

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION HIGHWAY DIVISION

PLAN AND PROFILE OF

CORRIDOR IMPROVEMENTS ON WASHINGTON STREET (ROUTE 138)

IN THE TOWN OF

STOUGHTON

NORFOLK COUNTY

FEDERAL AID PROJECT NO.

STOUGHTON WASHINGTON STREET (ROUTE 138)			
STATE	FED. AID PROJ. NO.	sheet no.	total sheets
MA	-	1	104
PROJECT FILE NO. 607403			
TITLE SHEET & INDEX			

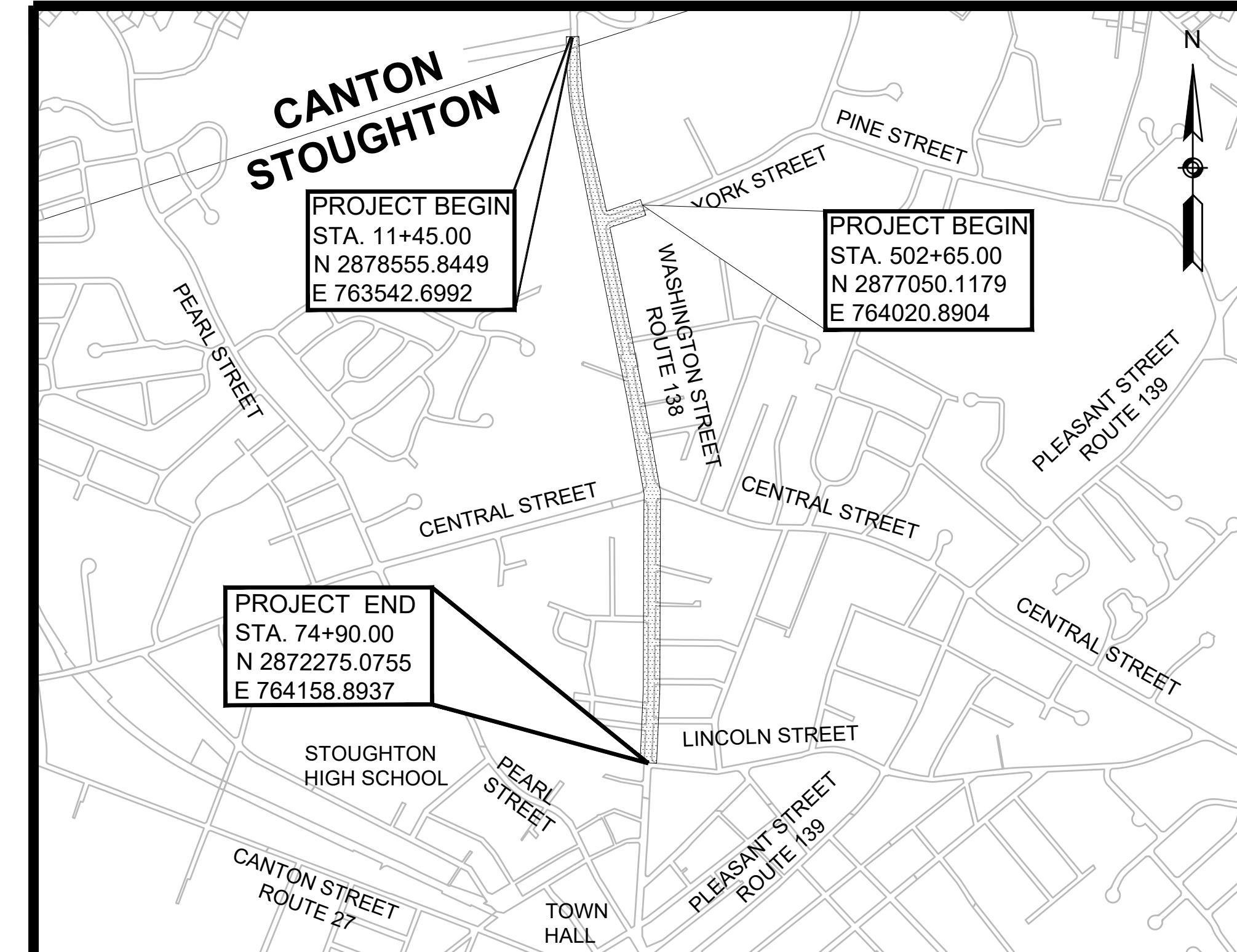
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THESE PLANS ARE SUPPLEMENTED BY THE OCTOBER 2017 CONSTRUCTION STANDARD DETAILS, THE 2015 OVERHEAD SIGNAL STRUCTURE AND FOUNDATION STANDARD DRAWINGS, MASSDOT TRAFFIC MANAGEMENT PLANS AND DETAIL DRAWINGS, THE 1990 STANDARD DRAWINGS FOR SIGNS AND SUPPORTS,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

25% RE- SUBMITTAL

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0 1,000 2,000 3,000 4,000
SCALE: 1" = 1,000'

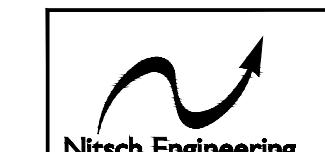
LENGTH OF PROJECT = 6,345.00 FEET = 1.202 MILES

DESIGN DESIGNATION (WASHINGTON STREET (ROUTE 138))

DESIGN SPEED	40/50 MPH
ADT (2017)	23,394
ADT (2027)	25,842
K	7.5%
D	52% NB
T (PEAK HOUR)	4.6%
T (AVERAGE DAY)	3.8%
DHV	1,940
DDHV	1,331
FUNCTIONAL CLASSIFICATION	URBAN PRINCIPAL ARTERIAL

DESIGN DESIGNATION (YORK STREET)

DESIGN SPEED	30 MPH
ADT (2017)	5,229
ADT (2027)	5,776
K	8.8%
D	50% WB
T (PEAK HOUR)	4.7%
T (AVERAGE DAY)	3.0%
DHV	506
DDHV	324
FUNCTIONAL CLASSIFICATION	URBAN COLLECTOR

 Nitsch Engineering	www.nitscheng.com 2 Center Plaza, Suite 430 Boston, MA 02108 T: (617) 338-0065 F: (617) 338-6472	
	Civil Engineering	Land Surveying
	Structural Engineering	Transportation
Geotechnical	Planning	
Geospatial	Codes	
10/9/20 25% RESUBMISSION		
12/21/18 25% SUBMISSION		
DATE	DESCRIPTION	REV #
 Massachusetts Department of Transportation Highway Division		
APPROVED		
CHIEF ENGINEER		DATE

