER MANHOLE
MHB	MHB	MASSACHUSETTS HIGHWAY BOUND
MON		MONUMENT
SB		STONE BOUND
TB		TOWN OR CITY BOUND
		TRAVERSE OR TRIANGULATION STATION
TPL or GUY	TPL or GUY	TROLLEY POLE OR GUY POLE
HTP		TRANSMISSION POLE
UFB	UFB	UTILITY POLE W/ FIREBOX
UPDL	UPDL	UTILITY POLE WITH DOUBLE LIGHT
ULT	ULT	UTILITY POLE W / 1 LIGHT
UPL	UPL	UTILITY POLE
		BUSH
SIZE & TYPE		TREE
		STUMP
		SWAMP / MARSH
WG	WG	WATER GATE
PM	PM	PARKING METER
		OVERHEAD CABLE/WIRE
		CURBING
100 99		CONTOURS (ON-THE-GROUND SURVEY DATA)
100 99		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
		HAY BALES/SILT FENCE
		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
1	1	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)
RRSG	RRSG	RAILROAD SIGNAL
OR		SIGNAL POST AND BASE (ALPHA-NUMERIC DESIGNATION NOTED)
	20'	MAST ARM, SHAFT AND BASE (ARM LENGTH AS NOTED)
		HIGH MAST POLE OR TOWER
		SIGN AND POST
		SIGN AND POST (2 POSTS)
	20'	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
ONLY	ONLY	LEGEND "ONLY" - WHITE
	SL	STOP LINE - 12 WIDE
	CW	CROSSWALK -12" WIDE
	SWL	SOLID WHITE LINE - 6" WIDE
	SYL	SOLID YELLOW LINE - 6" WIDE
	BWL	BROKEN WHITE LINE - 6" WIDE - 10' LINE AND 30' GAP
	BYL	BROKEN YELLOW LINE - 6" WIDE - 10' LINE AND 30' GAP
	DWL	DOTTED WHITE LINE - 6" WIDE - 3' LINE AND 9' GAP
	DYL	DOTTED YELLOW LINE - 6" WIDE - 3' LINE AND 9' GAP
	DWLEx	DOTTED WHITE LINE EXTENSION - 6" WIDE - 2' LINE AND 6' GAP
	DYLEx	DOTTED YELLOW LINE EXTENSION - 6" WIDE - 2' LINE AND 6' GAP
	DBWL	DOUBLE WHITE LINE - 6" WIDE
	DBYL	DOUBLE YELLOW LINE - 6" WIDE
	DDBYLEx	DOTTED DOUBLE YELLOW LINE EXTENSION - 6" WIDE - 2' LINE AND 6' GAP
	GFS	GREEN FRICTION SURFACE

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
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

MEDFORD
FOREST STREET (SALEM ST TO LAWRENCE RD)

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MA	-	2	26
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LEGEND AND ABBREVIATIONS

ABBREVIATIONS (cont.)

GENERAL

PVT	POINT OF VERTICAL TANGENCY
PVMT	PAVEMENT
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
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

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GENERAL NOTES

1. THE EXISTING TOPOGRAPHIC CONDITIONS SHOWN ON THESE PLANS CONSIST OF INFORMATION OBTAINED FROM THE CITY OF MEDFORD. THE PROJECT WAS DEVELOPED PARTIALLY USING GIS PLANS (STA 7+63+/- TO STA 13+20+/- AND STA 18+15+/- TO STA 25+37+/-) AND IS SCHEMATIC IN NATURE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONFIRMING EXISTING CONDITIONS AND THE EXACT LOCATION OF THE IMPROVEMENTS WITH THE CITY OF MEDFORD PRIOR TO THE START OF WORK.

2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING EXISTING GRADES AND ELEVATIONS AT THE LOCATIONS WHERE PROPOSED WORK MEETS EXISTING CONDITIONS.

3. THE CONTRACTOR SHALL BE RESPONSIBLE TO MAKE THEIR OWN DETERMINATION OF SUBSURFACE CONDITIONS INCLUDING THE LOCATION OF ROCK AND THE ACTUAL LOCATION OF UTILITIES OR OTHER FEATURES WHICH MAY AFFECT THEIR WORK.THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM AN ON THE GROUND SURVEY AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN HEREON COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM THE INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES. CONTRACTORS ARE REQUIRED TO NOTIFY DIG SAFE AND TO CHECK AND VERIFY THE LOCATION OF UTILITIES PRIOR TO CONSTRUCTION.

4. A PORTION OF THE TOPOGRAPHICAL INFORMATION IS FROM A SURVEY (STA 5+92 TO 7+63+/-, STA 13+20+/- TO STA 18+15+/-, AND STA 25+37+/- TO STA 29+65+/-)PERFORMED BY NITSCH ENGINEERING, THAT OCCURRED DURING JUNE 2023. HORIZONTAL DATUM IS BASED ON MASS GRID SYSTEM NAD 1983. ELEVATIONS SHOWN ON THIS PLAN REFER TO THE NAVD OF 1988.

5. A PORTION OF THE TOPOGRAPHICAL INFORMATION (STA 2+01+/- TO STA 5+92+/-) WAS OBTAINED FROM A MASSDOT SURVEY THAT OCCURED DURING APRIL 2022.

6. EXISTING UTILITIES SHOWN ON THESE PLANS WERE COMPILED FROM FIELD SURVEYS AND VARIOUS OTHER SOURCES. LOCATIONS ARE NOT GUARANTEED TO BE ACCURATE NOR IS IT GUARANTEED THAT ALL UTILITIES ARE SHOWN. NO SEPARATE OR ADDITIONAL COMPENSATION WILL BE ALLOWED TO THE CONTRACTOR DUE TO ANY VARIANCE BETWEEN THE DATA SHOWN ON THE PLANS AND ACTUAL FIELD CONDITIONS ENCOUNTERED. 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 THIS INFORMATION FURNISHED TO THE ENGINEER.

7. THE RELOCATION, INSTALLATION OR REMOVAL OF PRIVATE UTILITIES SHALL BE ACCOMPLISHED BY THEIR OWNERS, EXCEPT AS OTHERWISE NOTED. THE CONTRACTOR SHALL COORDINATE WITH THE PRIVATE UTILITY COMPANIES ON RELOCATIONS OF THEIR RESPECTIVE UTILITIES. THE CONTRACTOR SHALL SHOW PRIVATE UTILITY RELOCATION DURATIONS IN THE CONTRACTOR'S BASELINE SCHEDULE. 30 DAY NOTICE TO PROCEED WILL BE GIVEN IN ADVANCE OF ANY UTILITY WORK TO THE AFFECTED UTILITIES. THE CONTRACTOR SHALL ALLOW PRIVATE UTILITY COMPANIES ADEQUATE TIME TO COMPLETE THEIR WORK IN ADVANCE OF PERFORMING ANY PAVING OPERATIONS OR OTHER FINISH WORK.

8. AREAS OUTSIDE OF THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE TO THEIR ORIGINAL CONDITION AND TO THE SATISFACTION OF THE ENGINEER.

9. THE CONTRACTOR SHALL CONTACT "DIG SAFE" AT 1-888-DIG-SAFE AT LEAST 72 HOURS PRIOR TO COMMENCING WORK ON THE PROJECT.

10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND FOR MAINTAINING SEDIMENT CONTROL BARRIERS, SILT FENCE(S), AND OTHER EROSION CONTROL MEASURES THROUGHOUT THE DURATION OF THE CONTRACT AS SHOWN ON THE PLANS AND AS REQUIRED BY THE ENGINEER.

11. NO EXISTING DRAINAGE SYSTEMS SHALL BE ABANDONED, PLUGGED OR REMOVED WITHOUT PRIOR APPROVAL OF THE ENGINEER.

12. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL SAFETY CODES AND LEGAL REQUIREMENTS, IN THE CONSTRUCTION OF IMPROVEMENTS.

13. ALL EXISTING PIPING AND STRUCTURES EXPOSED DURING EXCAVATION SHALL BE ADEQUATELY SUPPORTED, BRACED OR OTHERWISE PROTECTED DURING CONSTRUCTION ACTIVITIES. EXCAVATIONS SHALL BE BACK FILLED DAILY AT THE COMPLETION OF WORK.

14. UNLESS OTHERWISE NOTED OR APPROVED BY THE ENGINEER, THE CONTRACTOR SHALL MAINTAIN ALL EXISTING UTILITIES IN SERVICE AT ALL TIMES. IF THE CONTRACTOR DAMAGES UTILITY SYSTEMS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE RESPECTIVE UTILITY COMPANY AND SHALL REPAIR/REPLACE THE AFFECTED SYSTEM AT THEIR OWN EXPENSE.

15. ALL MATERIALS TO BE REMOVED AND DISCARDED SHALL BE DISPOSED OF IN ACCORDANCE WITH ALL APPLICABLE CODES AND REGULATIONS.

16. CONTRACTOR SHALL PROVIDE ADEQUATE BRACING AND SHORING OF ALL EXCAVATIONS IN ACCORDANCE WITH THE REQUIREMENTS OF ALL GOVERNING CODES AND REGULATIONS.

17. THE TEMPORARY TRAFFIC CONTROL PLANS INDICATE THE GENERAL REQUIREMENTS FOR THE VARIOUS PHASES OF WORK. THE CONTRACTOR SHALL SUBMIT DETAILED TRAFFIC MANAGEMENT PLANS TO THE ENGINEER FOR APPROVAL.

18. ALL PROPOSED EXCAVATION SUPPORT SYSTEMS SHALL BE CONSIDERED INCIDENTAL TO THE APPLICABLE ITEMS.

19. THE FLOW OF TRAFFIC THROUGH THE SITE MUST BE MAINTAINED AS SHOWN ON THE TRAFFIC CONTROL PLANS AND SPECIFIED IN THE SPECIAL PROVISIONS. CONSTRUCTION EQUIPMENT AND MATERIALS SHALL NOT BE PARKED OR STOCKPILED SO AS TO OBSTRUCT THE FLOW OF VEHICLES.

20. DRAINAGE ELEVATIONS ARE PROVIDED FOR DESIGN PURPOSES ONLY. THE CONTRACTOR SHALL VERIFY BY TEST PIT, THE LOCATIONS OF EXISTING UTILITIES WHICH MAY CONFLICT WITH THE PROPOSED DRAINAGE DESIGN. ANY FIELD ADJUSTMENTS REQUIRED WILL BE MADE AS APPROVED OR DIRECTED BY THE ENGINEER. ONLY AFTER THE CONTRACTOR VERIFIES ELEVATIONS FOR THE CONSTRUCTABLITY OF THE DRAINAGE SYSTEM SHALL ANY STRUCTURES BE ORDERED. ANY FIELD ADJUSTMENTS TO LINE & GRADE UP TO A DEPTH OF 5' SHALL BE INCLUDED IN THE COST OF THE PIPE. PIPE EXCAVATION GREATER THAN 5' WILL BE PAID UNDER CLASS B TRENCH EXCAVATION.

21. ALL CATCH BASIN RIM ELEVATIONS ARE GIVEN AT THE CENTER OF THE BACK OF THE GRATE. THE CATCH BASIN RIM SHALL BE SET FLUSH WITH THE ROADWAY FINISHED GRADE.

22. ALL PROPOSED CATCH BASINS, UNLESS NOTED OTHERWISE, SHALL HAVE A 4' DEEP SUMP PROVIDED BY THE CONTRACTOR AT NO ADDITIONAL COMPENSATION.

23. THE TERM "PROPOSED" (PROP) MEANS WORK TO BE CONSTRUCTED USING NEW MATERIALS OR, WHERE APPLICABLE, RE-USING EXISTING MATERIALS IN SUITABLE CONDITION IDENTIFIED AS "REMOVE AND RESET" (R&R).

24. SURFACE JOINTS BETWEEN NEW HOT MIX ASPHALT ROADWAY PAVEMENT AND SAWCUT EXISTING PAVEMENT SHALL BE SEALED WITH HMA JOINT SEALANT.

25. ALL LATERAL DRAIN PIPES SHALL BE INSTALLED WITH A PITCH OF 0.01 FOOT PER FOOT (MINIMUM) UNLESS OTHERWISE SHOWN ON THE DRAWINGS.

26. ALL EXISTING GRANITE CURB & EDGING IN SUITABLE CONDITION SHALL BE RE-USED IN THE PROPOSED WORK, EXCEPT CURVED STONES OF A DIFFERENT RADIUS THAN PROPOSED CURB. ALL RESET CURB & EDGING SHALL BE USED CONTIGUOUSLY. ALL NEW CURB AND EDGING SHALL BE USED CONTIGUOUSLY. ALTERNATING OF NEW AND OLD MATERIALS/CURB/EDGING WILL NOT BE ACCEPTED.

27. IN AREAS OF FULL DEPTH PAVEMENT AND SIDEWALK RECONSTRUCTION WHERE PROPOSED MEETS EXISTING PAVEMENT, THE EXISTING PAVEMENT SHALL BE SAWCUT TO OBTAIN A CLEAN VERTICAL FACE.

28. THE LAYOUT OF ALL NEW PEDESTRIAN RAMPS SHALL CONFORM TO ADA/AAB STANDARDS, CITY OF MEDFORD STANDARDS, AND CURRENT MASSDOT STANDARDS AND DIRECTIVES.

29. ALL UTILITY AND DRAINAGE FRAMES, GRATES, AND COVERS SHALL BE INSTALLED FLUSH WITH SURROUNDING PAVEMENT.

30. THE CONTRACTOR SHALL PROVIDE INLET PROTECTION DURING CONSTRUCTION FOR ALL EXISTING AND PROPOSED CATCH BASINS/AREA DRAINS WITHIN THE LIMIT OF WORK. REFER TO THE "SEDIMENTATION AND EROSION CONTROL NOTES" AND THE DETAIL ENTITLED "INLET PROTECTION FOR CATCH BASIN WITH SILTATION SACK" ON THE CONSTRUCTION DETAIL SHEETS.

31. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF DRAINAGE STRUCTURE SEDIMENTS WITHIN THE STATE HIGHWAY LAYOUT AND LIMIT OF WORK AS REQUIRED BY THE ENGINEER AND IN ACCORDANCE WITH THE RELEVANT PROVISIONS OF SECTION 227 OF THE MASSDOT STANDARD SPECIFICATIONS, AS AMENDED.

32. THE CONTRACTOR SHALL PERFORM AN INVENTORY TO DETERMINE THE NUMBER OF FRAME AND GRATES THAT ARE SUITABLE FOR REUSE AS APPROVED BY THE ENGINEER. ALL EXISTING DRAINAGE FRAME AND COVER/GRATES DEEMED UNSUITABLE FOR REUSE SHALL BE REMOVED AND DISCARDED, PER ITEM 223.2, AND REPLACED WITH NEW FRAME AND GRATES/COVERS THAT COMPLY WITH SECTION 220 AND THE CITY OF MEDFORD STANDARDS. THE CONTRACTOR SHALL REMOVE AND STACK CASTINGS (INCIDENTAL TO ITEM 146.) THAT ARE SUITABLE FOR REUSE AT A LOCATION APPROVED BY THE ENGINEER UNTIL THEY ARE REQUIRED TO BE INSTALLED.

33. WATER UTILITIES ARE NOT INCLUDED IN DIGSAFE IN THE CITY OF MEDFORD AND MUST BE CALLED SEPARATELY.

34. AT LOCATIONS WHERE AN EXISTING MANHOLE, HANDHOLE, GATE BOX, OR OTHER SURFACE TYPE STRUCTURE, WHICH CANNOT BE REMOVED, IS LOCATED WITHIN AN ACCESSIBLE SURFACE (EXISTING/PROPOSED), THE STRUCTURE SHALL BE CAREFULLY ADJUSTED SUCH THAT THE TOPMOST SURFACE OR THE COVER IS FLUSH WITH THE ACCESSIBLE SURFACE.

MEDFORD
FOREST STREET (SALEM ST TO LAWRENCE RD)

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MA	-	3	26
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GENERAL NOTES

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MEDFORD
FOREST STREET (SALEM ST TO LAWRENCE RD)

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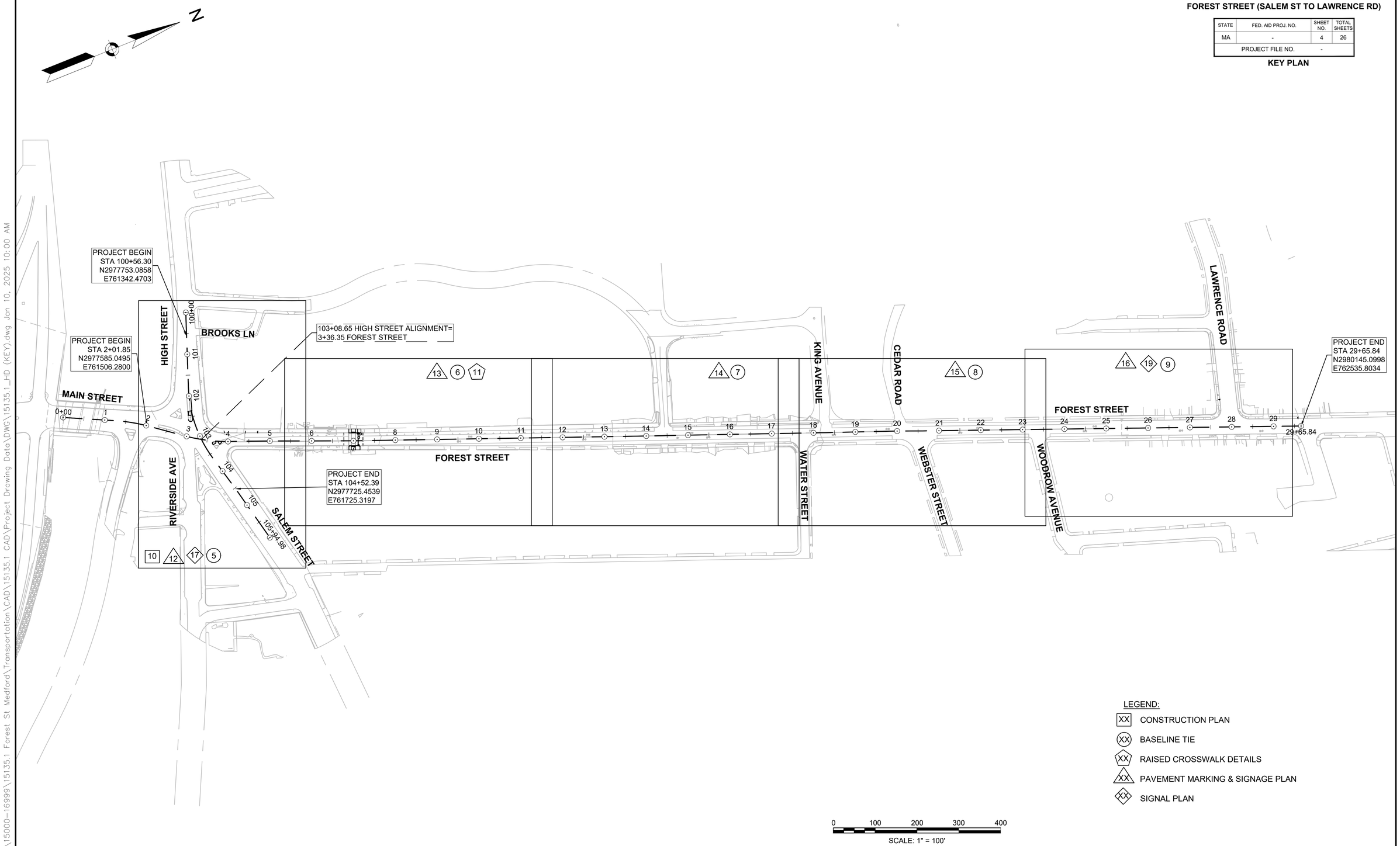
MA	-	4	26
PROJECT FILE NO.		-	