GENERAL SYMBOLS			TRAFFIC SYMBOLS			ABBREVIATIONS			STOUGHTON WASHINGTON STREET (ROUTE 138)		
EXISTING	PROPOSED	DESCRIPTION	EXISTING	PROPOSED	DESCRIPTION	GENERAL			STATE	FED. AID PROJ. NO.	HEET NO.
JB	JB	JERSEY BARRIER	CB	CB	CATCH BASIN	AADT	ANNUAL AVERAGE DAILY TRAFFIC		MA	-	2
CB		CATCH BASIN WITH CURB INLET				ABAN	ABANDON				104
		SPECIAL (SP) CATCH BASIN				ADJ	ADJUST				
		FIXED END SECTION				APPROX.	APPROXIMATE				
FP	FP	FLAG POLE				A.C.	ASPHALT CONCRETE				
GP	GP	GAS PUMP				ACCM PIPE	ASPHALT COATED CORRUGATED METAL PIPE				
MB	MB	MAIL BOX				BIT.	BITUMINOUS				
		POST SQUARE				BC	BOTTOM OF CURB				
		POST CIRCULAR				BD.	BOUND				
WELL	WELL	WELL				BL	BASELINE				
EHH	EHH	ELECTRIC HANDHOLE				BLDG	BUILDING				
		FENCE GATE POST				BM	BENCHMARK				
GG	GG	GAS GATE				BO	BY OTHERS				
BHL #	BHL #	BORING HOLE				BOS	BOTTOM OF SLOPE				
MW #	MW #	MONITORING WELL				BR.	BRIDGE				
TP #	TP #	TEST PIT				CBCI	CATCH BASIN WITH CURB INLET				
		HYDRANT				CC	CEMENT CONCRETE				
		LIGHT POLE				CCM	CEMENT CONCRETE MASONRY				
CO.BD.		COUNTY BOUND				CEM	CEMENT				
C		GPS POINT				CI	CURB INLET				
D		CABLE MANHOLE				CIP	CAST IRON PIPE				
E		DRAINAGE MANHOLE				CLF	CHAIN LINK FENCE				
G		ELECTRIC MANHOLE				CL	CENTERLINE				
M		GAS MANHOLE				CMP	CORRUGATED METAL PIPE				
S		MISC MANHOLE				CSP	CORRUGATED STEEL PIPE				
T		SEWER MANHOLE				CO.	COUNTY				
W		TELEPHONE MANHOLE				CONC	CONCRETE				
		WATER MANHOLE				CONT	CONTINUOUS				
MHB	MHB	MASSACHUSETTS HIGHWAY BOUND				CONST	CONSTRUCTION				
MON		MONUMENT				CR GR	CROWN GRADE				
SB		STONE BOUND				DHV	DESIGN HOURLY VOLUME				
TB		TOWN OR CITY BOUND				DI	DROP INLET				
T		TRAVERSE OR TRIANGULATION STATION				DIA	DIAMETER				
TPL or GUY	TPL or GUY	TROLLEY POLE OR GUY POLE				DIP	DUCTILE IRON PIPE				
HTP		TRANSMISSION POLE				DW	STEADY DON'T WALK - PORTLAND ORANGE				
UFB	UFB	UTILITY POLE W/ FIREBOX				DWY	DRIVEWAY				
UPDL	UPDL	UTILITY POLE WITH DOUBLE LIGHT				ELEV (or EL.)	ELEVATION				
ULT	ULT	UTILITY POLE W/ 1 LIGHT				EMB	EMBANKMENT				
UPL	UPL	UTILITY POLE				EOP	EDGE OF PAVEMENT				
		BUSH				EXIST (or EX)	EXISTING				
		TREE				EXC	EXCAVATION				
		STUMP				F&C	FRAME AND COVER				
		SWAMP / MARSH				F&G	FRAME AND GRATE				
		WATER GATE				FDN.	FOUNDATION				
		PARKING METER				FDP	FULL DEPTH PAVEMENT				
		OVERHEAD CABLE/WIRE				FLDSTN	FIELDSTONE				
		CURBING				GAR	GARAGE				
		CONTOURS (ON-THE-GROUND SURVEY DATA)				GD	GROUND				
		CONTOURS (PHOTOGRAMMETRIC DATA)				GFS	GREEN FRICTION SURFACE				
		UNDERGROUND DRAIN PIPE (DOUBLE LINE 24 INCH AND OVER)				GG	GAS GATE				
		UNDERGROUND ELECTRIC DUCT (DOUBLE LINE 24 INCH AND OVER)				GIP	GALVANIZED IRON PIPE				
		UNDERGROUND GAS MAIN (DOUBLE LINE 24 INCH AND OVER)				GRAN	GRANITE				
		UNDERGROUND SEWER MAIN (DOUBLE LINE 24 INCH AND OVER)				GRAV	GRAVEL				
		UNDERGROUND TELEPHONE DUCT (DOUBLE LINE 24 INCH AND OVER)				GRD	GUARD				
		UNDERGROUND WATER MAIN (DOUBLE LINE 24 INCH AND OVER)				HDW	HEADWALL				
		BALANCED STONE WALL				HMA	HOT MIX ASPHALT				
		GUARD RAIL - STEEL POSTS				HOR	HORIZONTAL				
		GUARD RAIL - WOOD POSTS				HYD	HYDRANT				
		CHAIN LINK OR METAL FENCE				INV	INVERT				
		WOOD FENCE				JCT	JUNCTION				
		COMPOST MULCH FILTER TUBES FOR EROSION CONTROL				L	LENGTH OF CURVE				
		TREE LINE				LB	LEACH BASIN				
		SAWCUT LINE				LP	LIGHT POLE				
		TOP OR BOTTOM OF SLOPE				LSA	LANDSCAPE AREA				
		EDGE OF PAVEMENT				LT	LEFT				
		LIMIT OF MICROMILLING AND OVERLAY				MAX	MAXIMUM				
		BANK OF RIVER OR STREAM				MB	MAILBOX				
		BORDER OF WETLAND				MHB	MASSACHUSETTS HIGHWAY BOUND				
		100 FT WETLAND BUFFER				MIN	MINIMUM				
		200 FT RIVERFRONT BUFFER				NIC	NOT IN CONTRACT				
		STATE HIGHWAY LAYOUT				NO.	NUMBER				
		TOWN OR CITY LAYOUT				PC	POINT OF CURVATURE				
		COUNTY LAYOUT				PCC	POINT OF COMPOUND CURVATURE				
		RAILROAD SIDELINE				P.G.L.	PROFILE GRADE LINE				
		TOWN OR CITY BOUNDARY LINE				PI	POINT OF INTERSECTION				
		PROPERTY LINE OR APPROXIMATE PROPERTY LINE				POC	POINT ON CURVE				
		EASEMENT				POT	POINT ON TANGENT				
						PRC	POINT OF REVERSE CURVATURE				
						PROJ	PROJECT				
						PROP	PROPOSED				
						<PT	ANGLE POINT				
						PT	POINT OF TANGENCY				
						PUE	PERMANENT UTILITY EASEMENT				

GENERAL NOTES

- THE EXISTING CONDITIONS SHOWN ON THESE PLANS ARE THE OF AN ON-THE-GROUND INSTRUMENT SURVEY PERFORMED BY BAY COLONY GROUP, INC. IN JANUARY OF 2014 AND WERE SUPPLEMENTED BY ON-THE-GROUND INSTRUMENT SURVEY PERFORMED BY NITSCH ENGINEERING FROM SEPTEMBER TO OCTOBER OF 2017, AND IN FEBRUARY 2020 .
- THE LOCATION OF STATE, COUNTY, MUNICIPAL AND PRIVATE RIGHT OF WAY LINES SHOWN HEREON ARE POSITIONED ON RECOVERED RECORD MONUMENTS LOCATED WITH ON-THE-GROUND INSTRUMENT SURVEY. DIVISIONS OF OWNERSHIPS ARE COMPILED FROM AVAILABLE RECORDS PLANS, DEEDS AND ASSESSOR'S MAPS.
- COORDINATES SHOWN HEREON ARE RESULTANT FROM GPS OBSERVATIONS TO THE MaCORS NETWORK, CONVENTIONAL TOTAL STATION TRAVERSING AND DIFFERENTIAL LEVELING AND ARE RELATED TO THE NORTH AMERICAN DATUM OF 1983-NAD83(2011),SPC83- MASSACHUSETTS (MAINLAND ZONE), EPOCH 2010.00. SOURCE CONTROL POINTS' COORDINATES, ELEVATIONS AND COMBINED SCALE FACTOR WERE ESTABLISHED BY MASS DOT GEODETIC AND ARE LISTED BELOW:

PNTS	NORTHING	EASTING	ELEV.	COMBINED SCALE FACTOR
516	2875014.07	764111.09	237.50	0.99995774
517	2875356.36	764051.47	238.45	0.99995768
518	2875585.69	764010.05	236.32	0.99995777
533	2872368.48	764141.82	242.09	0.99995767

- ELEVATION SHOWN HEREON ARE RESULTANT FROM GPS OBSERVATIONS TO MaCORS NETWORK AND DIFFERENTIAL LEVELING AND ARE RELATED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988(NAVD 88) AND RELATIVE TO POINTS 516, 517, 518, AND 533 AS SHOWN ABOVE.
- THE CONTRACTOR SHALL BE RESPONSIBLE TO MAKE HIS OWN DETERMINATION OF SUBSURFACE CONDITIONS INCLUDING THE LOCATION OF ROCK AND THE ACTUAL LOCATION OF UTILITIES OR OTHER FEATURES WHICH MAY AFFECT HIS WORK.
- 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.
- THE RELOCATION, INSTALLATION OR REMOVAL OF PRIVATE UTILITIES SHALL BE ACCOMPLISHED BY THEIR OWNERS, EXCEPT AS OTHERWISE NOTED. THE CONTRACTOR WILL BE REQUIRED TO COOPERATE WITH THE PRIVATE UTILITY COMPANIES AND ALLOW THEM ADEQUATE TIME TO COMPLETE THEIR WORK IN ADVANCE OF PERFORMING ANY PAVING OPERATIONS OR OTHER FINISHED WORK.
- 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.
- THE CONTRACTOR SHALL CONTACT "DIG SAFE" AT 1-888-DIG-SAFE AT LEAST 72 HOURS PRIOR TO COMMENCING WORK ON THE PROJECT.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND FOR MAINTAINING SEDIMENT CONTROL BARRIER, 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.
- NO EXISTING DRAINAGE SYSTEMS SHALL BE ABANDONED, PLUGGED OR REMOVED WITHOUT PRIOR APPROVAL OF THE ENGINEER.
- THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL SAFETY CODES AND LEGAL REQUIREMENTS, IN THE CONSTRUCTION OF IMPROVEMENTS.
- 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.
- 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 HIS OWN EXPENSE.
- ALL MATERIALS TO BE REMOVED AND DISCARDED SHALL BE DISPOSED OF IN ACCORDANCE WITH ALL APPLICABLE CODES AND REGULATIONS.
- CONTRACTOR SHALL PROVIDE ADEQUATE BRACING AND SHORING OF ALL EXCAVATIONS IN ACCORDANCE WITH THE REQUIREMENTS OF ALL GOVERNING CODES AND REGULATIONS.
- 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.
- ALL PROPOSED EXCAVATION SUPPORT SYSTEMS SHALL BE CONSIDERED INCIDENTAL TO THE APPLICABLE ITEMS.
- 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.
- 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.
- ALL PROPOSED CATCH BASINS, UNLESS NOTED OTHERWISE, SHALL HAVE A 4' DEEP SUMP PROVIDED BY THE CONTRACTOR AT NO ADDITIONAL COMPENSATION.
- 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 SHALL BE MADE AS APPROVED OR REQUIRED BY THE ENGINEER. ONLY AFTER THE CONTRACTOR VERIFIES ELEVATIONS FOR THE CONSTRUCTABILITY OF THE DRAINAGE SYSTEM SHALL ANY STRUCTURES BE ORDERED. ANY FIELD ADJUSTMENTS TO LINE & GRADE SHALL BE INCLUDED IN THE COST OF THE PIPE. PIPE EXCAVATION GREATER THAN 5' WILL BE PAID UNDER CLASS B TRENCH EXCAVATION.

- 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).
- SURFACE JOINTS BETWEEN NEW HOT MIX ASPHALT ROADWAY PAVEMENT AND SAWCUT EXISTING PAVEMENT SHALL BE SEALED WITH HMA JOINT SEALANT.
- ALL LATERAL DRAIN PIPES SHALL BE INSTALLED WITH A PITCH OF 0.01 FOOT PER FOOT (MINIMUM) UNLESS OTHERWISE SHOWN ON THE DRAWINGS.
- 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.
- 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.
- THE LAYOUT OF ALL NEW PEDESTRIAN RAMPS SHALL CONFORM TO ADA/AAB STANDARDS AND CURRENT MASSDOT STANDARDS AND DIRECTIVES.
- ALL UTILITY AND DRAINAGE FRAMES, GRATES, AND COVERS SHALL BE INSTALLED FLUSH WITH SURROUNDING PAVEMENT.
- 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 DETAIL ENTITLED "INLET PROTECTION FOR CATCH BASIN WITH SILTATION SACK" ON THE CONSTRUCTION DETAIL SHEETS.
- 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.
- ALL EXISTING/PROPOSED FRAMES AND COVERS/GRATES WITHIN THE PROJECT LIMITS SHALL COMPLY WITH MASSDOT ENGINEERING DIRECTIVE E-16-003. BOLT DOWN MANHOLE COVER ASSEMBLIES SHALL BE INSTALLED ON ALL MANHOLES FROM STA 12+70 TO 40+00. EXISTING COVERS THAT DO NOT COMPLY WITH E-16-003 SHALL BE REMOVED AND DISCARDED AND REPLACED WITH NEW FRAMES AND COVERS.

STOUGHTON WASHINGTON STREET (ROUTE 138)			
STATE	FED. AID PROJ. NO.	HEET NO.	TOTAL SHEETS
MA	-	3	104

PROJECT FILE NO. 607403

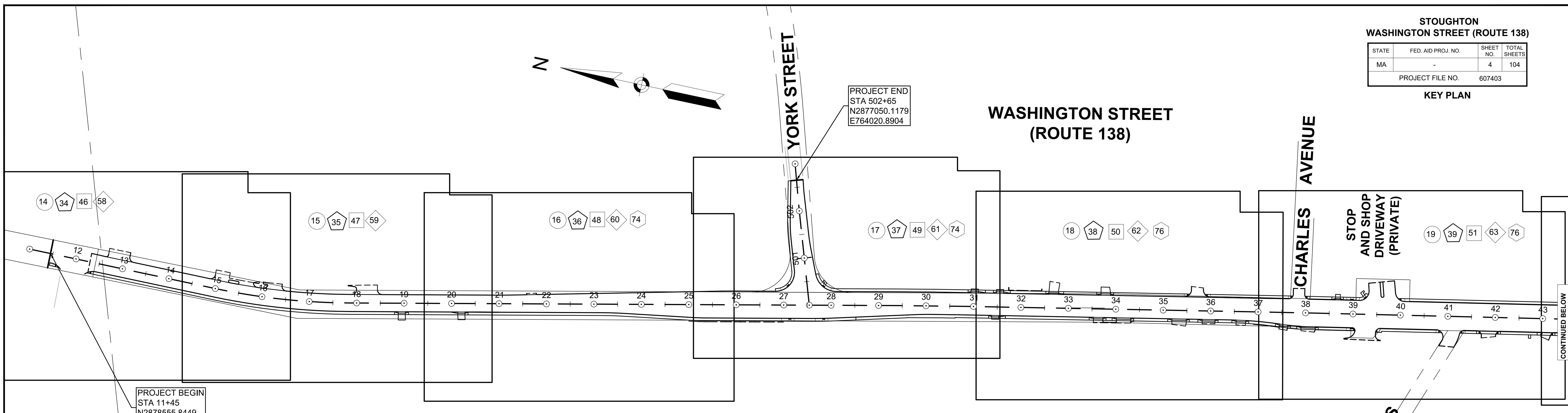
GENERAL NOTES

STOUGHTON WASHINGTON STREET (ROUTE 138)			
STATE	FED. AID PROJ. NO.	HEET NO.	TOTAL SHEETS
MA	-	4	104
PROJECT FILE NO. 607403			

KEY PLAN

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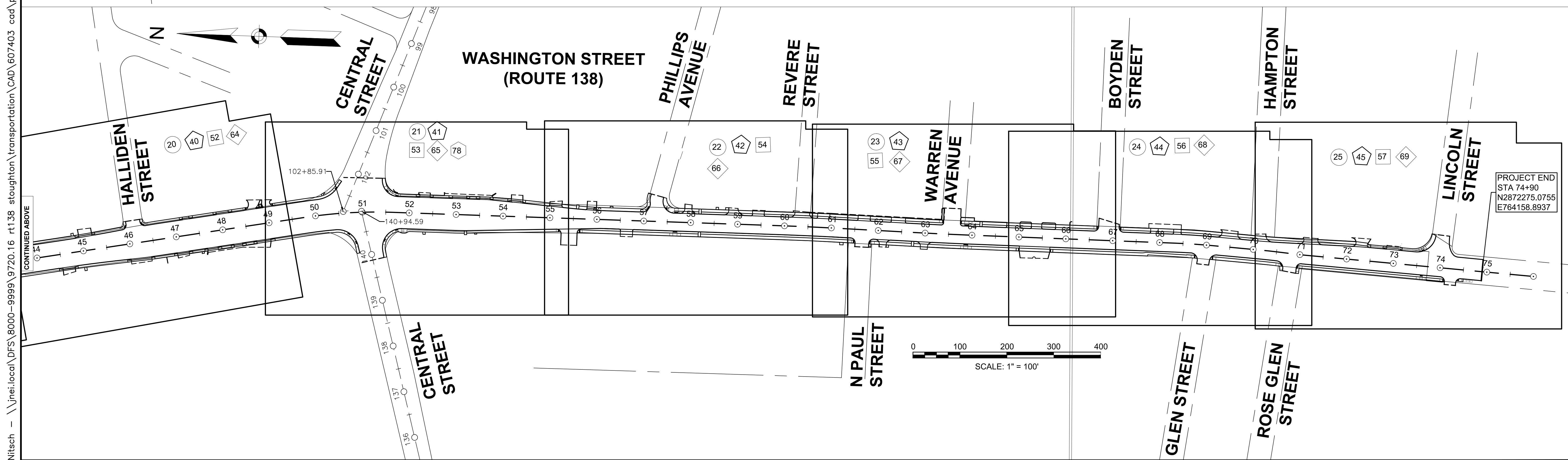
WASHINGTON STREET (ROUTE 138)

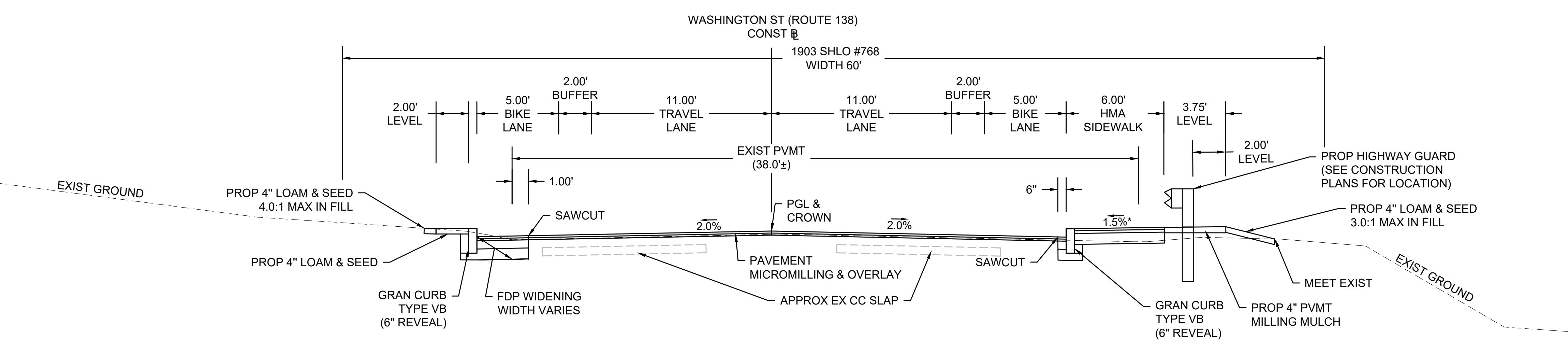


LEGEND:

- XX CONSTRUCTION PLAN
- XX TRAFFIC SIGN & PAVEMENT MARKING PLAN
- XX TRAFFIC SIGNAL PLAN
- XX DRAINAGE & UTILITY PLAN
- XX CURB TIE & GRADING PLAN

0 100 200 300 400
SCALE: 1" = 100'





STOUGHTON
WASHINGTON STREET (ROUTE 138)

STATE	FED. AID PROJ. NO.	HEET NO.	TOTAL SHEETS
MA	-	5	104

PROJECT FILE NO. 607403

TYPICAL SECTIONS & PAVEMENT NOTES

PAVEMENT NOTES:

PROPOSED PAVEMENT MICRO MILLING & OVERLAY

SURFACE: 1.5" ASPHALT RUBBER GAP GRADED - 12.5 (ARGG - 12.5) OVER
INTERMEDIATE: 1.5" ASPHALT RUBBER GAP GRADED - 12.5 (ARGG - 12.5) OVER
MILLING: VARIABLE DEPTH PAVEMENT MICRO MILLING (4" MAX DEPTH)

PROPOSED FULL DEPTH PAVEMENT

SURFACE: 1.5" ASPHALT RUBBER GAP GRADED - 12.5 (ARGG - 12.5) OVER
INTERMEDIATE: 1.5" ASPHALT RUBBER GAP GRADED - 12.5 (ARGG - 12.5) OVER
BASE: 4.5" SUPERPAVE BASE COURSE - 37.5 (SBC - 37.5) OVER
SUBBASE: 4" DENSE GRADED CRUSHED STONE FOR SUBBASE OVER 8" GRAVEL BORROW, TYPE b*

PROPOSED FULL DEPTH PAVEMENT WIDENING LESS THAN 4 FEET

SURFACE: 1.5" ASPHALT RUBBER GAP GRADED - 12.5 (ARGG - 12.5) OVER
INTERMEDIATE: 1.5" ASPHALT RUBBER GAP GRADED - 12.5 (ARGG - 12.5) OVER
BASE: 6" HIGH EARLY STRENGTH CEMENT CONCRETE OVER
SUBBASE: 8" GRAVEL BORROW, TYPE b*

PROPOSED CEMENT CONCRETE SIDEWALK/WCR/ISLAND

SURFACE: 4" CEMENT CONCRETE SIDEWALK (4000 PSI, 3", 610)
SUBBASE: 8" GRAVEL BORROW, TYPE b*

PROPOSED CEMENT CONCRETE SIDEWALK AT DRIVEWAY

SURFACE: 6" CEMENT CONCRETE SIDEWALK (4000 PSI, 3", 610)
SUBBASE: 8" GRAVEL BORROW, TYPE b*

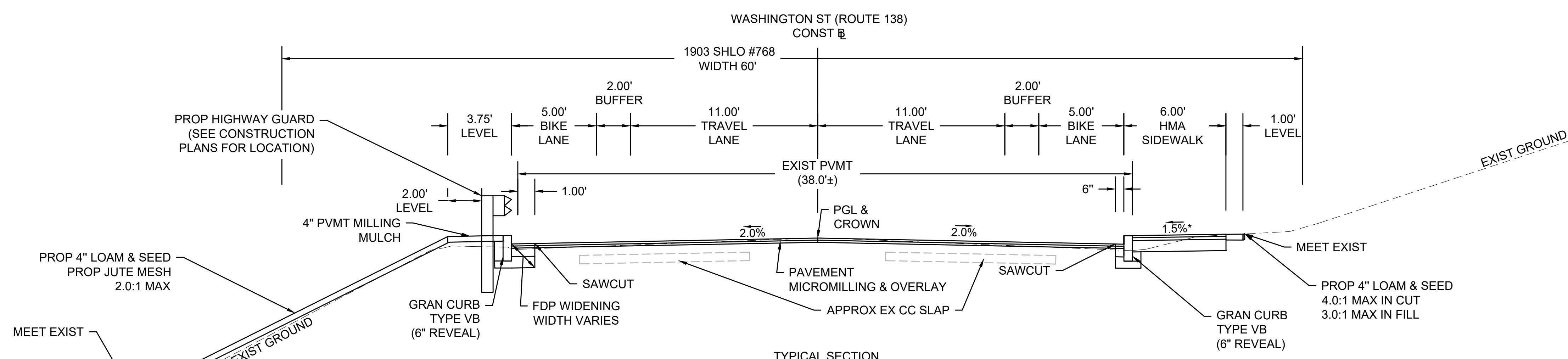
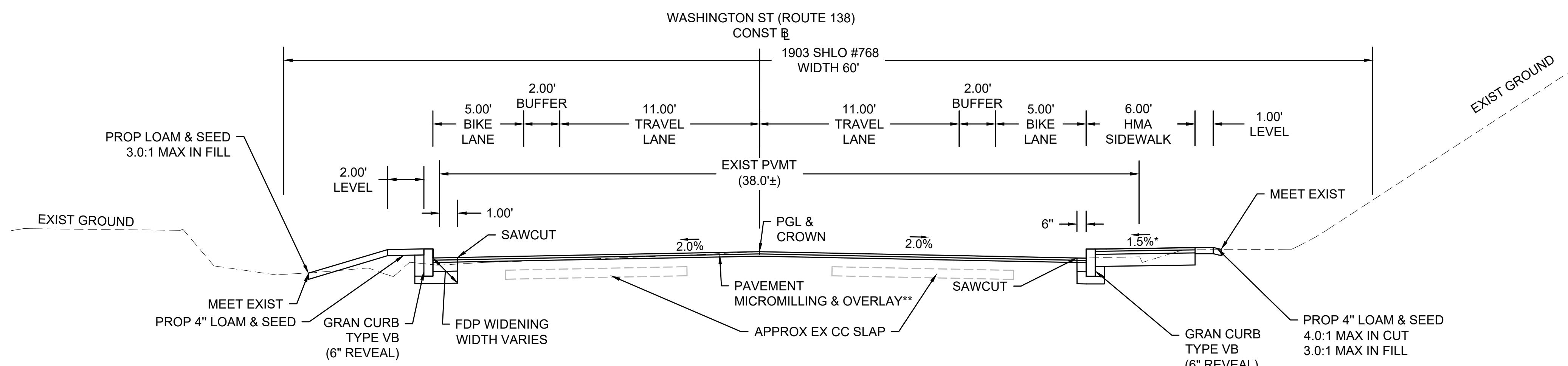
PROPOSED HOT MIX ASPHALT SIDEWALK OR DRIVEWAY

SURFACE: 3.5" HOT MIX ASPHALT PLACED IN TWO LIFTS:
(1.5" SUPERPAVE SURFACE COURSE - 9.5 (SSC - 9.5) OVER
2" SUPERPAVE INTERMEDIATE COURSE - 12.5 (SIC-12.5)) OVER
SUBBASE: 8" GRAVEL BORROW, TYPE b*

*EXISTING GRAVEL BORROW SHALL BE RE-USED IF DETERMINED SUITABLE BY THE ENGINEER.

NOTES:

1. PAVING OPERATION SHALL SCHEDULE PAVING INTERMEDIATE COURSE TO PROTECT MILLED SURFACE WITHIN SAME WORK SCHEDULE OR WEEK.
2. ALL STEEL FRAMES, GATES, COVERS, AND SERVICE BOXES SHALL BE ADJUSTED TWICE TO THE INTERMEDIATE COURSE AND TO LEVEL TO THE FINAL SURFACE COURSE.
3. EMBANKMENT AND BACKFILL SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES.