KEY PLAN



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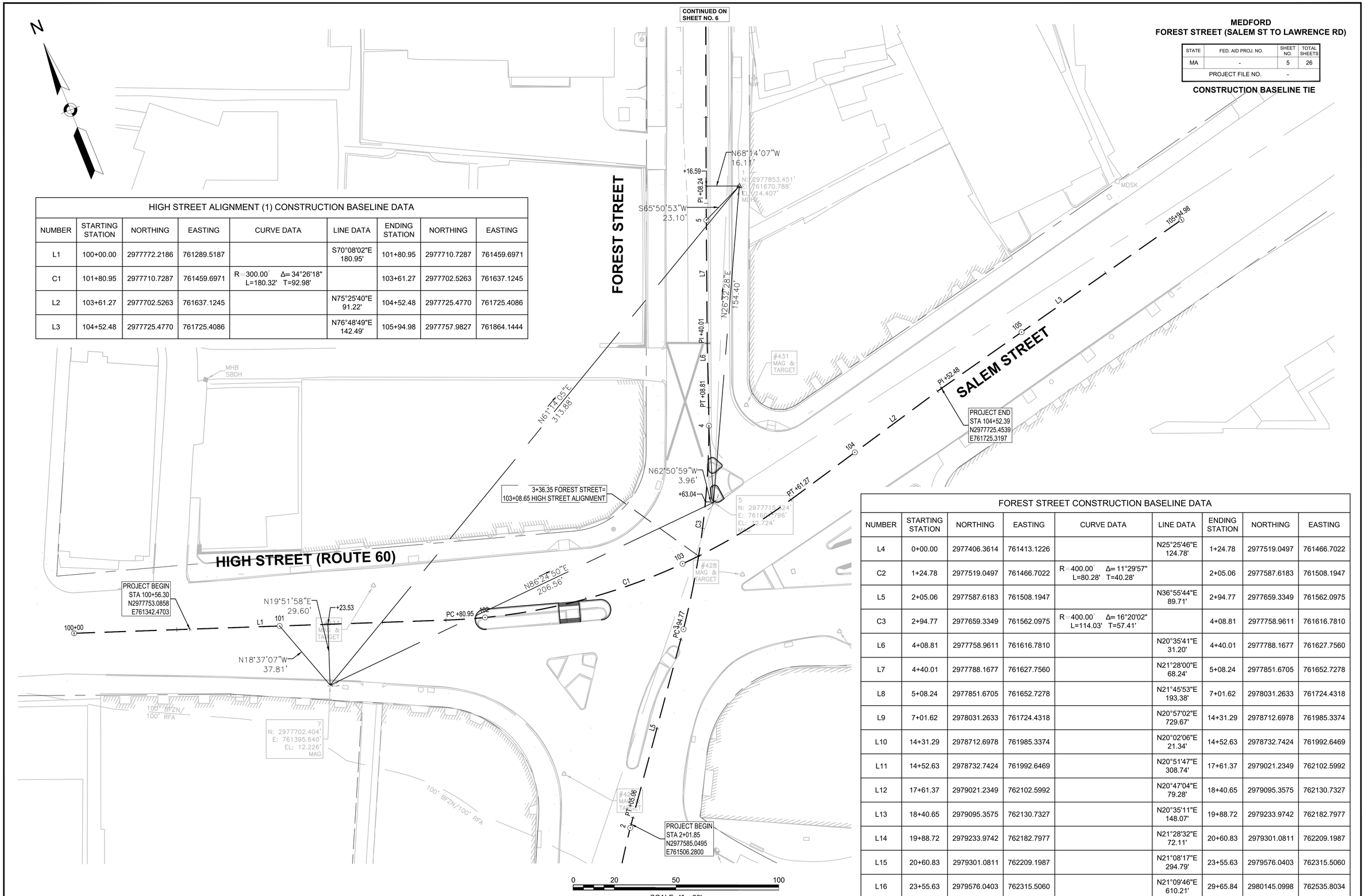
MEDFORD
FOREST STREET (SALEM ST TO LAWRENCE RD)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	5	26
PROJECT FILE NO.		-	

CONSTRUCTION BASELINE TIE



HIGH STREET ALIGNMENT (1) CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L1	100+00.00	2977772.2186	761289.5187		S70°08'02"E 180.95'	101+80.95	2977710.7287	761459.6971
C1	101+80.95	2977710.7287	761459.6971	R=300.00' Δ=34°26'18" L=180.32' T=92.98'		103+61.27	2977702.5263	761637.1245
L2	103+61.27	2977702.5263	761637.1245		N75°25'40"E 91.22'	104+52.48	2977725.4770	761725.4086
L3	104+52.48	2977725.4770	761725.4086		N76°48'49"E 142.49'	105+94.98	2977757.9827	761864.1444

FOREST STREET CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L4	0+00.00	2977406.3614	761413.1226		N25°25'46"E 124.78'	1+24.78	2977519.0497	761466.7022
C2	1+24.78	2977519.0497	761466.7022	R=400.00' Δ=11°29'57" L=80.28' T=40.28'		2+05.06	2977587.6183	761508.1947
L5	2+05.06	2977587.6183	761508.1947		N36°55'44"E 89.71'	2+94.77	2977659.3349	761562.0975
C3	2+94.77	2977659.3349	761562.0975	R=400.00' Δ=16°20'02" L=114.03' T=57.41'		4+08.81	2977758.9611	761616.7810
L6	4+08.81	2977758.9611	761616.7810		N20°35'41"E 31.20'	4+40.01	2977788.1677	761627.7560
L7	4+40.01	2977788.1677	761627.7560		N21°28'00"E 68.24'	5+08.24	2977851.6705	761652.7278
L8	5+08.24	2977851.6705	761652.7278		N21°45'53"E 193.38'	7+01.62	2978031.2633	761724.4318
L9	7+01.62	2978031.2633	761724.4318		N20°57'02"E 729.67'	14+31.29	2978712.6978	761985.3374
L10	14+31.29	2978712.6978	761985.3374		N20°02'06"E 21.34'	14+52.63	2978732.7424	761992.6469
L11	14+52.63	2978732.7424	761992.6469		N20°51'47"E 308.74'	17+61.37	2979021.2349	762102.5992
L12	17+61.37	2979021.2349	762102.5992		N20°47'04"E 79.28'	18+40.65	2979095.3575	762130.7327
L13	18+40.65	2979095.3575	762130.7327		N20°35'11"E 148.07'	19+88.72	2979233.9742	762182.7977
L14	19+88.72	2979233.9742	762182.7977		N21°28'32"E 72.11'	20+60.83	2979301.0811	762209.1987
L15	20+60.83	2979301.0811	762209.1987		N21°08'17"E 294.79'	23+55.63	2979576.0403	762315.5060
L16	23+55.63	2979576.0403	762315.5060		N21°09'46"E 610.21'	29+65.84	2980145.0998	762535.8034

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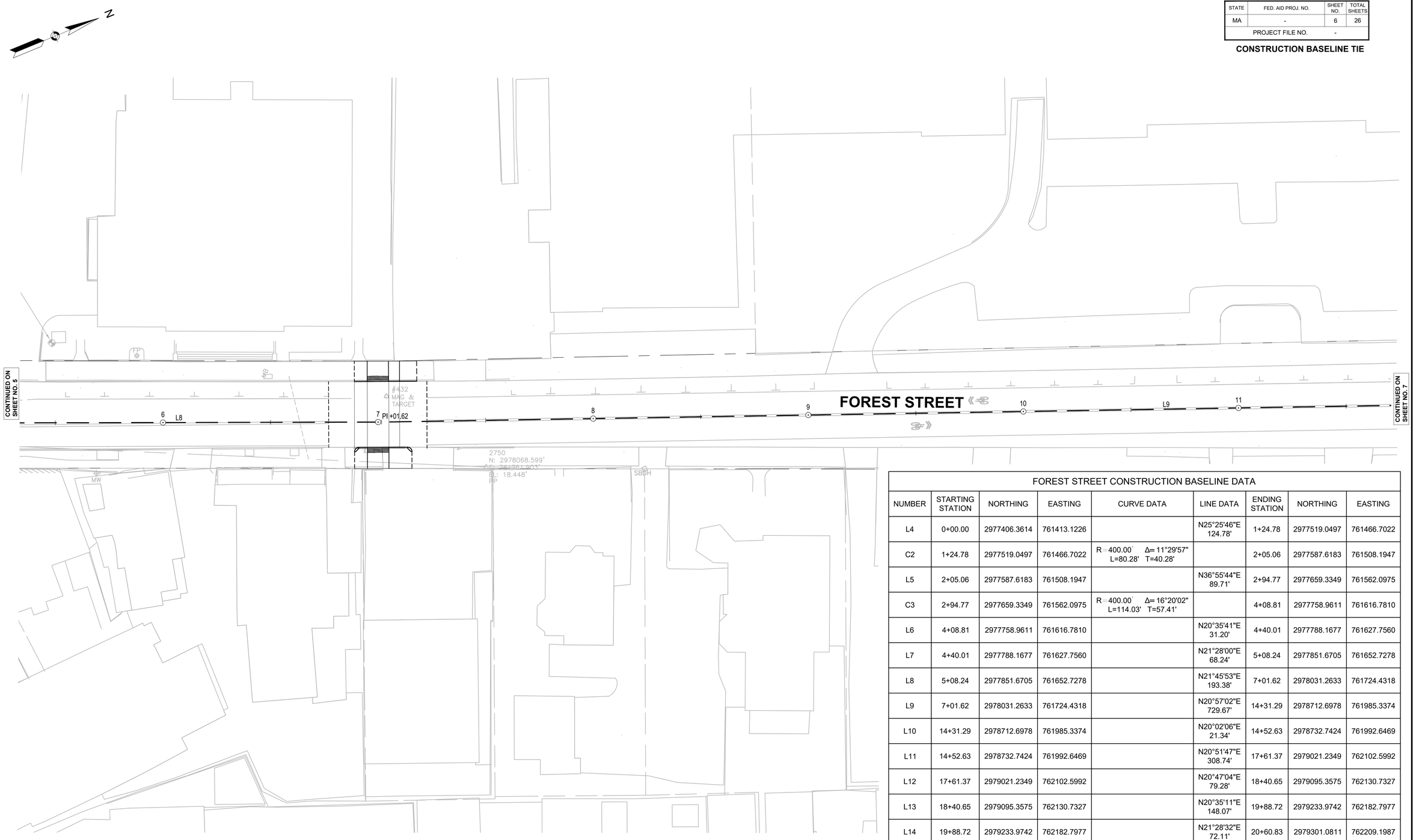
15135.1_HD (BASELINE TIE).DWG Plotted on 10-Jan-2025 10:03 AM

MEDFORD
FOREST STREET (SALEM ST TO LAWRENCE RD)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	6	26
PROJECT FILE NO.		-	

CONSTRUCTION BASELINE TIE



FOREST STREET CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L4	0+00.00	2977406.3614	761413.1226		N25°25'46"E 124.78'	1+24.78	2977519.0497	761466.7022
C2	1+24.78	2977519.0497	761466.7022	R=400.00' Δ=11°29'57" L=80.28' T=40.28'		2+05.06	2977587.6183	761508.1947
L5	2+05.06	2977587.6183	761508.1947		N36°55'44"E 89.71'	2+94.77	2977659.3349	761562.0975
C3	2+94.77	2977659.3349	761562.0975	R=400.00' Δ=16°20'02" L=114.03' T=57.41'		4+08.81	2977758.9611	761616.7810
L6	4+08.81	2977758.9611	761616.7810		N20°35'41"E 31.20'	4+40.01	2977788.1677	761627.7560
L7	4+40.01	2977788.1677	761627.7560		N21°28'00"E 68.24'	5+08.24	2977851.6705	761652.7278
L8	5+08.24	2977851.6705	761652.7278		N21°45'53"E 193.38'	7+01.62	2978031.2633	761724.4318
L9	7+01.62	2978031.2633	761724.4318		N20°57'02"E 729.67'	14+31.29	2978712.6978	761985.3374
L10	14+31.29	2978712.6978	761985.3374		N20°02'06"E 21.34'	14+52.63	2978732.7424	761992.6469
L11	14+52.63	2978732.7424	761992.6469		N20°51'47"E 308.74'	17+61.37	2979021.2349	762102.5992
L12	17+61.37	2979021.2349	762102.5992		N20°47'04"E 79.28'	18+40.65	2979095.3575	762130.7327
L13	18+40.65	2979095.3575	762130.7327		N20°35'11"E 148.07'	19+88.72	2979233.9742	762182.7977
L14	19+88.72	2979233.9742	762182.7977		N21°28'32"E 72.11'	20+60.83	2979301.0811	762209.1987
L15	20+60.83	2979301.0811	762209.1987		N21°08'17"E 294.79'	23+55.63	2979576.0403	762315.5060
L16	23+55.63	2979576.0403	762315.5060		N21°09'46"E 610.21'	29+65.84	2980145.0998	762535.8034

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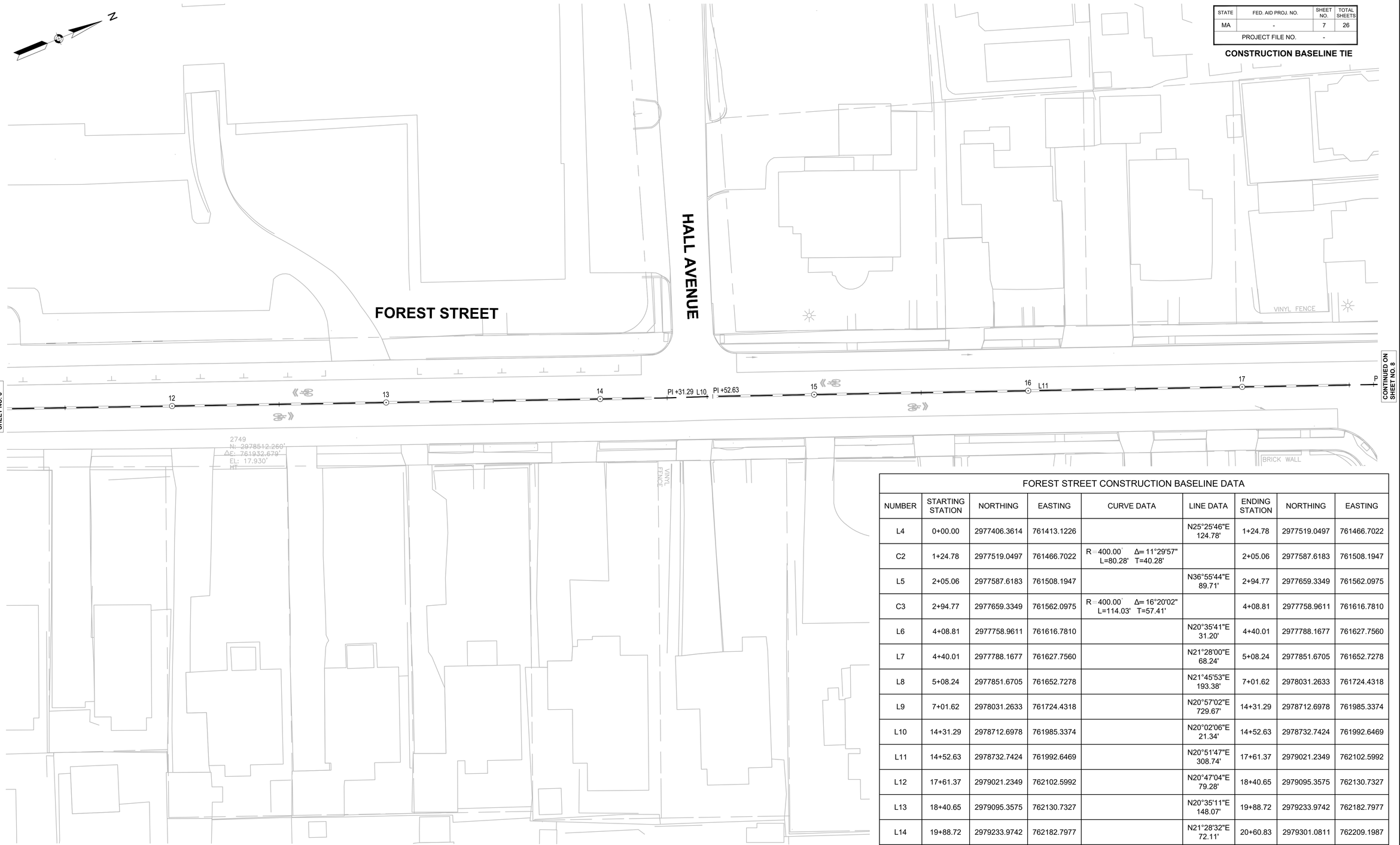
MEDFORD
FOREST STREET (SALEM ST TO LAWRENCE RD)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	7	26
PROJECT FILE NO.		-	