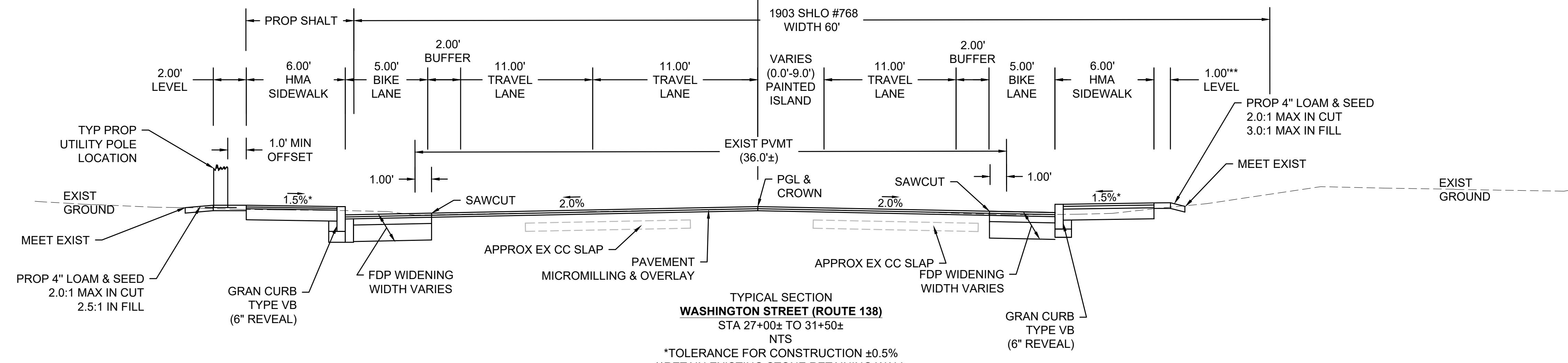
WASHINGTON ST (ROUTE 138)
CONST B

**STOUGHTON
WASHINGTON STREET (ROUTE 138)**

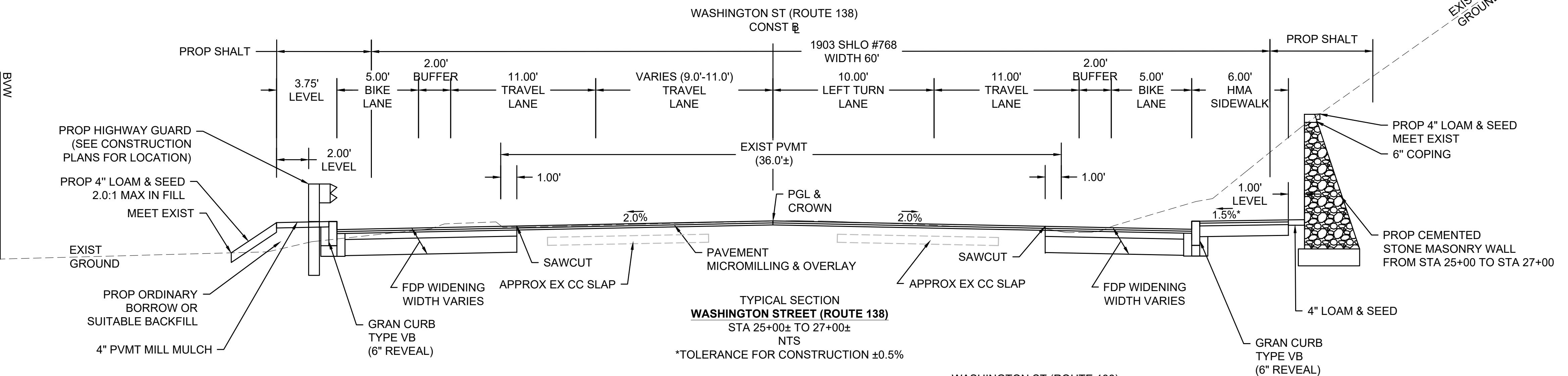
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	6	104
PROJECT FILE NO.		607403	

TYPICAL SECTIONS & PAVEMENT NOTES

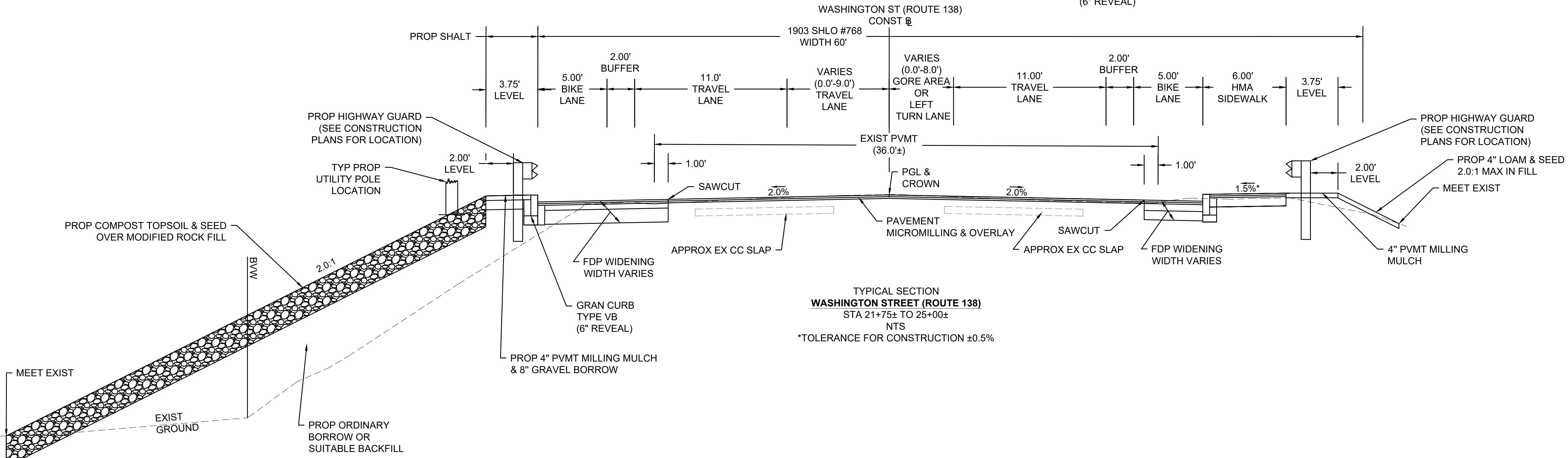
SEE SHEET 5 FOR PAVEMENT NOTES:



*TOLERANCE FOR CONSTRUCTION $\pm 0.5\%$
**RETAIN EXISTING STONE RETAINING WALL
FROM STATION STA 29+60.12± (RT) TO STA 30+61.71± (RT)

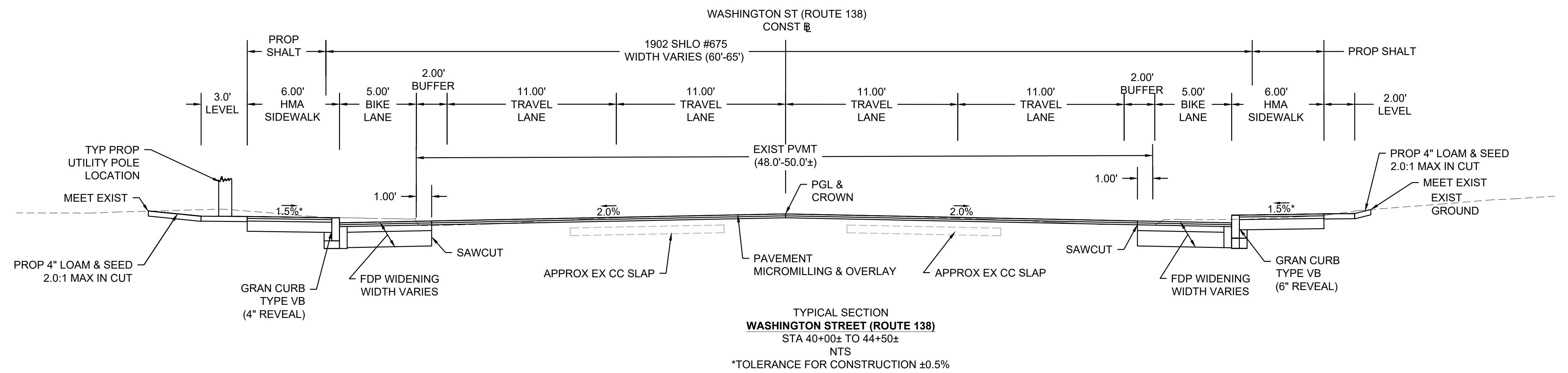


*TOLERANCE FOR CONSTRUCTION ± 0.5



TYPICAL SECTION
WASHINGTON STREET (ROUTE 13)

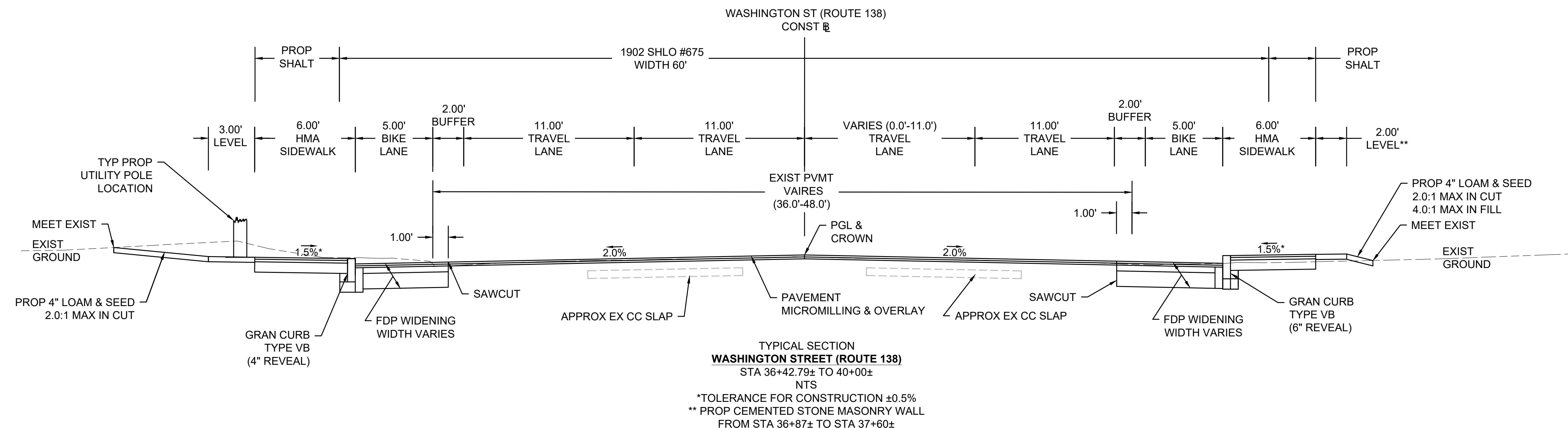
NTS
*TOLERANCE FOR CONSTRUCTION ± 0.5



TYPICAL SECTION
WASHINGTON STREET (ROUTE 138)
STA. 40+00 TO 44+50

NTS

COLLATERAL FOR CONSTRUCTION 2015



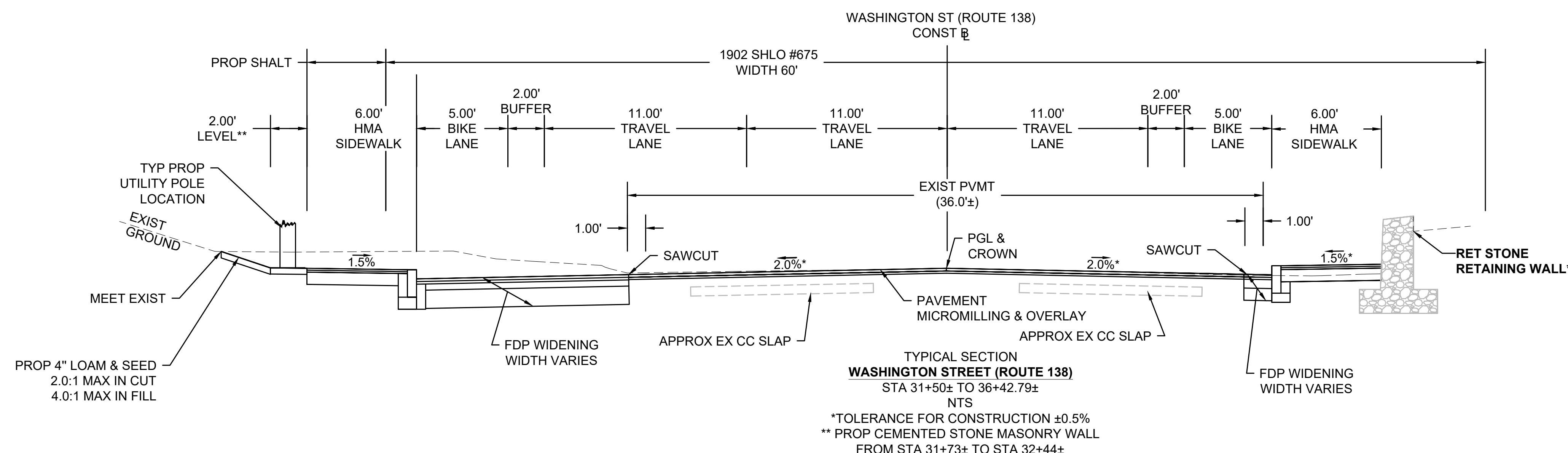
TYPICAL SECTION
WASHINGTON STREET (ROUTE 13)