CONSTRUCTION BASELINE TIE



FOREST STREET CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L4	0+00.00	2977406.3614	761413.1226		N25°25'46"E 124.78'	1+24.78	2977519.0497	761466.7022
C2	1+24.78	2977519.0497	761466.7022	R=400.00' Δ=11°29'57" L=80.28' T=40.28'		2+05.06	2977587.6183	761508.1947
L5	2+05.06	2977587.6183	761508.1947		N36°55'44"E 89.71'	2+94.77	2977659.3349	761562.0975
C3	2+94.77	2977659.3349	761562.0975	R=400.00' Δ=16°20'02" L=114.03' T=57.41'		4+08.81	2977758.9611	761616.7810
L6	4+08.81	2977758.9611	761616.7810		N20°35'41"E 31.20'	4+40.01	2977788.1677	761627.7560
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L10	14+31.29	2978712.6978	761985.3374		N20°02'06"E 21.34'	14+52.63	2978732.7424	761992.6469
L11	14+52.63	2978732.7424	761992.6469		N20°51'47"E 308.74'	17+61.37	2979021.2349	762102.5992
L12	17+61.37	2979021.2349	762102.5992		N20°47'04"E 79.28'	18+40.65	2979095.3575	762130.7327
L13	18+40.65	2979095.3575	762130.7327		N20°35'11"E 148.07'	19+88.72	2979233.9742	762182.7977
L14	19+88.72	2979233.9742	762182.7977		N21°28'32"E 72.11'	20+60.83	2979301.0811	762209.1987
L15	20+60.83	2979301.0811	762209.1987		N21°08'17"E 294.79'	23+55.63	2979576.0403	762315.5060
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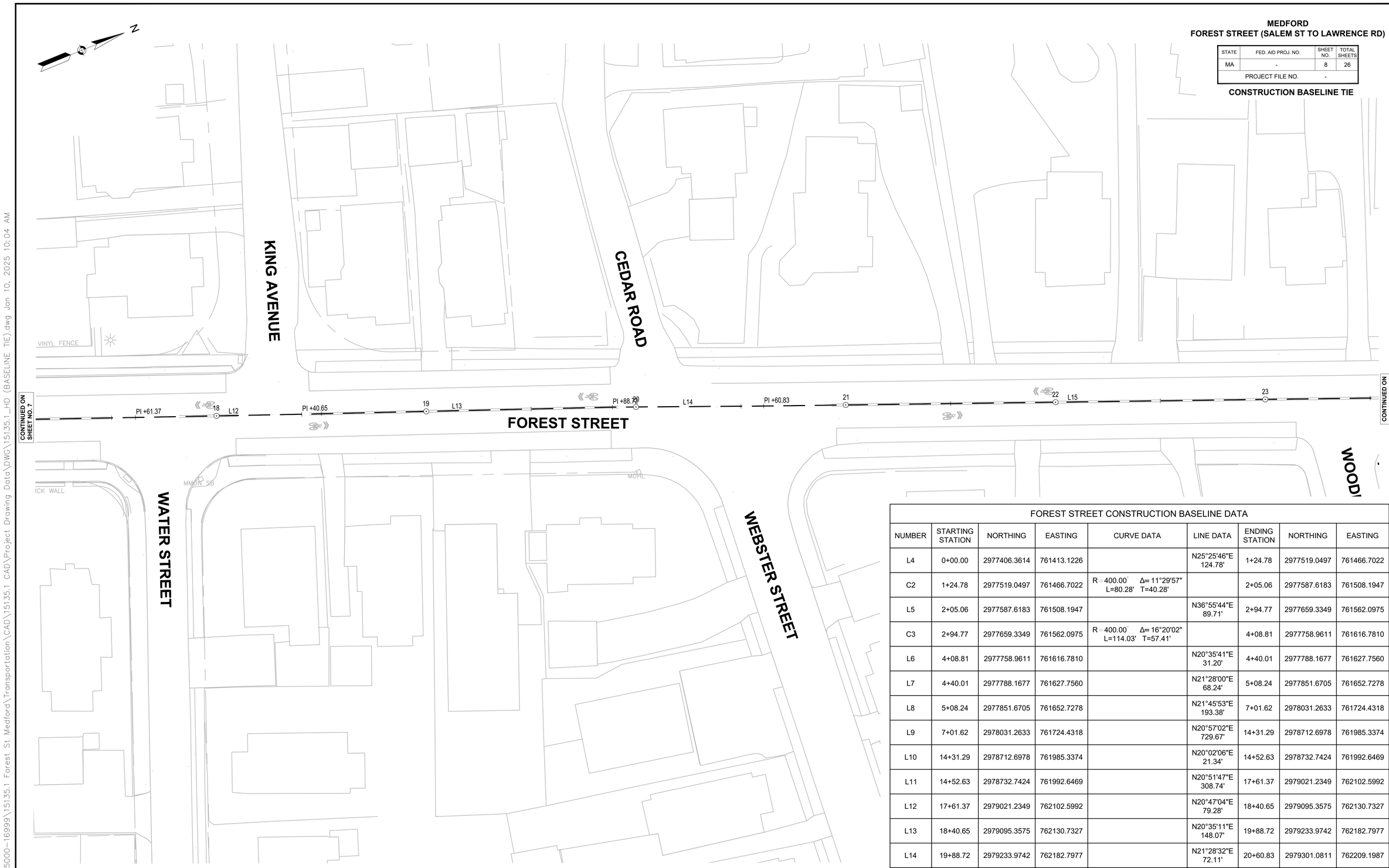
15135.1_HD (BASELINE TIE).DWG Plotted on 10-Jan-2025 10:03 AM

MEDFORD
FOREST STREET (SALEM ST TO LAWRENCE RD)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	8	26
PROJECT FILE NO.		-	

CONSTRUCTION BASELINE TIE



FOREST STREET CONSTRUCTION BASELINE DATA

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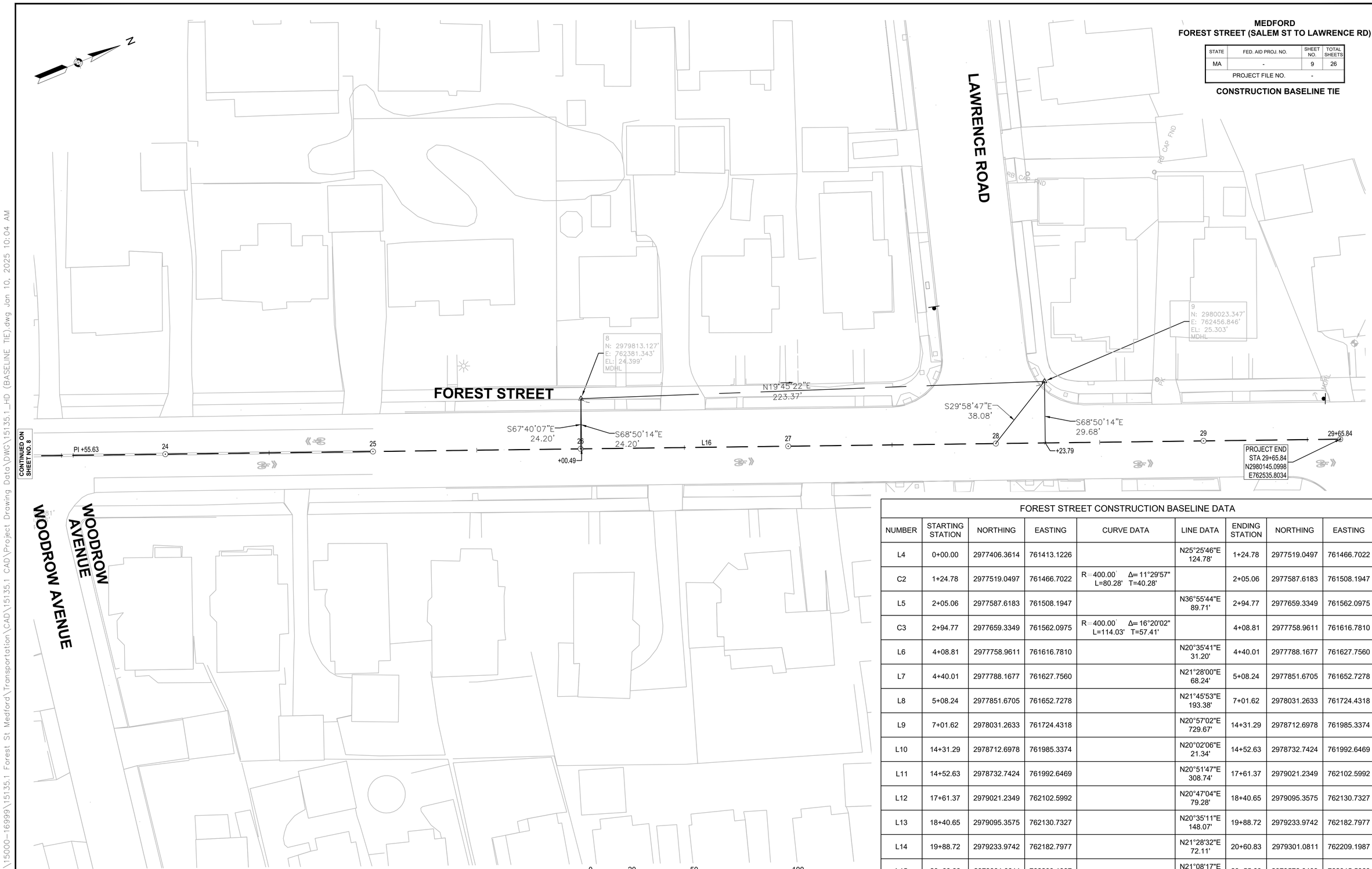
15135.1_HD (BASELINE TIE).DWG Plotted on 10-Jan-2025 10:04 AM

MEDFORD
FOREST STREET (SALEM ST TO LAWRENCE RD)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	9	26
PROJECT FILE NO.		-	

CONSTRUCTION BASELINE TIE



FOREST STREET CONSTRUCTION BASELINE DATA

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L9	7+01.62	2978031.2633	761724.4318		N20°57'02"E 729.67'	14+31.29	2978712.6978	761985.3374
L10	14+31.29	2978712.6978	761985.3374		N20°02'06"E 21.34'	14+52.63	2978732.7424	761992.6469
L11	14+52.63	2978732.7424	761992.6469		N20°51'47"E 308.74'	17+61.37	2979021.2349	762102.5992
L12	17+61.37	2979021.2349	762102.5992		N20°47'04"E 79.28'	18+40.65	2979095.3575	762130.7327
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15135.1_HD (BASELINE TIE).DWG Plotted on 10-Jan-2025 10:04 AM

PROPOSED STANDARD MILLING & OVERLAY

SURFACE: 1.75" SUPERPAVE SURFACE COURSE - 12.5 (SSC-12.5) OVER

1.75" SUPERPAVE INTERMEDIATE COURSE - 12.5 (SIC-12.5) OVER

MILLING: VARIABLE DEPTH PAVEMENT STANDARD MILLING (3.5" MAX)

PROPOSED FULL DEPTH PAVEMENT WIDENING LESS THAN 4 FEET

SURFACE: 1.75" SUPERPAVE SURFACE COURSE - 12.5 (SSC-12.5) OVER
1.75" SUPERPAVE INTERMEDIATE COURSE - 12.5 (SIC-12.5)

BASE: 6" HIGH EARLY STRENGTH CEMENT CONCRETE

SUBBASE: 8" GRAVEL BORROW, TYPE B

PROPOSED CEMENT CONCRETE SIDEWALK / PEDESTRIAN CURB RAMP/ CEMENT CONCRETE ISLAND

SURFACE: 4" CEMENT CONCRETE SIDEWALK (4000 PSI, $\frac{3}{4}$", 610)

SUBBASE: 8" GRAVEL BORROW, TYPE B

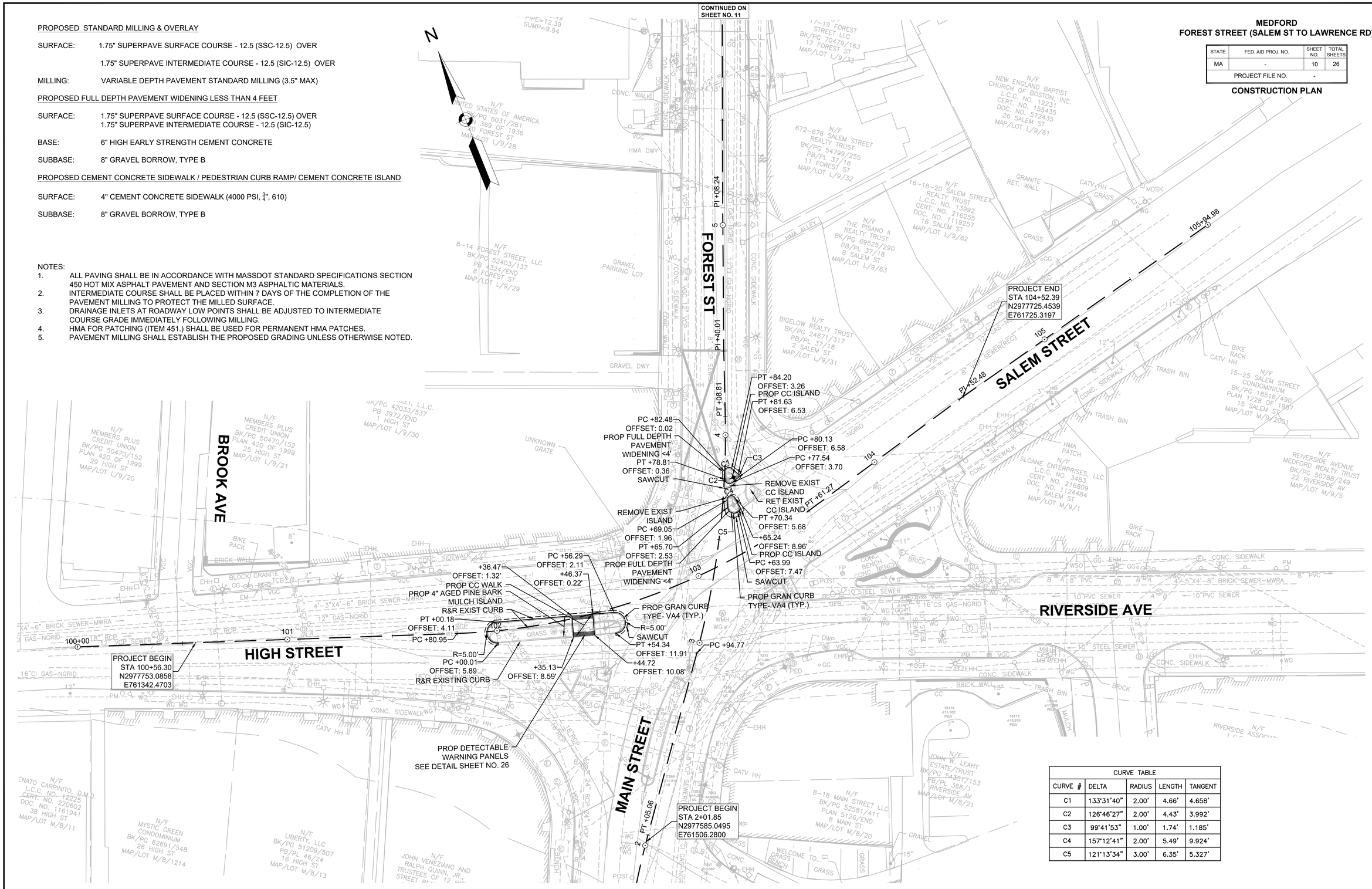
NOTES:

1. ALL PAVING SHALL BE IN ACCORDANCE WITH MASSDOT STANDARD SPECIFICATIONS SECTION 450 HOT MIX ASPHALT PAVEMENT AND SECTION M3 ASPHALTIC MATERIALS.
2. INTERMEDIATE COURSE SHALL BE PLACED WITHIN 7 DAYS OF THE COMPLETION OF THE PAVEMENT MILLING TO PROTECT THE MILLED SURFACE.
3. DRAINAGE INLETS AT ROADWAY LOW POINTS SHALL BE ADJUSTED TO INTERMEDIATE COURSE GRADE IMMEDIATELY FOLLOWING MILLING.
4. HMA FOR PATCHING (ITEM 451.) SHALL BE USED FOR PERMANENT HMA PATCHES.
5. PAVEMENT MILLING SHALL ESTABLISH THE PROPOSED GRADING UNLESS OTHERWISE NOTED.

MEDFORD
FOREST STREET (SALEM ST TO LAWRENCE RD)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	10	26
PROJECT FILE NO.		-	

CONSTRUCTION PLAN



CURVE TABLE				
CURVE #	DELTA	RADIUS	LENGTH	TANGENT
C1	133°31'40"	2.00'	4.66'	4.658'
C2	126°46'27"	2.00'	4.43'	3.992'
C3	99°41'53"	1.00'	1.74'	1.185'
C4	157°12'41"	2.00'	5.49'	9.924'
C5	121°13'34"	3.00'	6.35'	5.327'

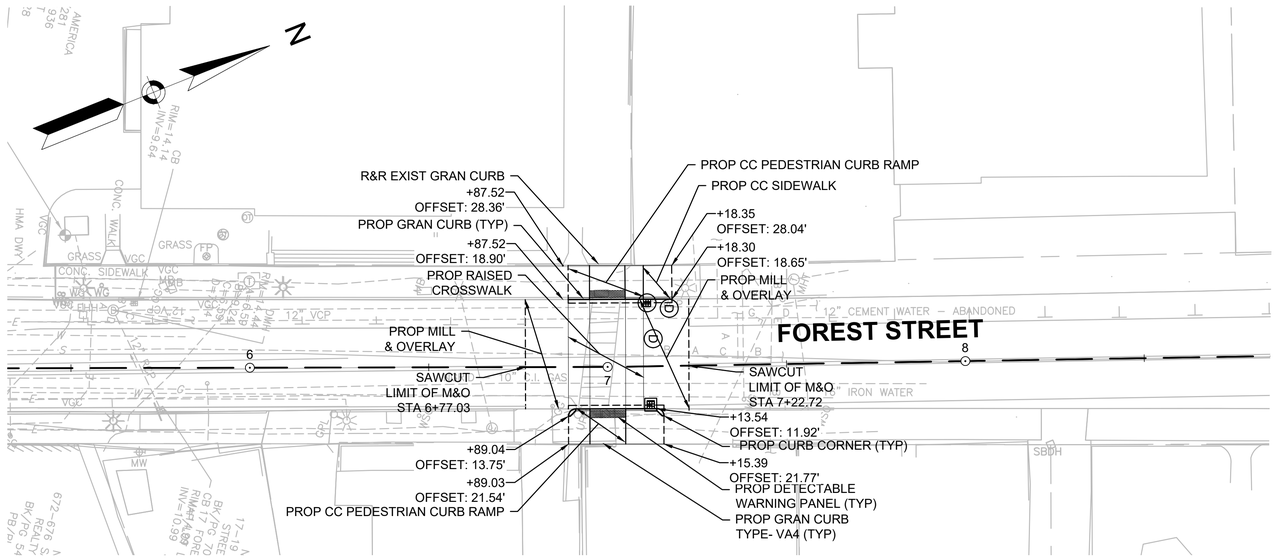
15135.1_HD (CONST).DWG Plotted on 10-Jan-2025 10:06 AM

Nitsch – P:\15000-16999\15135.1 Forest St Medford\Transportation\CAD\15135.1 CAD\Project Drawing Data\DWG\15135.1_HD (CONST).dwg Jan 10, 2025 10:06 AM

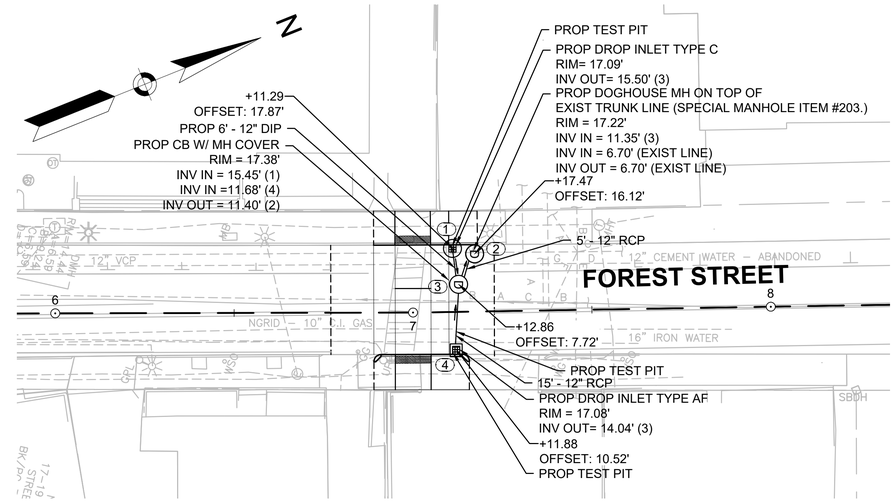
MEDFORD
FOREST STREET (SALEM ST TO LAWRENCE RD)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	11	26
PROJECT FILE NO.		-	