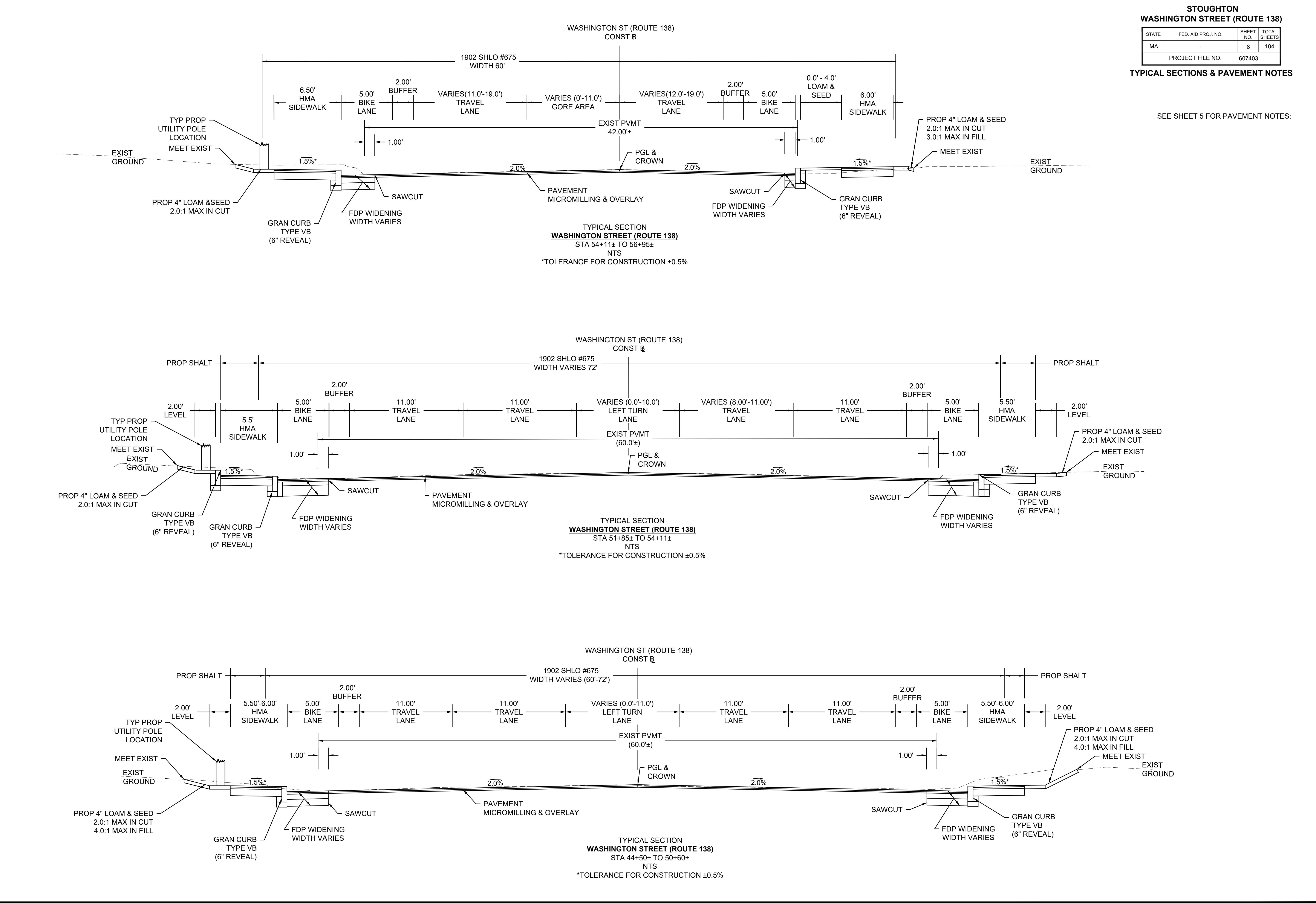
STA 36+42.79±10 40+00±
NTS

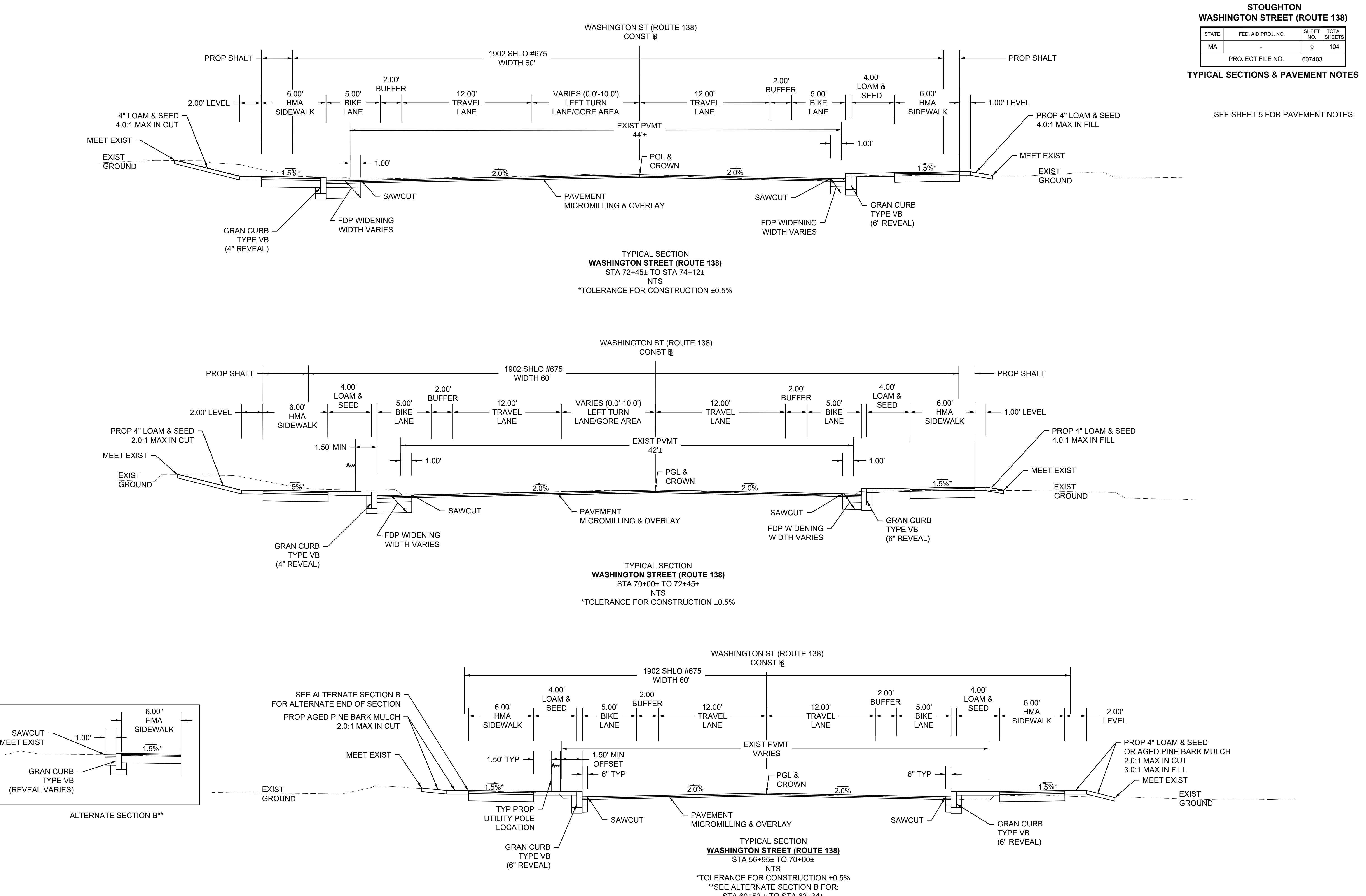
*TOE FRANCE FOR CONSTRUCTION +0.5

** TOLERANCE FOR CONSTRUCTION ± 0.5
** PROP CEMENTED STONE MASONRY W.

PROP CEMENTED STONE MASONRY W FROM STA 36+87+ TO STA 37+60+



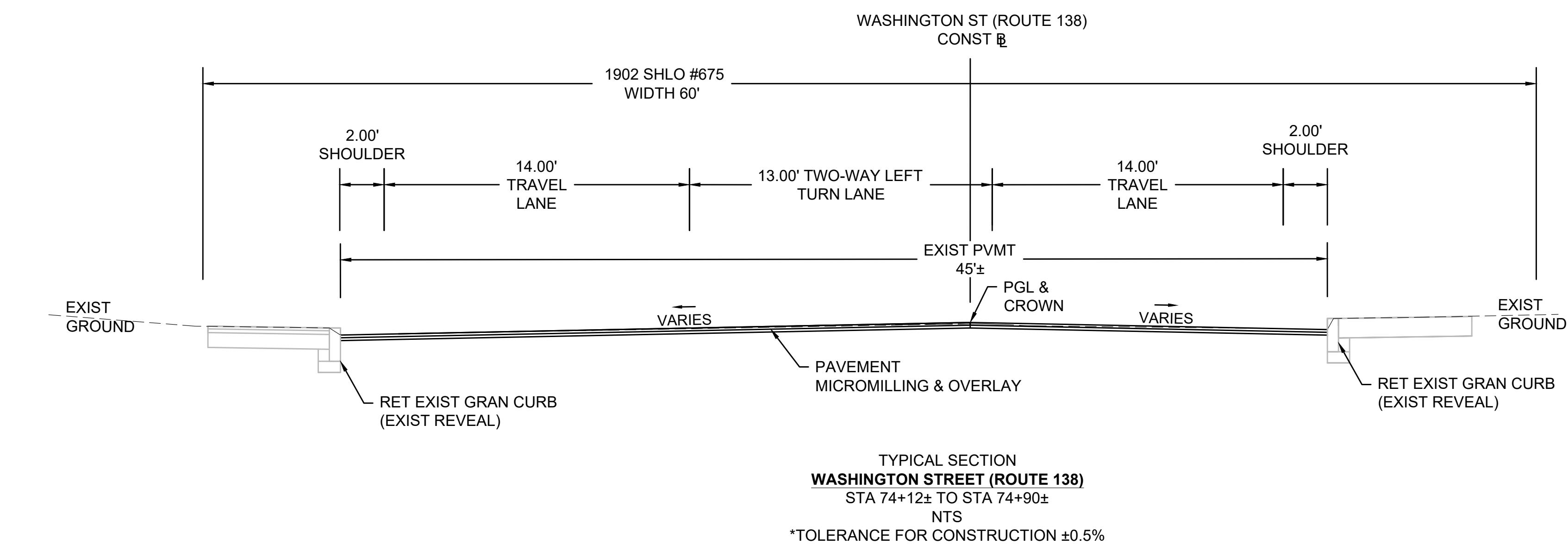
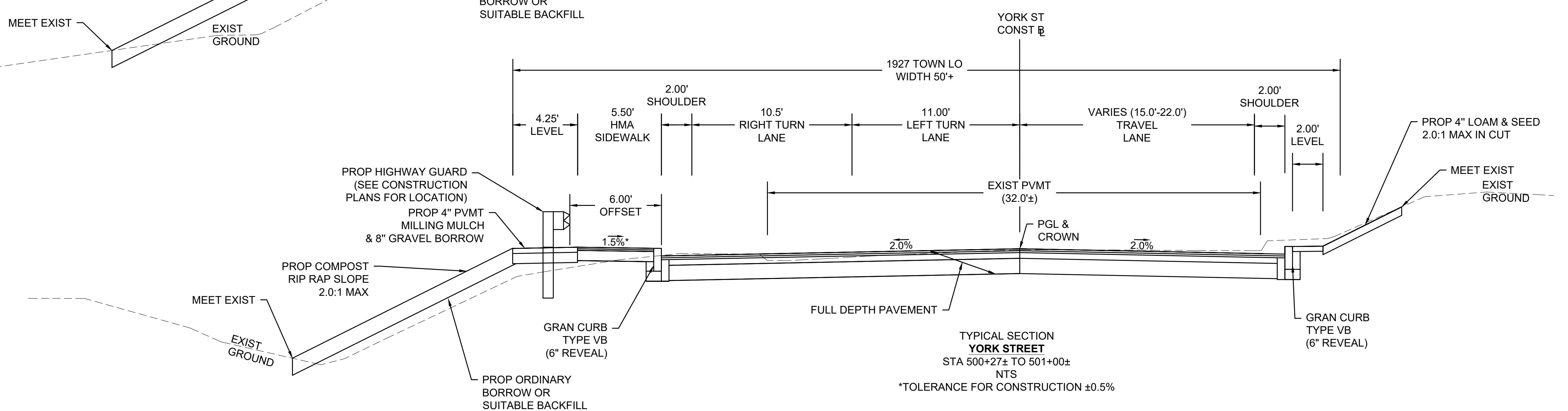
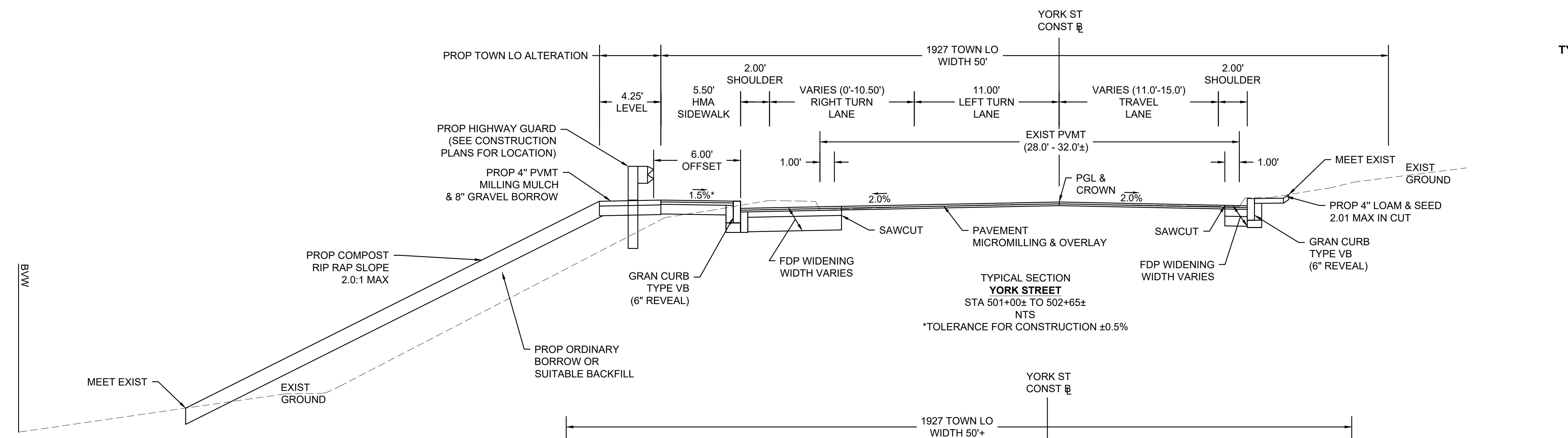