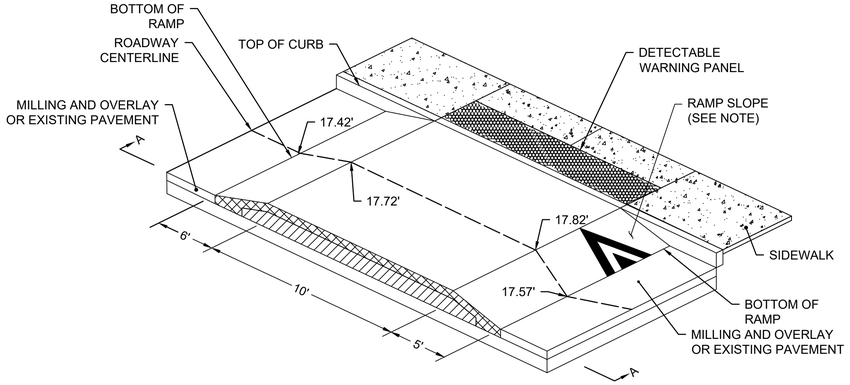
RAISED CROSSWALK DETAILS



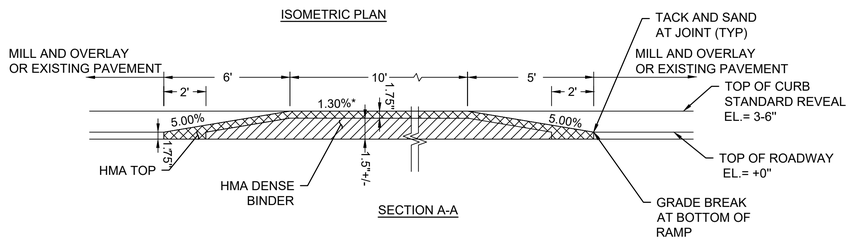
CONSTRUCTION VIEW



UTILITY VIEW



ISOMETRIC PLAN



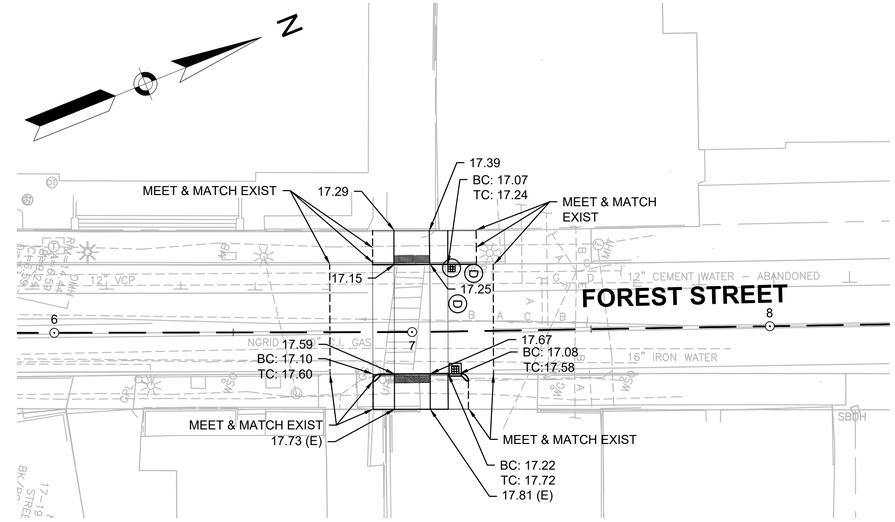
SECTION A-A

RAISED CROSSWALK DETAIL
NOT TO SCALE

NOTES:

1. RAISED CROSSINGS SHOULD BE PAVED IN 2" MAXIMUM LIFT.
2. THE RAMP SCOPE SHOULD NOT EXCEED 7% RELATIVE T0 THE EXISTING SLOPE OF THE STREET ADJACENT TO THE CROSSING.

* TOLERANCE FOR CONSTRUCTION (+/- 0.5%)



GRADING VIEW

0 20 50 100
SCALE: 1" = 20'

NOTES:

1. DRAINAGE ELEVATIONS ARE SHOWN FOR DESIGN PURPOSE ONLY. THE CONTRACTOR SHALL VERIFY, BY TEST PIT LOCATIONS, ALL EXISTING UTILITIES WHICH MAY CONFLICT WITH THE PROPOSED DRAINAGE DESIGN. ANY FIELD ADJUSTMENTS REQUIRED WILL BE MADE ONLY AFTER APPROVED BY THE ENGINEER. NO DRAINAGE STRUCTURE SHALL BE ORDERED UNTIL AFTER THE CONTRACTOR VERIFIES THE CONSTRUCTABILITY OF THE SYSTEM.
2. ALL MUNICIPAL STANDARD COVERS, FRAMES, AND GRATES SHALL BE BICYCLE COMPATIBLE.
3. NEW FRAMES AND GRATES/COVERS SHALL BE PROVIDED THAT COMPLY WITH SECTION 220.

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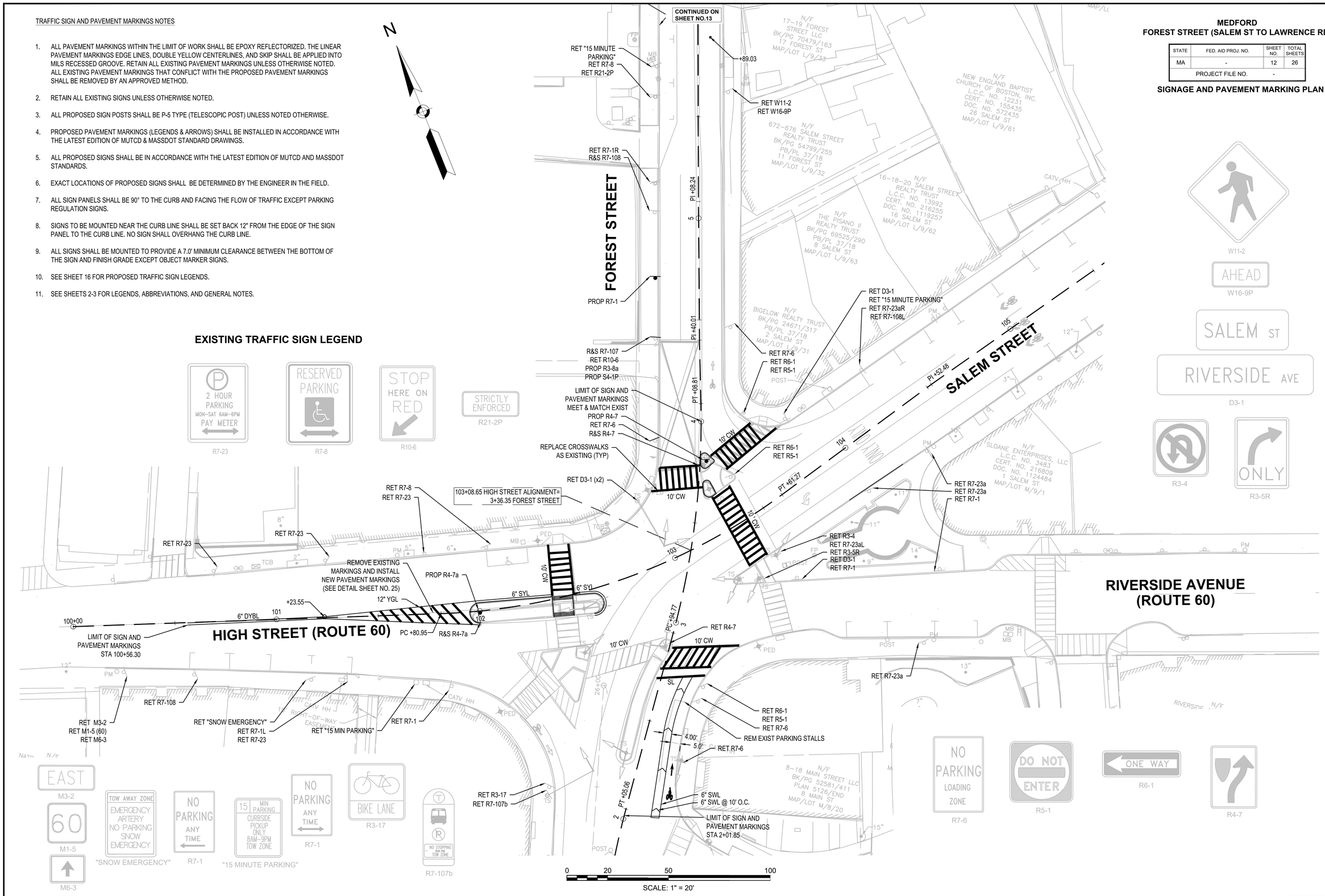
TRAFFIC SIGN AND PAVEMENT MARKINGS NOTES

1. ALL PAVEMENT MARKINGS WITHIN THE LIMIT OF WORK SHALL BE EPOXY REFLECTORIZED. THE LINEAR PAVEMENT MARKINGS EDGE LINES, DOUBLE YELLOW CENTERLINES, AND SKIP SHALL BE APPLIED INTO MILS RECESSED GROOVE. RETAIN ALL EXISTING PAVEMENT MARKINGS UNLESS OTHERWISE NOTED. ALL EXISTING PAVEMENT MARKINGS THAT CONFLICT WITH THE PROPOSED PAVEMENT MARKINGS SHALL BE REMOVED BY AN APPROVED METHOD.
2. RETAIN ALL EXISTING SIGNS UNLESS OTHERWISE NOTED.
3. ALL PROPOSED SIGN POSTS SHALL BE P-5 TYPE (TELESCOPIC POST) UNLESS NOTED OTHERWISE.
4. PROPOSED PAVEMENT MARKINGS (LEGENDS & ARROWS) SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF MUTCD & MASSDOT STANDARD DRAWINGS.
5. ALL PROPOSED SIGNS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF MUTCD AND MASSDOT STANDARDS.
6. EXACT LOCATIONS OF PROPOSED SIGNS SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD.
7. ALL SIGN PANELS SHALL BE 90° TO THE CURB AND FACING THE FLOW OF TRAFFIC EXCEPT PARKING REGULATION SIGNS.
8. SIGNS TO BE MOUNTED NEAR THE CURB LINE SHALL BE SET BACK 12" FROM THE EDGE OF THE SIGN PANEL TO THE CURB LINE. NO SIGN SHALL OVERHANG THE CURB LINE.
9. ALL SIGNS SHALL BE MOUNTED TO PROVIDE A 7.0' MINIMUM CLEARANCE BETWEEN THE BOTTOM OF THE SIGN AND FINISH GRADE EXCEPT OBJECT MARKER SIGNS.
10. SEE SHEET 16 FOR PROPOSED TRAFFIC SIGN LEGENDS.
11. SEE SHEETS 2-3 FOR LEGENDS, ABBREVIATIONS, AND GENERAL NOTES.

EXISTING TRAFFIC SIGN LEGEND



MEDFORD
FOREST STREET (SALEM ST TO LAWRENCE RD)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	12	26
PROJECT FILE NO.		-	

SIGNAGE AND PAVEMENT MARKING PLAN

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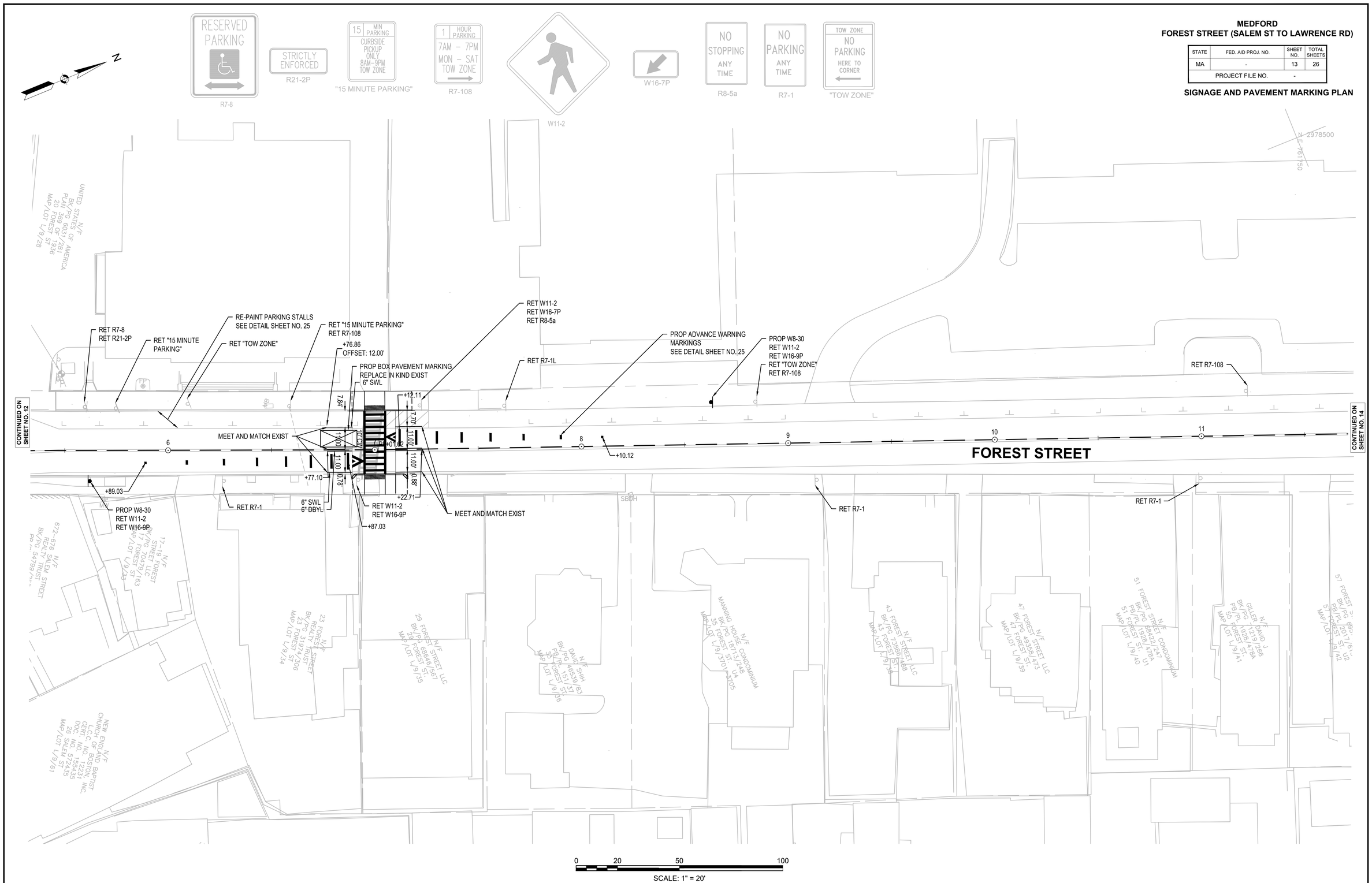
15135.1_HD (SIGN & PVMK).DWG Plotted on 10-Jan-2025 10:07 AM

MEDFORD
FOREST STREET (SALEM ST TO LAWRENCE RD)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	13	26
PROJECT FILE NO.		-	

SIGNAGE AND PAVEMENT MARKING PLAN



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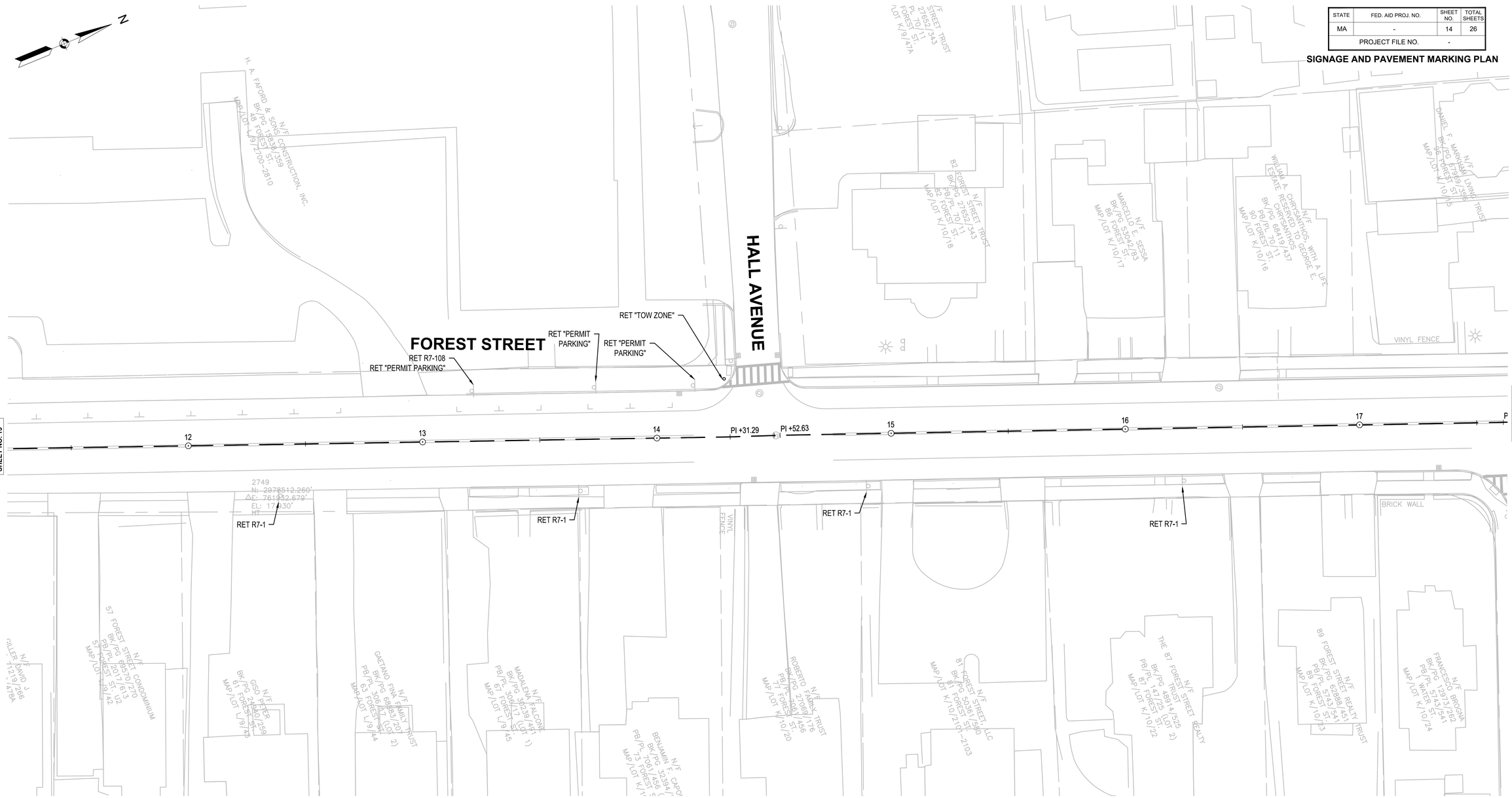
15135.1_HD (SIGN & PVMK).DWG Plotted on 10-Jan-2025 10:07 AM

MEDFORD
FOREST STREET (SALEM ST TO LAWRENCE RD)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	14	26
PROJECT FILE NO.		-	

SIGNAGE AND PAVEMENT MARKING PLAN



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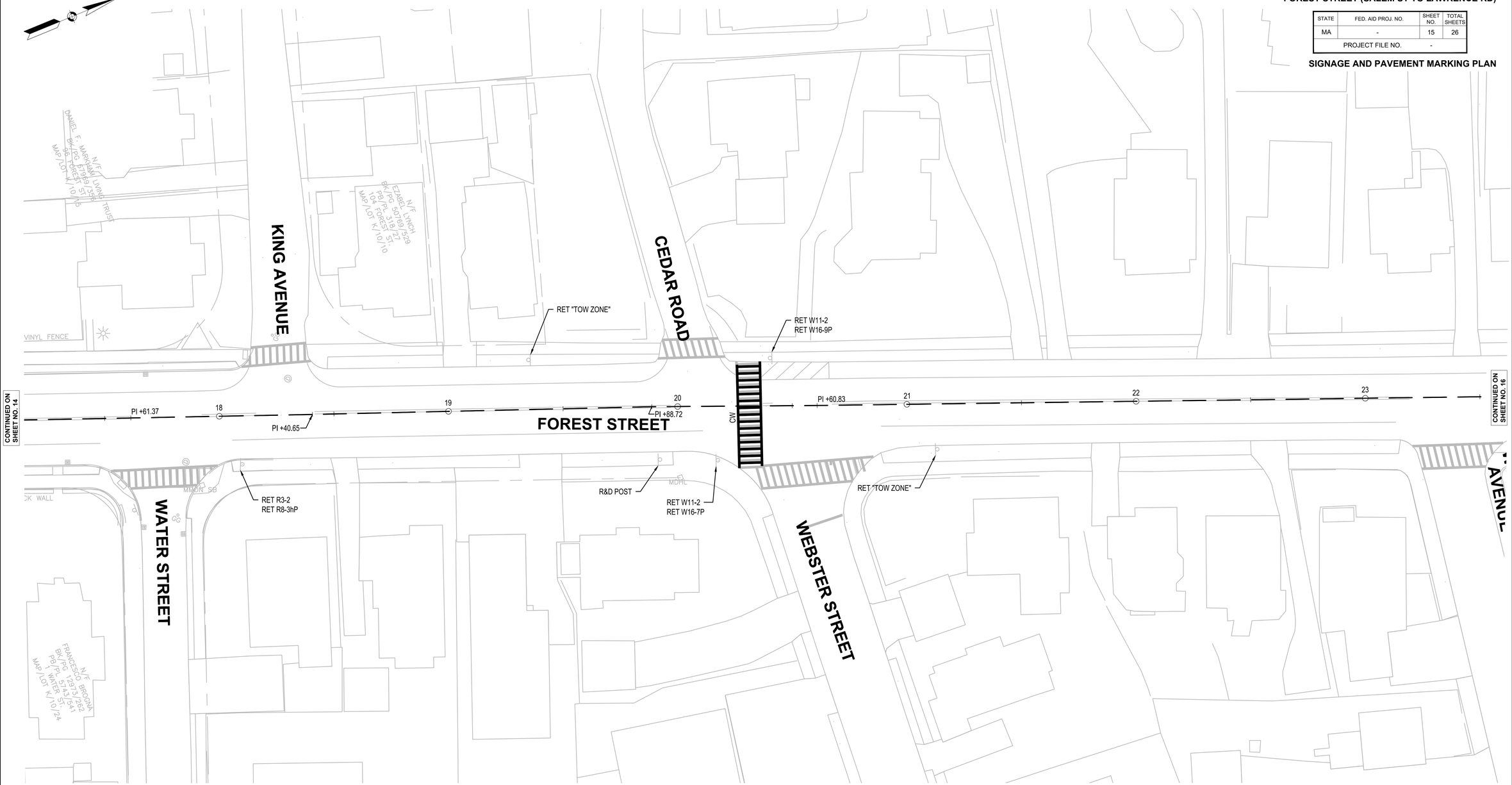
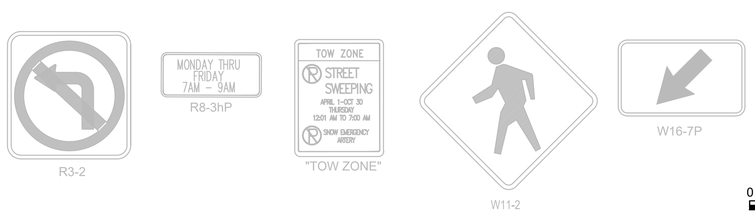
15135.1_HD (SIGN & PVMK).DWG Plotted on 10-Jan-2025 10:07 AM

MEDFORD
FOREST STREET (SALEM ST TO LAWRENCE RD)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	15	26
PROJECT FILE NO.	-		

SIGNAGE AND PAVEMENT MARKING PLAN





0 20 50 100
SCALE: 1" = 20'

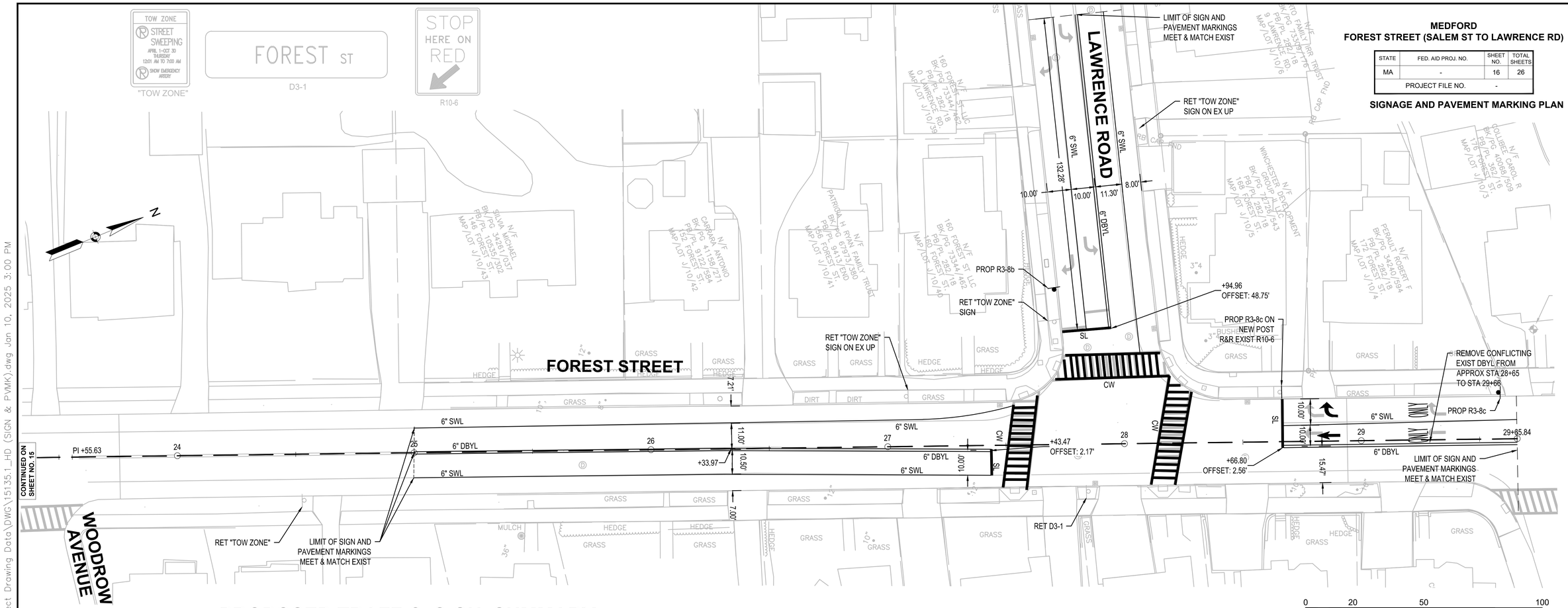
Nitsch – P:\15000-16999\15135.1 Forest St Medford\Transportation\CAD\15135.1 CAD\Project Drawing Data\DWG\15135.1_HD (SIGN & PVMK).dwg Jan 10, 2025 10:07 AM

15135.1_HD (SIGN & PVMK).DWG Plotted on 10-Jan-2025 10:07 AM

MEDFORD
FOREST STREET (SALEM ST TO LAWRENCE RD)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	16	26
PROJECT FILE NO.		-	

SIGNAGE AND PAVEMENT MARKING PLAN



PROPOSED TRAFFIC SIGN SUMMARY

IDENTIFICATION NUMBER	SIZE OF SIGN WIDTH	SIZE OF SIGN HEIGHT	TEXT	TEXT DIMENSIONS (INCHES) LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.	NUMBER OF SIGNS REQUIRED	COLOR BACK-GROUND	LEGEND	BORDER	POST SIZE AND NUMBER REQUIRED	UNIT AREA (S.F.)	AREA IN SQUARE FEET
R4-7	24"	30"		①	①	①	1	WHITE	BLACK	BLACK	0 REQ'D MOUNT ON SIGNAL POST	5.00	5.00
R4-7a	24"	30"	KEEP → RIGHT				1	WHITE	BLACK	BLACK	P-5 1 REQ'D	5.00	5.00
R7-1	24"	18"	NO PARKING ANY TIME				1	WHITE	RED	RED	P-5 1 REQ'D	3.00	3.00
R3-8a	30"	30"					1	WHITE	BLACK	BLACK	0 REQ'D MOUNT ON LP	6.25	6.25
R3-8b	30"	30"	ONLY ONLY				1	WHITE	BLACK	BLACK	P-5 1 REQ'D	6.25	6.25

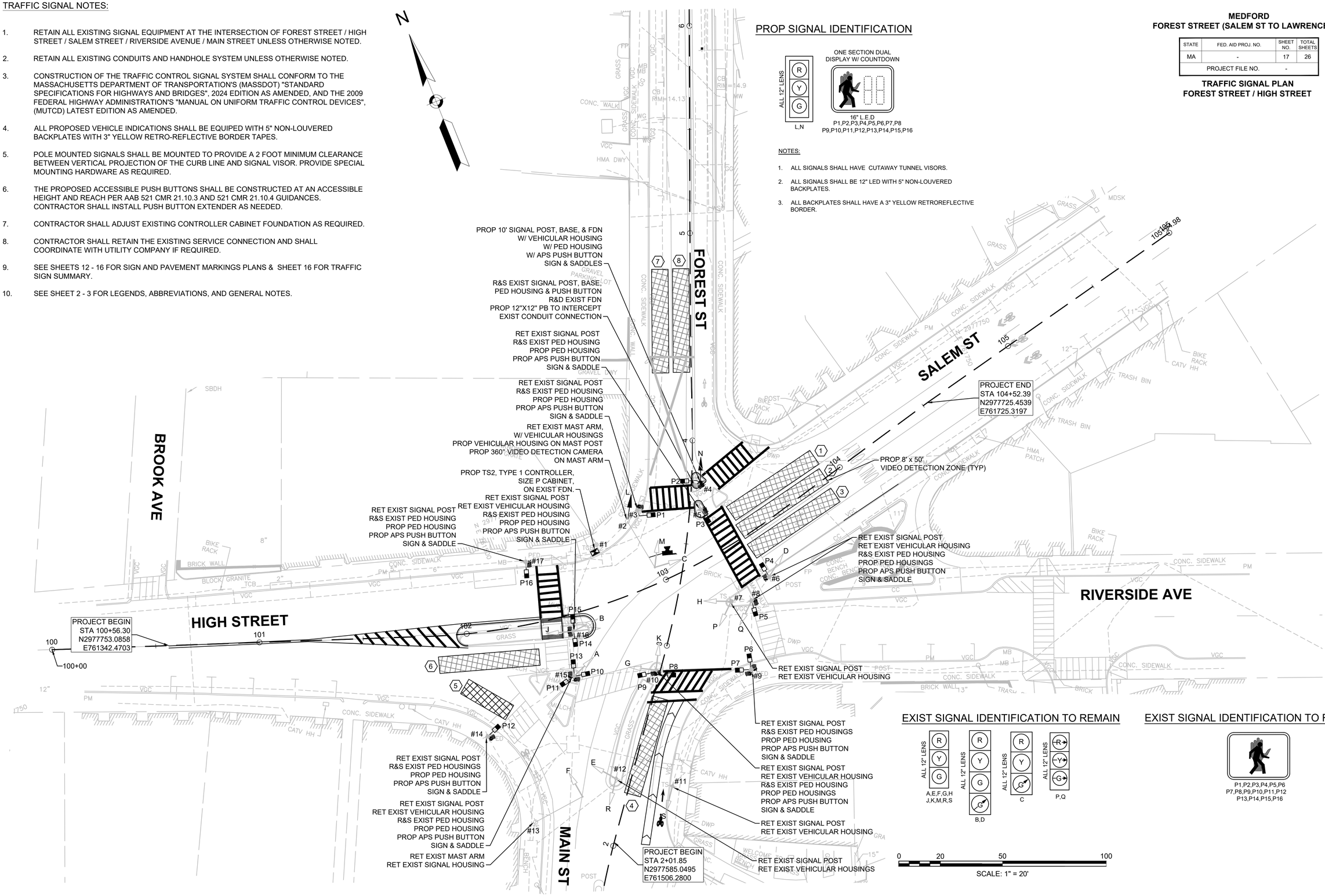
IDENTIFICATION NUMBER	SIZE OF SIGN WIDTH	SIZE OF SIGN HEIGHT	TEXT	TEXT DIMENSIONS (INCHES) LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.	NUMBER OF SIGNS REQUIRED	COLOR BACK-GROUND	LEGEND	BORDER	POST SIZE AND NUMBER REQUIRED	UNIT AREA (S.F.)	AREA IN SQUARE FEET
R3-8c	30"	30"	↑ ↱ ONLY ONLY	①	①	①	2	WHITE	BLACK	BLACK	P-5 2 REQ'D	6.25	12.50
S4-1P	24"	10"	7:00-9:00 AM 4:00-6:00 PM				1	WHITE	BLACK	BLACK	MOUNT W/ R3-8a 0 REQ'D	1.67	1.67
W8-30	30"	30"	SPEED TABLE				2	YELLOW	BLACK	BLACK	0 REQ'D MOUNT ON LP	6.25	12.50

① SEE MUTCD 2009 EDITION, THE 2012 SUPLEMENT TO THE 2004 EDITION OF THE STANDARD HIGHWAY SIGNS, SECTION M9.30.0 TYPE III OF THE MASSDOT STANDARD SPECIFICATION, THE CITY OF WALTHAM STANDARD DETAILS, AND THE MASSDOT STANDARD SIGN BOOK FOR TEXT DIMENSIONS AND COLOR.

Nitsch — P:\15000-16999\15135.1 Forest St Medford\Transportation\CAD\15135.1 CAD\Project Drawing Data\DWG\15135.1_HD (SIGN & PVMK).dwg Jan 10, 2025 3:00 PM
15135.1_HD (SIGN & PVMK).DWG Plotted on 10-Jan-2025 3:00 PM

TRAFFIC SIGNAL NOTES:

1. RETAIN ALL EXISTING SIGNAL EQUIPMENT AT THE INTERSECTION OF FOREST STREET / HIGH STREET / SALEM STREET / RIVERSIDE AVENUE / MAIN STREET UNLESS OTHERWISE NOTED.
2. RETAIN ALL EXISTING CONDUITS AND HANDHOLE SYSTEM UNLESS OTHERWISE NOTED.
3. CONSTRUCTION OF THE TRAFFIC CONTROL SIGNAL SYSTEM SHALL CONFORM TO THE MASSACHUSETTS DEPARTMENT OF TRANSPORTATION'S (MASSDOT) "STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES", 2024 EDITION AS AMENDED, AND THE 2009 FEDERAL HIGHWAY ADMINISTRATION'S "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", (MUTCD) LATEST EDITION AS AMENDED.
4. ALL PROPOSED VEHICLE INDICATIONS SHALL BE EQUIPED WITH 5" NON-LOUVERED BACKPLATES WITH 3" YELLOW RETRO-REFLECTIVE BORDER TAPES.
5. POLE MOUNTED SIGNALS SHALL BE MOUNTED TO PROVIDE A 2 FOOT MINIMUM CLEARANCE BETWEEN VERTICAL PROJECTION OF THE CURB LINE AND SIGNAL VISOR. PROVIDE SPECIAL MOUNTING HARDWARE AS REQUIRED.
6. THE PROPOSED ACCESSIBLE PUSH BUTTONS SHALL BE CONSTRUCTED AT AN ACCESSIBLE HEIGHT AND REACH PER AAB 521 CMR 21.10.3 AND 521 CMR 21.10.4 GUIDANCES. CONTRACTOR SHALL INSTALL PUSH BUTTON EXTENDER AS NEEDED.
7. CONTRACTOR SHALL ADJUST EXISTING CONTROLLER CABINET FOUNDATION AS REQUIRED.
8. CONTRACTOR SHALL RETAIN THE EXISTING SERVICE CONNECTION AND SHALL COORDINATE WITH UTILITY COMPANY IF REQUIRED.
9. SEE SHEETS 12 - 16 FOR SIGN AND PAVEMENT MARKINGS PLANS & SHEET 16 FOR TRAFFIC SIGN SUMMARY.
10. SEE SHEET 2 - 3 FOR LEGENDS, ABBREVIATIONS, AND GENERAL NOTES.



PROP SIGNAL IDENTIFICATION

NOTES:

1. ALL SIGNALS SHALL HAVE CUTAWAY TUNNEL VISORS.
2. ALL SIGNALS SHALL BE 12" LED WITH 5" NON-LOUVERED BACKPLATES.
3. ALL BACKPLATES SHALL HAVE A 3" YELLOW RETROREFLECTIVE BORDER.

MEDFORD
FOREST STREET (SALEM ST TO LAWRENCE RD)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	17	26
PROJECT FILE NO.		-	

TRAFFIC SIGNAL PLAN
FOREST STREET / HIGH STREET

EXIST SIGNAL IDENTIFICATION TO REMAIN

EXIST SIGNAL IDENTIFICATION TO R&S

P1,P2,P3,P4,P5,P6
P7,P8,P9,P10,P11,P12
P13,P14,P15,P16

0 20 50 100
SCALE: 1" = 20'

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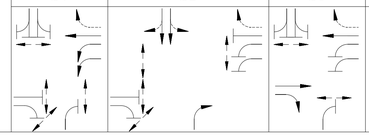
15135.1_HD (SIGNAL PLAN).DWG Plotted on 10-Jan-2025 10:12 AM

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	18	26
PROJECT FILE NO.		-	

TRAFFIC SIGNAL DATA SEQUENCE PLAN
FOREST STREET / LAWRENCE ROAD



Ø4	Ø5	Ø6	Ø7	Ø8
NOT USED	NOT USED	NOT USED	NOT USED	NOT USED

SEQUENCE AND TIMING FOR FULL ACTUATED CONTROL (ISOLATED)

STREET	DIRECTION	HOUSINGS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	FLASH OPER.
SALEM STREET	WB	A	G	Y	R	R	R	R	R	R	R	R	R																FY
SALEM STREET	WB	B,D	G/GR	Y	R	R	R	R	R	R	R/GR	R/GR	R/GR																FY
SALEM STREET	WB	C	GR	Y	R	R	R	R	R	R	GR	GR	GR																FY
HIGH STREET	EB	E,F,G,H,J	R	R	R	R	R	R	R	R	G	Y	R																FR
FOREST STREET	SB	K,L,M,N	R	R	R	G	G	G	Y	R	R	R	R																FR
MAIN STREET	NB	P,Q	RR	RR	RR	GR	GR	GR	YR	RR	RR	RR	RR																FRR
MAIN STREET	NB	R,S	R	R	R	G	Y	R	R	R	R	R	R																FR
PEDESTRIAN CROSSING	EB-WB	P1,P2	W/FDW	DW	DW	DW	DW	DW	DW	DW	W/FDW	DW	DW																OFF
PEDESTRIAN CROSSING	NB-SB	P3,P4	DW	DW	DW	W/FDW	FDW	DW	DW	DW	DW	DW	DW																OFF
PEDESTRIAN CROSSING	NB-SB	P5,P6	W/FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW																OFF
PEDESTRIAN CROSSING	EB-WB	P7-P10	DW	DW	DW	DW	DW	DW	DW	DW	W/FDW	DW	DW																OFF
PEDESTRIAN CROSSING	NB-SB	P11-P14	W/FDW	FDW	DW	W/FDW	FDW	FDW	DW	DW	DW	DW	DW																OFF
PEDESTRIAN CROSSING	NB-SB	P15,P16	DW	DW	DW	W/FDW	FDW	FDW	DW	DW	DW	DW	DW																OFF
TIMING IN SECONDS																													
MINIMUM GREEN (INITIAL)			10			15					10																		EMERGENCY ONLY
PASSAGE TIME (VEHICLE)			4			5					4																		
MAXIMUM 1			33			18	3	1			25																		
MAXIMUM 2			67			25	3	1			34																		
YELLOW CLEARANCE				3			3		3			3																	
RED CLEARANCE					3			1		5			3																
WALK (W)			7			15					9																		
PEDESTRIAN CLEARANCE			17			3	3	1			14																		
RECALL			MIN			OFF					OFF																		
MEMORY			NON-LOCKING			NON-LOCKING					NON-LOCKING																		

MAX 1: ALL OTHER TIMES
MAX 2: 6:00 AM - 10:00 AM
PEDESTRIAN SIGNALS REST IN WALK.
FOR PEDESTRIAN SIGNALS THAT SERVE A CROSSING DURING TWO ADJACENT PHASES, SIGNALS SHALL REMAIN IN WALK MODE AND SKIP THE FDW AND DW CLEARANCES FOR THE FIRST OF THOSE PHASES WHEN THE PEDESTRIAN SIGNAL IS CALLED IN BOTH PHASES.
APS PEDESTRIAN PUSHBUTTONS ON POSTS #10 & #16 SHALL HAVE DUAL ARROW INDICATIONS.

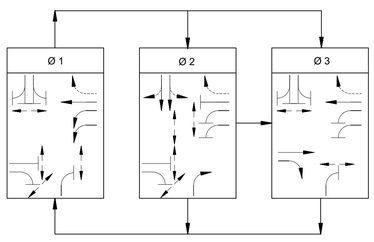
MAJOR ITEMS REQUIRED

PAY ITEM	QUANTITY	ITEM
816.01	1	TS2, TYPE 1 CONTROLLER & SIZE P CABINET ON EXIST FDN.
	1	10' SIGNAL POLE, BASE, & FDN.
	2	1 WAY, 3 SECTION, SIGNAL HOUSING (12" L.E.D.)
	2	5" 3-SECTION BACKPLATES (NON-LOUVERED) WITH 3" RETROREFLECTIVE BORDER
	16	16" PEDESTRIAN COUNTDOWN HOUSING, TYPE L.E.D. (INT'L SYMBOL)
	13	PEDESTRIAN PUSH BUTTON, SIGN & SADDLES (APS)
	1	VIDEO DETECTION SYSTEM (1 - 360° CAMERA)
811.31	1	12" X 12" PULL BOX
		Plus all necessary duct, cable, labor, miscellaneous
		material and equipment to complete the installation.

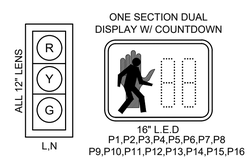
VIDEO DETECTOR DATA

DETECTOR NUMBER	DETECTION ZONE SIZE	Ø CALLED	Ø EXT.
1	8' X 50'	1	1
2	8' X 50'	1	1
3	8' X 50'	1	1
4	8' X 50'	2	2
5	8' X 50'	3	3
6	8' X 50'	3	3
7	8' X 50'	2	2
8	8' X 50'	2	2

PREFERENTIAL PHASING SEQUENCE



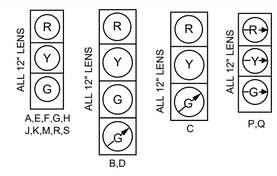
PROP SIGNAL IDENTIFICATION



NOTES:

1. ALL SIGNALS SHALL HAVE CUTAWAY TUNNEL VISORS.
2. ALL SIGNALS SHALL BE 12" LED WITH 5" NON-LOUVERED BACKPLATES.
3. ALL BACKPLATES SHALL HAVE A 3" YELLOW RETROREFLECTIVE BORDER.

EXIST SIGNAL IDENTIFICATION TO REMAIN



EXIST SIGNAL IDENTIFICATION TO R&S

P1,P2,P3,P4,P5,P6
P7,P8,P9,P10,P11,P12
P13,P14,P15,P16

Nitsch – P:\15000–16999\15135.1 Forest St Medford\Transportation\CAD\15135.1 CAD\Project Drawing Data\DWG\15135.1_HD (SIGNAL PLAN).dwg Jan 10, 2025 10:12 AM
15135.1_HD (SIGNAL PLAN).DWG Plotted on 10-Jan-2025 10:12 AM

TRAFFIC SIGNAL NOTES:

1. RETAIN ALL EXISTING SIGNAL EQUIPMENT AT THE INTERSECTION OF FOREST STREET / LAWRENCE ROAD UNLESS OTHERWISE NOTED.
2. RETAIN ALL EXISTING CONDUITS AND HANDHOLE SYSTEM UNLESS OTHERWISE NOTED.
3. CONSTRUCTION OF THE TRAFFIC CONTROL SIGNAL SYSTEM SHALL CONFORM TO THE MASSACHUSETTS DEPARTMENT OF TRANSPORTATION'S (MASSDOT) "STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES", 2024 EDITION AS AMENDED, AND THE 2009 FEDERAL HIGHWAY ADMINISTRATION'S "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", (MUTCD) LATEST EDITION AS AMENDED.
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5. THE PROPOSED ACCESSIBLE PUSH BUTTONS SHALL BE CONSTRUCTED AT AN ACCESSIBLE HEIGHT AND REACH PER AAB 521 CMR 21.10.3 AND 521 CMR 21.10.4 GUIDANCES. CONTRACTOR SHALL INSTALL PUSH BUTTON EXTENDER AS NEEDED.
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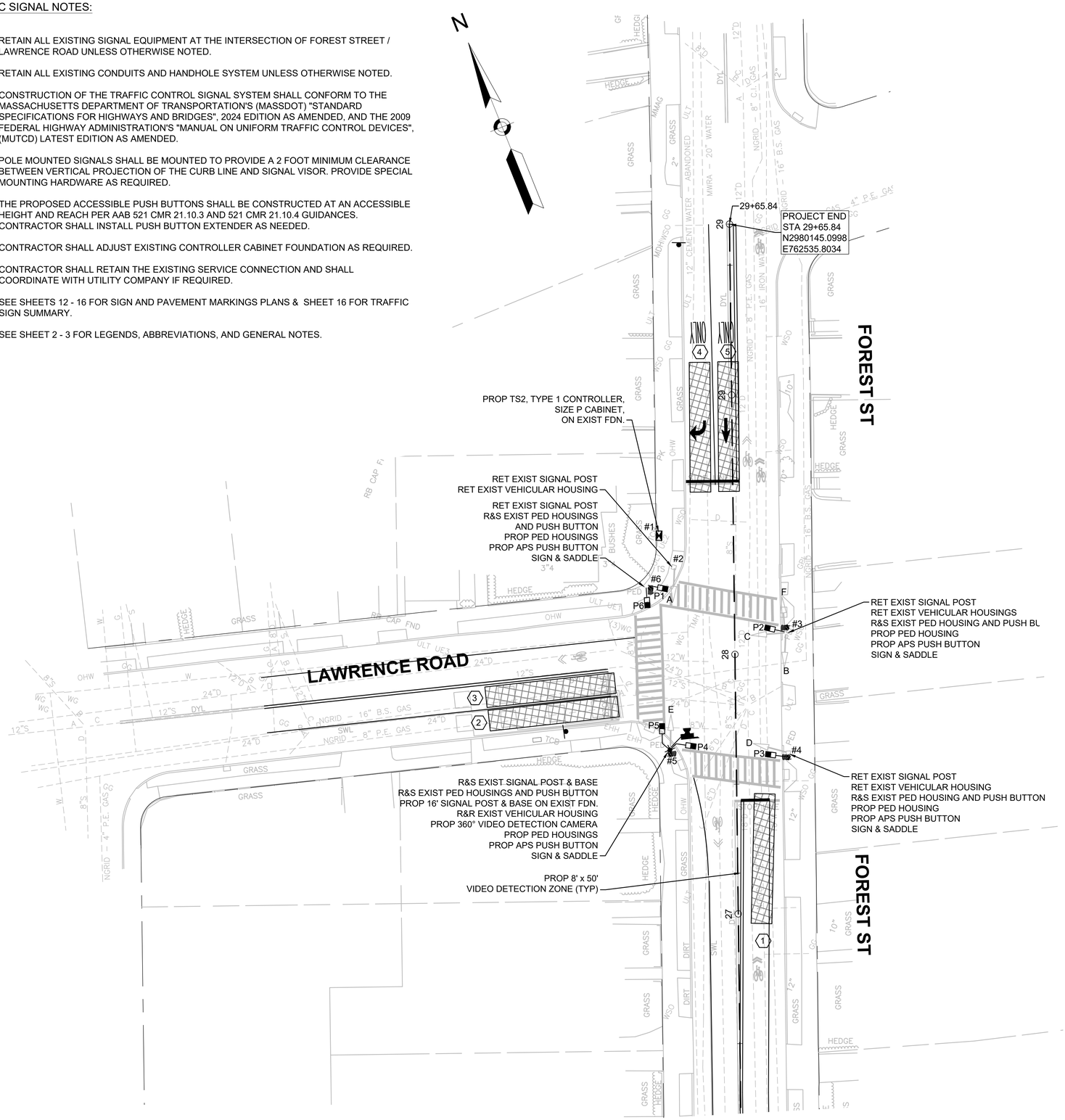
8. SEE SHEETS 12 - 16 FOR SIGN AND PAVEMENT MARKINGS PLANS & SHEET 16 FOR TRAFFIC SIGN SUMMARY.
9. SEE SHEET 2 - 3 FOR LEGENDS, ABBREVIATIONS, AND GENERAL NOTES.



MEDFORD
FOREST STREET (SALEM ST TO LAWRENCE RD)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	19	26
PROJECT FILE NO.		-	

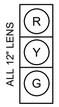
TRAFFIC SIGNAL PLAN
FOREST STREET / LAWRENCE ROAD

PROP SIGNAL IDENTIFICATION

ONE SECTION DUAL DISPLAY W/ COUNTDOWN

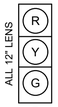
16" L.E.D
P1,P2,P3,P4,P5,P6

EXIST SIGNAL IDENTIFICATION TO REMAIN



A,B,C,D,F

EXIST SIGNAL IDENTIFICATION TO R&R



E

EXIST SIGNAL IDENTIFICATION TO R&S

P1,P2,P3,P6

P4,P5

0 20 50 100
SCALE: 1" = 20'

Nitsch – P:\15000-16999\15135.1 Forest St Medford\Transportation\CAD\15135.1 CAD\Project Drawing Data\DWG\15135.1_HD (SIGNAL PLAN).dwg Jan 10, 2025 10:12 AM

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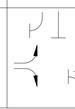
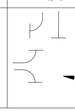
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	20	26
PROJECT FILE NO.		-	

TRAFFIC SIGNAL PLAN SEQUENCE PLAN
FOREST STREET / LAWRENCE ROAD

Ø 1	Ø 2	Ø 3	Ø 4	Ø 5	Ø 6	Ø 7	Ø 8	Ø 9*
NOT USED		NOT USED		NOT USED		NOT USED	NOT USED	(PED.)

SEQUENCE AND TIMING FOR FULL ACTUATED CONTROL (ISOLATED)

STREET	DIRECTION	HOUSINGS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	FLASH OPER.
FOREST STREET	NB	A,B				R	R	R				R	R	R				G	Y	R							R	R	R	FY
FOREST STREET	SB	E,F				G	Y	R				R	R	R				R	R	R							R	R	R	FY
LAWRENCE ROAD	EB	C,D				R	R	R				G	Y	R				R	R	R							R	R	R	FR
PEDESTRIAN CROSSING	EB-WB	P1,P2				DW	DW	DW				DW	DW	DW				DW	DW	DW							W	FDW	DW	OFF
PEDESTRIAN CROSSING	EB-WB	P3,P4				DW	DW	DW				DW	DW	DW				DW	DW	DW							W	FDW	DW	OFF
PEDESTRIAN CROSSING	NB-SB	P5,P6				DW	DW	DW				DW	DW	DW				DW	DW	DW							W	FDW	DW	OFF
TIMING IN SECONDS																														
MINIMUM GREEN (INITIAL)						15						13						15									-			EMERGENCY ONLY
PASSAGE TIME (VEHICLE)						4						4						4									-			
MAXIMUM 1						29						20						29									-			
MAXIMUM 2						20						29						20									-			
YELLOW CLEARANCE							3.5						3						3.5									-		
RED CLEARANCE								2.5						2						2.5									4	
WALK (W)																											7			
PEDESTRIAN CLEARANCE																												9		
RECALL						MIN						OFF						MIN									OFF			
MEMORY						NON-LOCKING						NON-LOCKING						NON-LOCKING									LOCKING			

MAX 1: ALL OTHER TIMES
MAX 2: 3:00 PM - 7:00 PM
*EXCLUSIVE PEDESTRIAN PHASE UPON PUSHBUTTON ACTUATION ONLY.

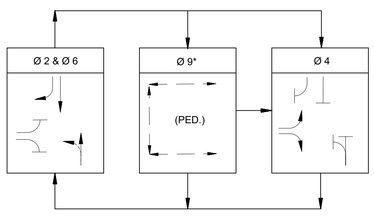
MAJOR ITEMS REQUIRED

PAY ITEM	QUANTITY	ITEM
816.02	1	TS2, TYPE 1 CONTROLLER & SIZE P CABINET ON EXIST FDN.
	1	16' SIGNAL POLE & BASE ON EXIST FDN.
	6	16" PEDESTRIAN COUNTDOWN HOUSING, TYPE L.E.D. (INT'L SYMBOL)
	4	PEDESTRIAN PUSH BUTTON, SIGN & SADDLES (APS)
	1	VIDEO DETECTION SYSTEM (1 - 360° CAMERA)
		Plus all necessary duct, cable, labor, miscellaneous
		material and equipment to complete the installation.

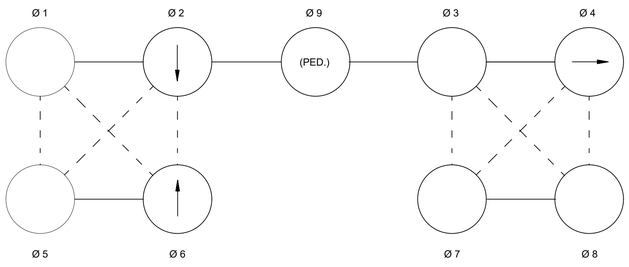
VIDEO DETECTOR DATA

DETECTOR NUMBER	DETECTION ZONE SIZE	Ø CALLED	Ø EXT.
1	8' X 50'	6	6
2	8' X 50'	4	4
3	8' X 50'	4	4
4	8' X 50'	2	2
5	8' X 50'	2	2

PREFERENTIAL PHASING SEQUENCE



NEMA DUAL RING PHASING NOTES:



NOTES:

1. PHASES ASSOCIATED BY A SOLID LINE SHALL NOT OPERATE CONCURRENTLY.
2. PHASES ASSOCIATED BY A DASHED LINE MAY OPERATE CONCURRENTLY.
3. THROUGH MOVEMENTS MAY INCLUDE RIGHT TURNS.
4. 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 SHALL NOT CHANGE DURING THE CHANGE INTERVAL(S) UNLESS OTHERWISE NOTED.

PROP SIGNAL IDENTIFICATION

ONE SECTION DUAL DISPLAY W/ COUNTDOWN

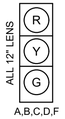
16" L.E.D
P1,P2,P3,P4,P5,P6

EXIST SIGNAL IDENTIFICATION TO R&S

P1,P2,P3,P6

P4,P5

EXIST SIGNAL IDENTIFICATION TO REMAIN



A,B,C,D,F

EXIST SIGNAL IDENTIFICATION TO R&R

E

1. ALL SIGNALS SHALL HAVE CUTAWAY TUNNEL VISORS.
2. ALL SIGNALS SHALL BE 12" LED WITH 5" NON-LOUVERED BACKPLATES.
3. ALL BACKPLATES SHALL HAVE A 3" YELLOW RETROREFLECTIVE BORDER.

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TRAFFIC MANAGEMENT NOTES:

1. ALL TRAFFIC MANAGEMENT AND WORK ZONE TRAFFIC CONTROL MEASURES SHALL CONFORM TO THE REQUIREMENTS OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) CURRENT EDITION WITH MASSACHUSETTS AMMENDMENTS, THE STANDARD SPECIFICATIONS, THE PROJECT SPECIAL PROVISIONS, AND THE FOLLOWING NOTES.
2. THE TRAFFIC MANAGEMENT PLANS CONTAINED HEREIN ARE GIVEN AS A GUIDE FOR TYPICAL WORK ZONE TRAFFIC CONTROL APPLICATIONS FOR THE TYPES OF WORK ANTICIPATED FOR THIS PROJECT. THEY ARE NOT INTENDED TO COVER ALL POSSIBLE CONSTRUCTION OPERATIONS WHICH THE CONTRACTOR MAY CHOOSE TO EMPLOY. WORK ZONE TRAFFIC CONTROL FOR OTHER CONSTRUCTION OPERATIONS OR OTHER TRAFFIC SITUATIONS IF APPLICABLE SHALL BE IN ACCORDANCE WITH THE MUTCD AND AS APPROVED OR DIRECTED BY THE ENGINEER.
3. NO CONSTRUCTION VEHICLES SHALL BE PARKED WITHIN THE TRAVEL WAY WITHOUT PROPER PROTECTION AND APPROVAL OF THE ENGINEER.
4. TEMPORARY CONSTRUCTION SIGNING AND ALL OTHER TRAFFIC CONTROL DEVICES SHALL BE IN PLACE PRIOR TO THE START OF ANY WORK.
5. ALL WARNING SIGNS SHALL BE BLACK LEGEND ON A REFLECTIVE ORANGE BACKGROUND AND IN ACCORDANCE WITH THE MUTCD. ALL REGULATORY SIGNS SHALL BE BLACK LEGEND ON A WHITE REFLECTIVE BACKGROUND. ALL CONSTRUCTION SIGNS SHALL BE ATTACHED TO THEIR OWN INDEPENDENT SUPPORTS UNLESS SHOWN OTHERWISE.
6. THE CONTRACTOR SHALL MAKE EVERY EFFORT TO AVOID PLACING TEMPORARY TRAFFIC CONTROL DEVICES ON PRIVATE PROPERTY. IF SUCH PLACEMENT ON PRIVATE PROPERTY IS UNAVOIDABLE, IT SHALL BE DONE WITH THE EXPLICIT APPROVAL OF THE PROPERTY OWNER AND THE ENGINEER.
7. ABUTTER ACCESS SHALL NOT BE CLOSED EXCEPT FOR SHORT PERIODS AND ONLY WITH THE APPROVAL OF THE ENGINEER. THE CONTRACTOR 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.
8. THE CONTRACTOR SHALL PROVIDE IMMEDIATE ACCESS TO EMERGENCY VEHICLES AT ALL TIMES.
9. GRADE DIFFERENCES IN EXCESS OF 2" DURING NON-WORKING HOURS WILL REQUIRE DELINEATION BY USE OF DRUMS.
10. GRADE DIFFERENCES IN EXCESS OF 4" DURING NON-WORKING HOURS SHALL BE PROTECTED BY BACKFILLING WITH A TRANSITION OF GRAVEL OR OTHER MATERIAL TO BE COMPACTED AT A 4:1 SLOPE, AND DELINEATED BY DRUMS.
11. CONSTRUCTION SIGNS NOT APPLICABLE TO VARIOUS STAGES OF CONSTRUCTION SHALL BE REMOVED OR COVERED.
12. USE MA-W20-7b SIGNS ONLY WHEN POLICE OFFICER IS DIRECTING TRAFFIC. THEY SHALL BE TAKEN DOWN OR COVERED AT THE CLOSE OF EACH OPERATION.
13. MAINTAIN PEDESTRIAN ACCESS THROUGH THE WORK AREA AT ALL TIMES. THE POLICE DETAIL SHALL PROVIDE CONTROL TO CROSS PEDESTRIANS ON ROADWAY TO SIDEWALK. PROVIDE TEMPORARY CROSSWALKS AND RAMPS AS NEEDED AND AS DIRECTED BY THE ENGINEER.
14. ALL CONSTRUCTION SIGNING AND OTHER TRAFFIC MAINTENANCE DEVICES SHALL CONFORM WITH THE 2009 MUTCD AS AMENDED, MASH, AND MASSDOT STANDARDS.
15. ADVANCE WARNING SIGNS NO LONGER APPLICABLE, WHICH MIGHT CREATE CONFUSION IN THE MINDS OF VEHICLE OPERATORS, SHALL EITHER BE COVERED OR REMOVED AS SOON AS POSSIBLE. NO SIGN SHALL BE VISIBLE TO TRAFFIC THAT MAY CONFLICT WITH ACTUAL ROADWAY CONDITIONS.
16. ALL DISTANCES MAY BE ADJUSTED TO FIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.HOWEVER, MINIMUM DISTANCES, WHERE INDICATED, SHOULD BE MAINTAINED.
17. THE CONTRACTOR SHALL USE TEMPORARY PATCHING OR BEVELED STEEL PLATES TO COVER PIPE TRENCHES AND OTHER EXCAVATED HOLES NOT COMPLETED BY THE END OF EACH WORK DAY.
18. 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).
19. MINIMUM LANE WIDTH IS TO BE 11 FEET UNLESS OTHERWISE SHOWN. MINIMUM LANE WIDTH WILL BE MEASURED FROM THE EDGE OF DRUMS OR CONES OR MEDIAN BARRIER.
20. ORANGE CONSTRUCTION FLAGS MAY BE USED ON ADVANCE WARNING SIGNS AS DIRECTED BY THE ENGINEER. FLAGS SHALL BE A MINIMUM OF 16" X 16".
21. MAINTAIN EXISTING PAVEMENT MARKINGS WHERE APPLICABLE. WHEN LANES SHIFT, IF NECESSARY, EXISTING MARKINGS SHALL BE REMOVED AND TEMPORARY PAVEMENT MARKING SHALL BE PROVIDED.
22. AT THE END OF EACH WORK DAY, NO TRAFFIC CONTROL DEVICES SHALL REMAIN IN THE ROADWAY AND ALL LANES SHALL BE OPEN FOR TRAFFIC FLOW.
23. THE CONTRACTOR MAY PROPOSE TO USE A DIFFERENT SEQUENCE OF WORK AREAS THAN WHAT IS BEING PROPOSED IN THESE DOCUMENTS. THE CONTRACTOR SHALL SUBMIT PHASING AND TRAFFIC MANAGEMENT PLANS FOR APPROVAL BY THE ENGINEER.
24. DISTANCES ARE A GUIDE AND MAY BE ADJUSTED IN THE FIELD BY THE ENGINEER.
25. MAXIMUM SPACING OF TRAFFIC DEVICES IN A TAPER (DRUMS OR CONES) IS EQUAL IN FEET TO THE SPEED LIMIT IN MPH. (20' SPACING TYPICAL ON TAPER, 35' SPACING TYPICAL ON TANGENTS.)
26. CHANNELIZATION WILL BE ACCOMPLISHED THROUGH THE USE OF REFLECTORIZED PLASTIC DRUMS WITH SEQUENTIAL FLASHING WARNING LIGHTS.
27. THE FIRST TEN PLASTIC DRUMS OF A TAPER SHALL BE MOUNTED WITH SEQUENTIAL FLASHING WARNING LIGHTS.
28. ALL SIGNS SHALL BE MOUNTED ON THEIR OWN STANDARD SIGN SUPPORTS.
29. POLICE DETAIL SHALL BE USED WHILE SETTING UP THE TEMPORARY TRAFFIC CONTROL DEVICES ON THE ROADWAY.
30. EACH WORK ZONE SHALL HAVE MA-R2-10a, MA-R2-10e, AND W-20 SERIES SIGNS WHERE APPLICABLE.
31. POLICE DETAILS SHALL BE EMPLOYED AND SHALL BE SUBSTITUTED WITH CERTIFIED ROADWAY FLAGGERS AS DIRECTED BY THE ENGINEER AND PER SECTION 850 "TRAFFIC CONTROLS FOR CONSTRUCTION AND MAINTENANCE OPERATIONS" IN THE MASSDOT SUPPLEMENTAL SPECIFICATIONS DATED JUNE 12, 2012.
32. THE ADVISORY SPEED LIMIT, IF REQUIRED, SHALL BE DETERMINED BY THE ENGINEER.
33. ALL DRIVEWAYS AND STREETS SHALL REMAIN OPEN AT ALL TIMES EXCEPT FOR SHORT PERIODS AS APPROVED BY THE ENGINEER.

SUGGESTED WORK ZONE WARNING SIGN SPACING

ROAD TYPE	DISTANCE BETWEEN SIGNS **		
	A	B	C
LOCAL OR LOW VOLUME ROADWAYS*	350 (100)	350 (100)	350 (100)
MOST OTHER ROADWAYS*	500 (150)	500 (150)	500 (150)
FREEWAYS AND EXPRESSWAYS*	1,000 (300)	1,500 (450)	2,640 (800)

* ROAD TYPE TO BE DETERMINED BY CITY OR ENGINEER.

** DISTANCES ARE SHOWN IN FEET (METERS). 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.

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

MA-R2-10a, MA-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.(15 m) 100 FT(30 m) MAX.
DOWNSTREAM TAPER	50 FT MIN.(15 m) 100 FT MAX.(30 m) 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 ANTICAPATED OPERATING SPEED IN MPH (KM/H)

STOPPING SIGHT DISTANCE AS A FUNCTION OF SPEED

SPEED* (mph)	DISTANCE (ft)
20	115
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645
70	730
75	820

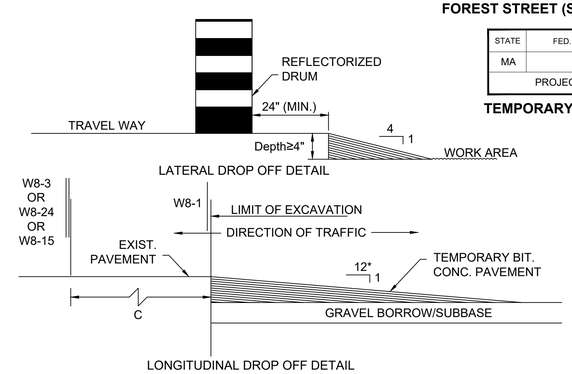
*POSTED SPEED, OFF-PEAK 85TH-PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED

THESE VALUES MAY BE USED TO DETERMINE THE LENGTH OF LONGITUDINAL BUFFER SPACES.

THE DISTANCES IN THE ABOVE CHART REPRESENT THE MINIMAL VALUES FOR BUFFER SPACING.

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
- MEDIAN BARRIER
- MEDIAN BARRIER WITH WARNING LIGHTS
- WORK VEHICLE
- TRUCK MOUNTED ATTENUATOR
- TRAFFIC OR PEDESTRIAN SIGNAL
- SIGN



* - INCREASE SLOPE RATIO FOR HIGHER SPEEDS

MEDFORD
FOREST STREET (SALEM ST TO LAWRENCE RD)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	21	26
PROJECT FILE NO.		-	

TEMPORARY TRAFFIC CONTROL PLAN

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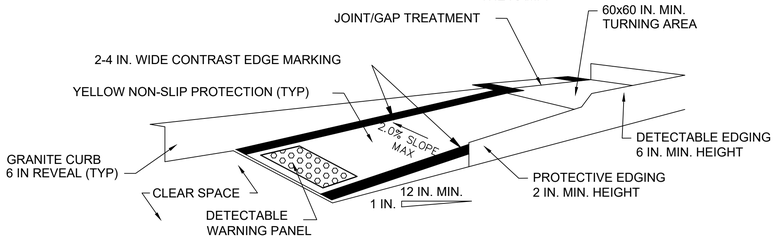
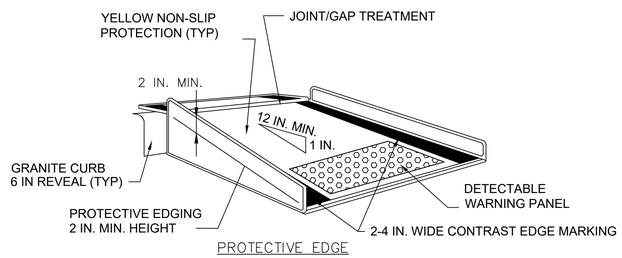
NOTES:

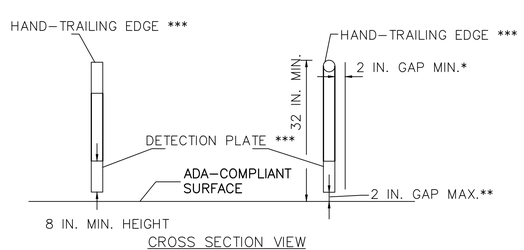
1. CURB RAMPS SHALL BE 60 IN. MINIMUM WIDTH WITH A FIRM, STABLE AND NON-SLIP SURFACE.
2. PROTECTIVE EDGING WITH A 2 IN. MINIMUM HEIGHT SHALL BE INSTALLED WHEN THE CURB RAMP OR LANDING PLATFORM HAS A VERTICAL DROP OF 6 IN. OR GREATER OR HAS A SIDE APRON SLOP STEEPER THAN 1:3 (33%). PROTECTIVE EDGING SHOULD BE CONSIDERED WHEN THE CURB RAMPS OR LANDING PLATFORMS HAVE A VERTICAL DROP OF 3 IN. OR MORE.
3. DETECTABLE EDGING WITH 6 IN. MINIMUM HEIGHT AND CONTRASTING COLOR SHALL BE INSTALLED ON ALL CURB RAMP LANDINGS WHERE THE WALKWAY CHANGES DIRECTION (TURNS).
4. THE CURB RAMP WALKWAY AND LANDING AREA SURFACE SHALL BE OF A SOLID CONTINUOUS CONTRASTING COLOR ABUTTING UP TO THE EXISTING SIDEWALK.
5. CURB RAMPS AND LANDINGS SHOULD HAVE A 1:50 (2%) MAX CROSS-SLOPE.
6. CLEAR SPACE OF 48x48 IN. MINIMUM SHALL BE PROVIDED ABOVE AND BELOW THE CURB RAMP.
7. WATER FLOW IN THE GUTTER SYSTEM SHALL HAVE MINIMAL RESTRICTION.
8. LATERAL JOINTS OR GAPS BETWEEN SURFACES SHALL BE LESS THAN 0.5 IN. WIDTH.
9. 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.
10. 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.



TEMPORARY CURB RAMP-PARALLEL TO CURB



TEMPORARY CURB RAMP-PERPENDICULAR TO CURB



PEDESTRIAN CHANNELIZING DEVICE

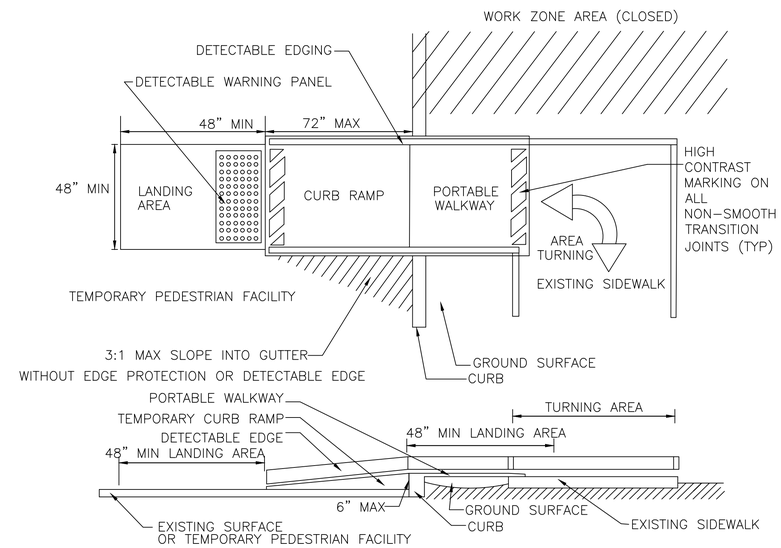
NOTES:

* THERE SHALL BE A 2 INCH GAP BETWEEN THE HAND-TRAILING EDGE AND ITS SUPPORT.
** A MAXIMUM 2 INCH GAP BETWEEN THE BOTTOM OF THE BOTTOM RAIL AND THE SURFACE MAY BE USED TO PROVIDE DRAINAGE.
*** THE HAND-TRAILING EDGE AND DETECTION PLATE SHALL BE CONTINUOUS THROUGHOUT THE LENGTH OF THE PATH SUCH THAT A PEDESTRIAN USER WITH A LONG CANE CAN FOLLOW IT.

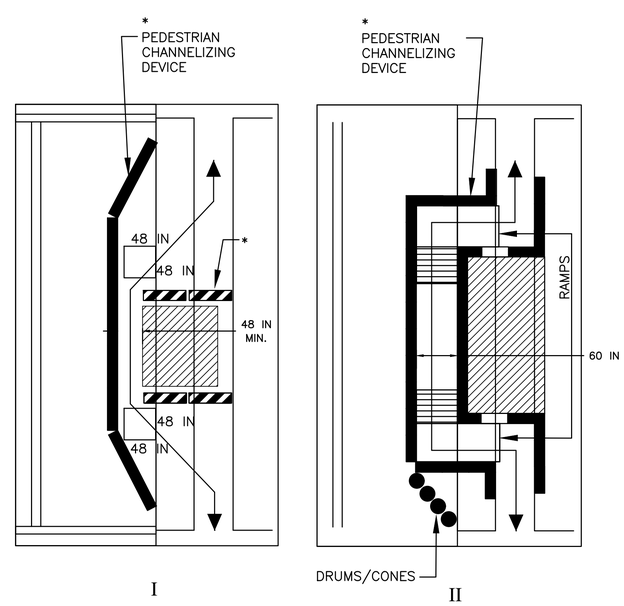
MEDFORD
FOREST STREET (SALEM ST TO LAWRENCE RD)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	22	26
PROJECT FILE NO.		-	

TEMPORARY TRAFFIC CONTROL PLAN



TEMPORARY CURB RAMP – TYPE 2



TEMPORARY PEDESTRIAN DELINEATION DETAILS

- 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.

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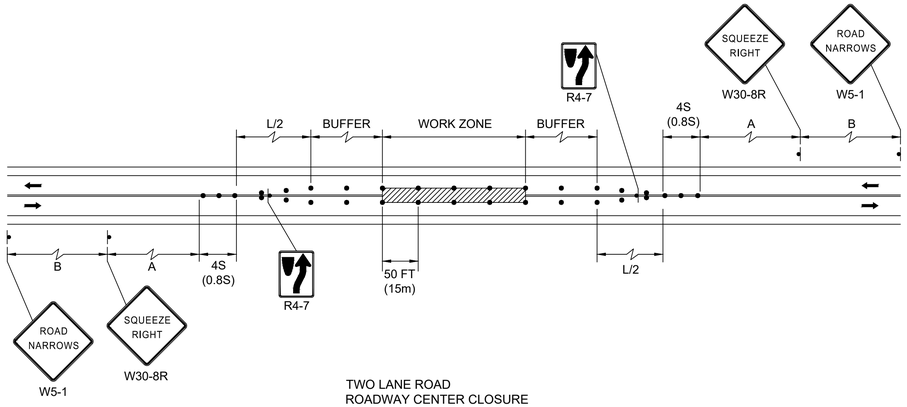
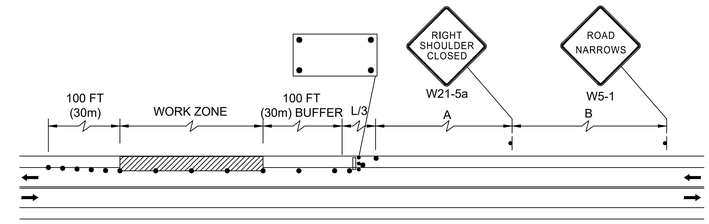
MEDFORD
FOREST STREET (SALEM ST TO LAWRENCE RD)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	23	26
PROJECT FILE NO.		-	

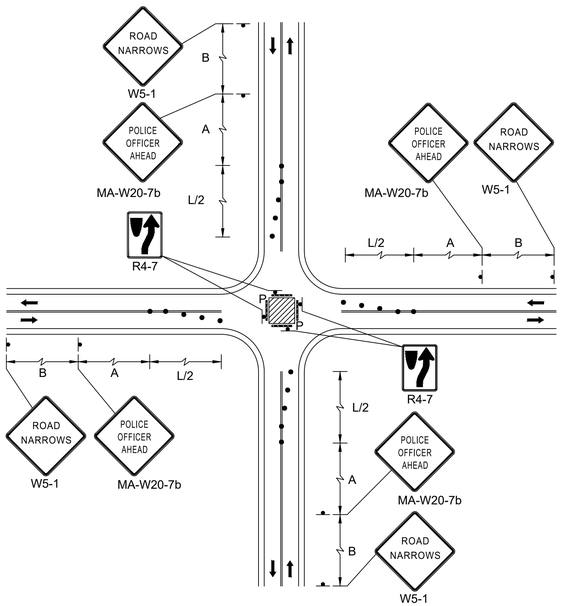
TEMPORARY TRAFFIC CONTROL PLAN



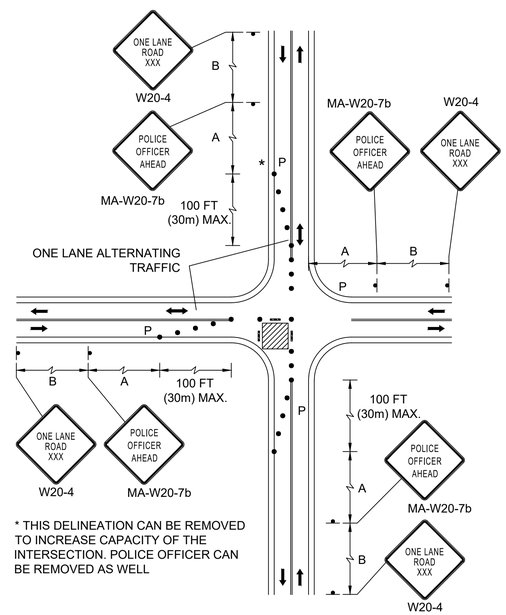
TWO LANE ROAD
ROADWAY CENTER CLOSURE



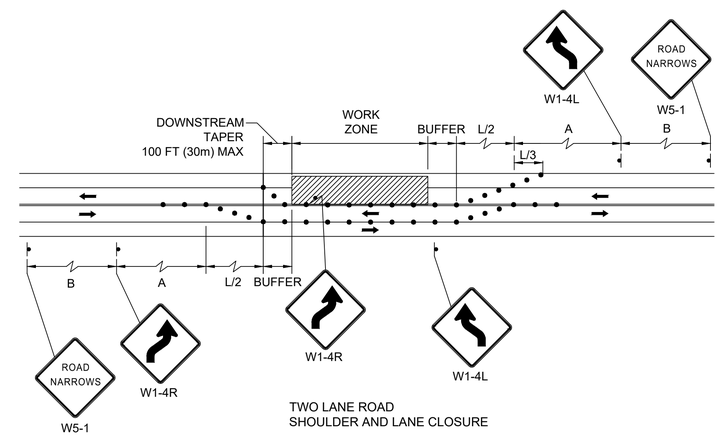
TWO LANE ROAD
SHOULDER CLOSURE



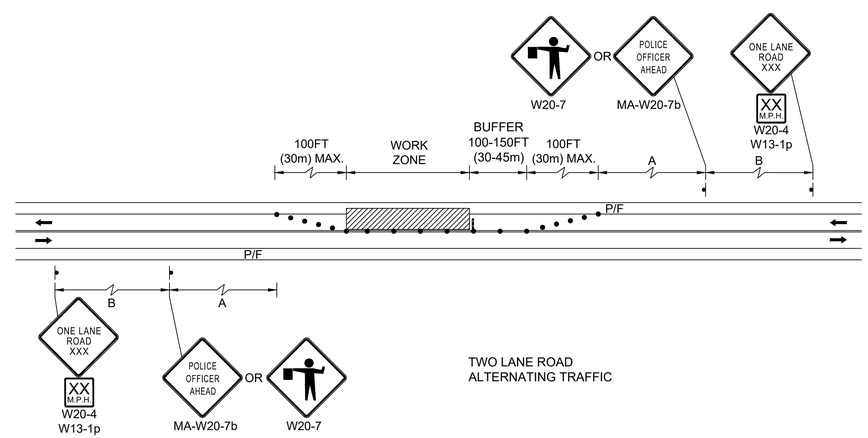
SINGLE LANE APPROACH INTERSECTION
CENTER CLOSURE



* THIS DELINEATION CAN BE REMOVED TO INCREASE CAPACITY OF THE INTERSECTION. POLICE OFFICER CAN BE REMOVED AS WELL



TWO LANE ROAD
SHOULDER AND LANE CLOSURE



TWO LANE ROAD
ALTERNATING TRAFFIC

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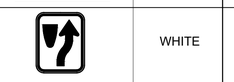
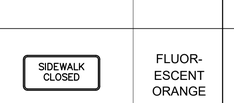
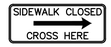
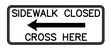
CONSTRUCTION SIGN SUMMARY

MEDFORD
FOREST STREET (SALEM ST TO LAWRENCE RD)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	24	26
PROJECT FILE NO.		-	

TEMPORARY TRAFFIC CONTROL PLAN

IDENTIFICATION NUMBER	SIZE OF SIGN		SIGN DIAGRAM	COLOR			# REQ'D *	UNIT AREA S.F.	AREA IN SQUARE FEET
	WIDTH	HEIGHT		BACK-GROUND	LEGEND	BORDER			
W1-4L	36"	36"		FLUOR-ESCENT ORANGE	BLACK	BLACK	3	9.00	27.00
W1-4R	36"	36"		FLUOR-ESCENT ORANGE	BLACK	BLACK	3	9.00	27.00
W5-1	36"	36"		FLUOR-ESCENT ORANGE	BLACK	BLACK	3	9.00	27.00
W13-1p	24"	24"		FLUOR-ESCENT ORANGE	BLACK	BLACK	3	4.00	12.00
W20-1	36"	36"		FLUOR-ESCENT ORANGE	BLACK	BLACK	3	9.00	27.00
W20-4	36"	36"		FLUOR-ESCENT ORANGE	BLACK	BLACK	3	9.00	27.00
W20-5L	36"	36"		FLUOR-ESCENT ORANGE	BLACK	BLACK	3	9.00	27.00
MA-W20-7b	36"	36"		FLUOR-ESCENT ORANGE	BLACK	BLACK	3	9.00	27.00

IDENTIFICATION NUMBER	SIZE OF SIGN		SIGN DIAGRAM	COLOR			# REQ'D *	UNIT AREA S.F.	AREA IN SQUARE FEET
	WIDTH	HEIGHT		BACK-GROUND	LEGEND	BORDER			
MA-R2-10a	48"	36"		FLUOR-ESCENT ORANGE / WHITE	BLACK / BLACK	BLACK / BLACK	3	12.00	36.00
MA-R2-10e	36"	48"		FLUOR-ESCENT ORANGE / WHITE	BLACK / BLACK	BLACK / BLACK	3	12.00	36.00
R4-7	24"	30"		WHITE	BLACK	BLACK	3	5.00	15.00
R9-9	24"	12"		FLUOR-ESCENT ORANGE	BLACK	BLACK	2	2.00	4.00
R9-11aR	24"	12"		FLUOR-ESCENT ORANGE	BLACK	BLACK	2	2.00	4.00
R9-11aL	24"	12"		FLUOR-ESCENT ORANGE	BLACK	BLACK	2	2.00	4.00
W11-2	36"	36"		FLUOR-ESCENT ORANGE	BLACK	BLACK	4	9.00	36.00
W16-7p	24"	12"		FLUOR-ESCENT ORANGE	BLACK	BLACK	4	2.00	8.00
W30-8R	36"	36"		FLUOR-ESCENT ORANGE	BLACK	BLACK	2	9.00	18.00

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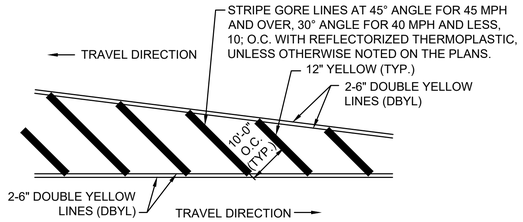
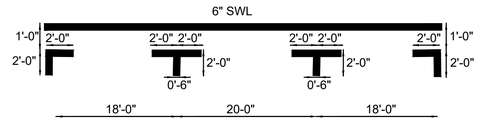
MEDFORD
FOREST STREET (SALEM ST TO LAWRENCE RD)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	25	26
PROJECT FILE NO.		-	

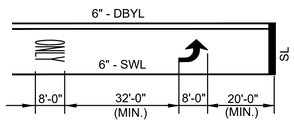
CONSTRUCTION DETAILS



TYPICAL GORE MARKINGS
NOT TO SCALE

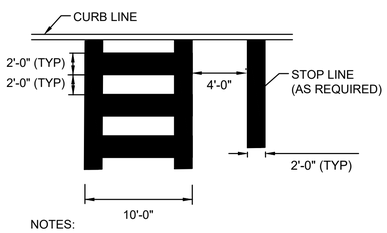


TYPICAL PARKING STALL DETAIL
NOT TO SCALE



ARROW SHALL BE POINTED RIGHT FOR RIGHT TURN ONLY.

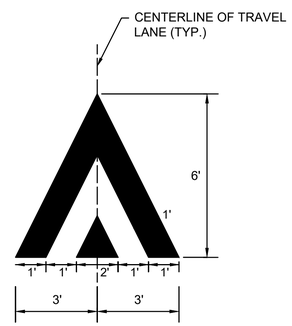
DIMENSION FOR TYPICAL PAVEMENT MARKINGS
NOT TO SCALE



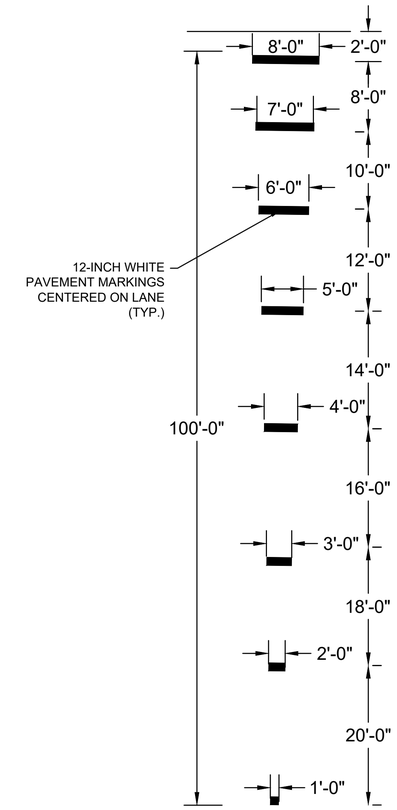
NOTES:

1. ALL PROPOSED STOP LINES AND CROSSWALKS SHALL BE WHITE REFLECTORIZED THERMOPLASTIC.

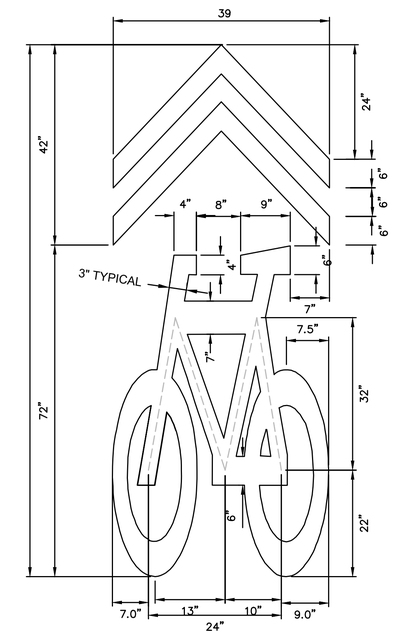
HIGH VISIBILTY CROSSWALK & STOP LINE
NOT TO SCALE



SPEED HUMP AND RAISED CROSSWALK PAVEMENT MARKING SYMBOL
NOT TO SCALE



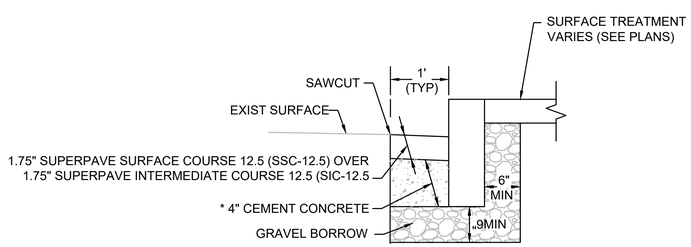
ADVANCED WARNING MARKINGS FOR SPEED HUMPS
NOT TO SCALE



SHARED LANE SYMBOL PLACEMENT NOTES:

1. SHARED LANE MARKING SYMBOLS SHALL BE PLACED SO THAT THE CENTER IS 4 FEET FROM THE ADJACENT SOLID WHITE EDGE LINE.
2. DO NOT PLACE SYMBOLS ON LANE LINES.
3. SHARED LANE SYMBOLS SHALL BE PLACED A MAXIMUM OF 500 FEET APART.

SHARED LANE MARKING DETAIL
NOT TO SCALE



* COST OF CEMENT CONCRETE INCLUDED IN CURBING

GRANITE CURB IN EXISTING PAVEMENT
NOT TO SCALE

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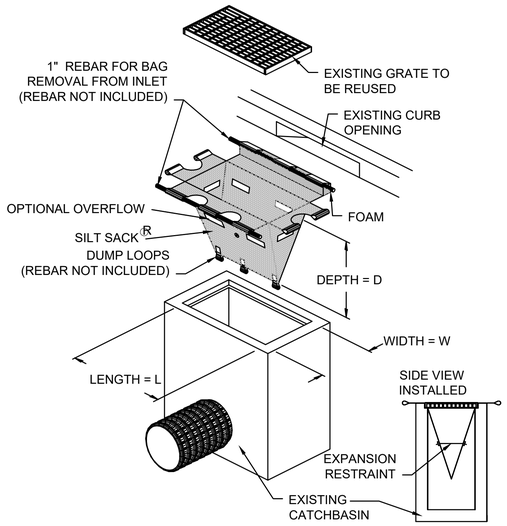
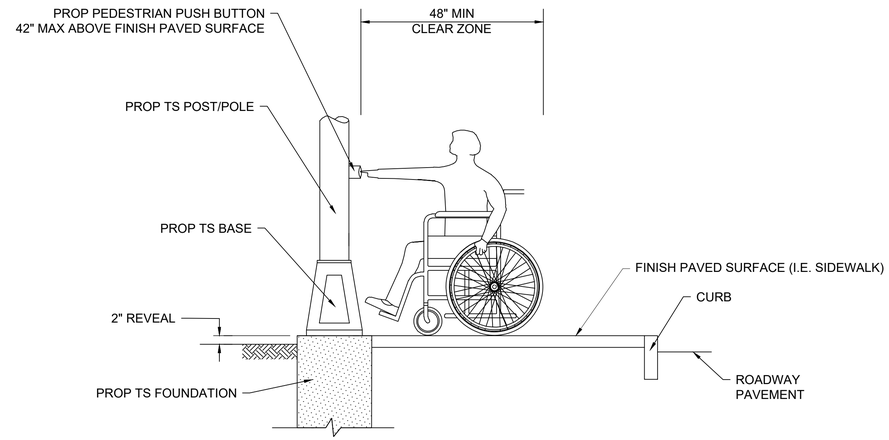
MEDFORD
FOREST STREET (SALEM ST TO LAWRENCE RD)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	26	26
PROJECT FILE NO.		-	

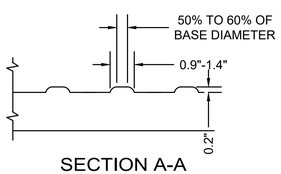
CONSTRUCTION DETAILS



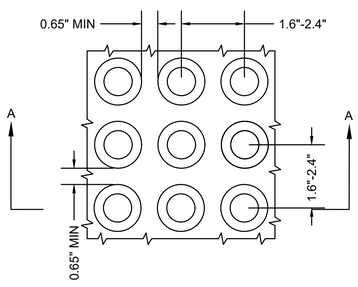
CATCH BASIN W/ SILTSACK INLET PROTECTION
NOT TO SCALE



FORWARD APPROACH (SIDE REACH)
NOT TO SCALE



SECTION A-A

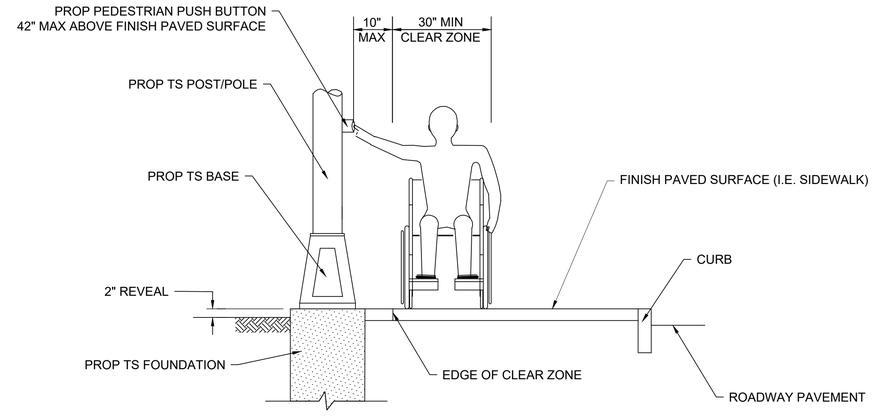


DETECTABLE WARNING PANEL

NOTES:

1. DETECTABLE WARNING PANELS SHALL BE PERMANENTLY APPLIED TO THE RAMP.
2. DETECTABLE WARNING PANELS SHALL CONTRAST VISUALLY WITH THE ADJACENT WALKWAY SURFACES PER THE FOLLOWING COLOR SCHEDULE:
   - PALE YELLOW ON CEMENT CONCRETE PEDESTRIAN RAMPS
3. DETECTABLE WARNING PANELS SHALL BE AS MANUFACTURED BY ADA SOLUTIONS, INC. OF NORTH BILLERICA, MA OR AN APPROVED EQUAL.
4. DETECTABLE WARNING PANELS SHALL BE INSTALLED PER THE MANUFACTURER'S RECOMMENDATIONS.

DETECTABLE WARNING PANEL FOR PEDESTRIAN RAMPS DETAIL
NOT TO SCALE



PARALLELL APPROACH (SIDE REACH)

NOTES:

1. A CLEAR GROUND SPACE SHALL CONSIST OF A STABLE AND FIRM AREA, COMPLYING WITH 521 CMR 6.5 (FORWARD REACH) OR 521 CMR 6.6 (SIDE REACH) AND SHALL BE PROVIDED AT EACH OF THE PEDESTRIAN PUSH BUTTONS.
   1.1. WHERE A FORWARD APPROACH IS PROVIDED, PEDESTRIAN PUSH BUTTONS SHALL BE WITHIN TEN INCHES (10") HORIZONTALLY OF AND CENTERED ON THE CLEAR GROUND SPACE.
   1.2. WHERE A PARALLEL APPROACH IS PROVIDED, PEDESTRIAN PUSH BUTTONS SHALL BE WITHIN TEN INCHES (10") HORIZONTALLY OF AND CENTERED ON THE CLEAR GROUND SPACE.

PEDESTRIAN PUSH BUTTON CLEAR ZONE
NOT TO SCALE

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