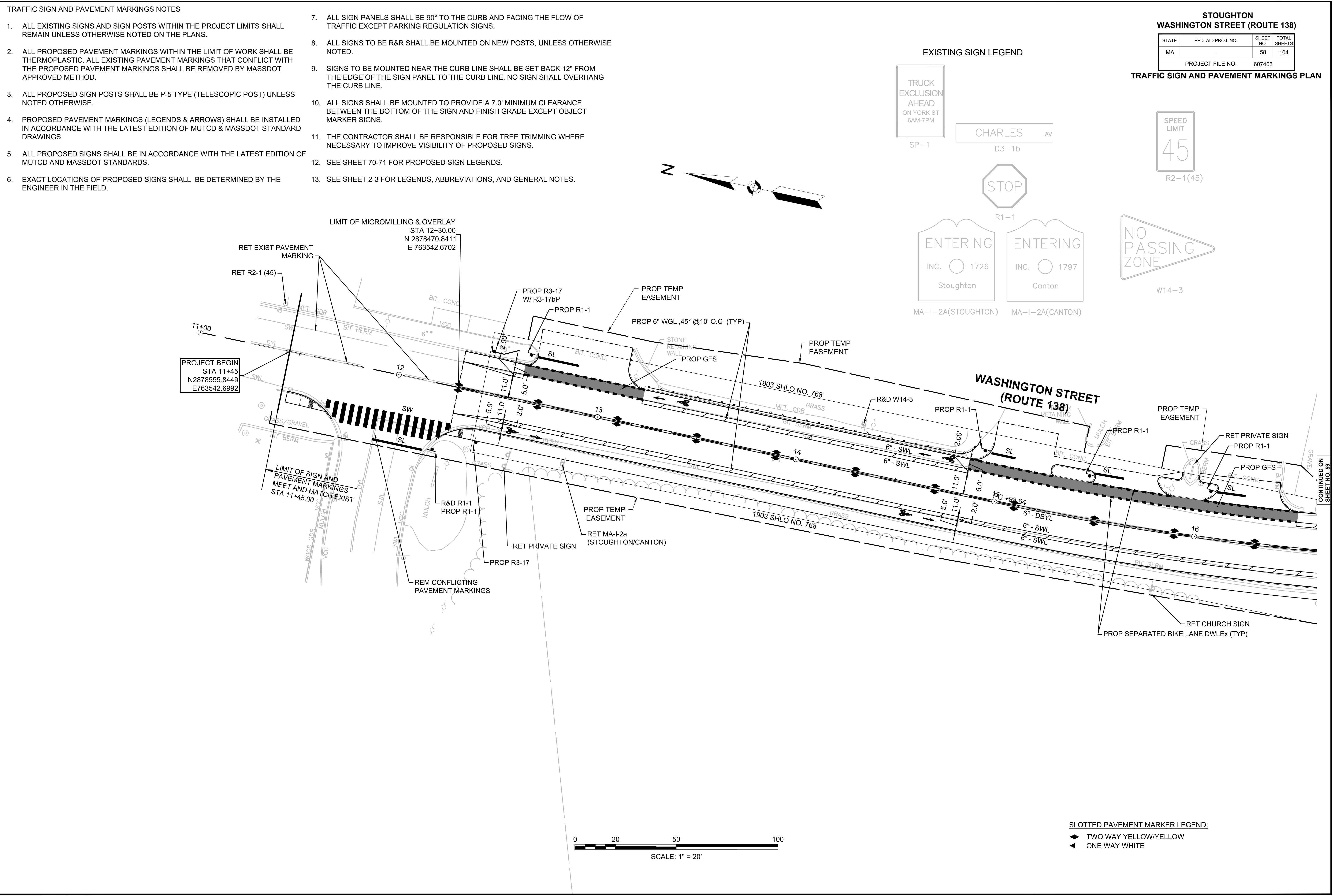


STOUGHTON WASHINGTON STREET (ROUTE 138)			
STATE	FED. AID PROJ. NO.	HEET NO.	TOTAL SHEETS
MA	-	10	104
PROJECT FILE NO. 607403			

TYPICAL SECTIONS & PAVEMENT NOTES

SEE SHEET 5 FOR PAVEMENT NOTES:





NOTE

1. SEE SHEET 58 FOR SIN AND PAVEMENT MARKING NOTES.

A diagram of a gyroscope. It features a black circular frame with a central axle. A horizontal line extends from the right side of the frame, ending in a black rectangular block. A large, thick black arrow points upwards from the left side of the frame. The background is white.

NOTE

1. SEE SHEET 58 FOR SIN AND PAVEMENT MARKING NOTES.

CONTINUED ON
SHEET NO. 58

**WASHINGTON STREET
(ROUTE 138)**

R&D W14-3

PROPS R1-1

PROPS TEMP EASEMENT

GRASS

BIT. BERM

BIT. CONC.

SL

RETAINING WALL

MULCH

SL

RET. CHURCH

PROPS SEPARATED BIKE LANE DWLEX

PROPS R1-1

15C +98.64

16

6" - SWL

6" - SWL

11.0'

5.0'

2.0'

6" - DBYL

6" - SWL

6" - SWL

11.0'

5.0'

2.0'

RET. CHURCH

PROPS SEPARATED BIKE LANE DWLEX

0 20 50

SCALE: 1" = 20'

DOTTED PAVEMENT MARKER LEGEND:

0 WASHINGTON ST
TOWN OF CANTON
BK 1894 PG 532
MAP PARCEL ID 058 001 0

EXISTING SIGN LEGEND



SP-1

N

STOUGHTON
WASHINGTON STREET (ROUTE 138)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	60	104
PROJECT FILE NO. 607403			

TRAFFIC SIGN AND PAVEMENT MARKINGS PLAN

NOTE

1. SEE SHEET 58 FOR SIGN AND PAVEMENT MARKING NOTES.

0 WASHINGTON ST
TOWN OF CANTON
BK 706 PG 308
MAP PARCEL ID 057 092 0

0 WASHINGTON ST
TOWN OF CANTON
BK 706 PG 308
MAP PARCEL ID 057 093 0

0 WASHINGTON ST
TOWN OF CANTON
BK 1894 PG 532
MAP PARCEL ID 058 001 0

0 WASHINGTON ST
TOWN OF CANTON
BK 1703 PG 597
MAP PARCEL ID 057 091 0

0 20 50 100
SCALE: 1" = 20'

SLOTTED PAVEMENT MARKER LEGEND:
 ◆ TWO WAY YELLOW/YELLOW
 ▲ ONE WAY WHITE

EXISTING SIGN LEGEND



168 WASHINGTON ST
NSTAR ELECTRIC COMPANY
BK 22202 PG 466
MAP PARCEL ID 057 110 0

198 WASHINGTON ST
FRANCIS WILL
aka FRANCIS A. WILL
TRUSTEE OF AREA REALTY
TRUST II
BK 7563 PG 306
MAP PARCEL ID 057 111 0

214 WASHINGTON ST
PETER H. P. & ANGELA F LEE
TRUSTEES OF YUNG-LAU
REALTY TRUST
BK 7110 PG 583
MAP PARCEL ID 057 112 0

A diagram of a gyroscope. It features a large, dark, triangular mass at the end of a long, thin horizontal rod. The rod is attached to a circular base with a central vertical axis. A vertical line labeled 'N' is positioned to the left of the gyroscope, indicating the direction of the North magnetic pole.

STOUGHTON
WASHINGTON STREET (ROUTE 100)

WASHINGTON STREET (ROUTE 138)			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	62	104
PROJECT FILE NO.		607403	

TRAFFIC SIGN AND PAVEMENT MARKINGS PLAN

NOTE

1. SEE SHEET 58 FOR SIGN AND PAVEMENT MARKING NOTES

234 WASHINGTON ST
UH STORAGE (DE)
LIMITED PARTNERSHIP
BK 21043 PG 108
AP PARCEL ID 057 113 0

WASHINGTON STREET (ROUTE 138)

O WASHINGTON ST
TOWN OF CANTON
BK 1703 PG 597
MAP PARCEL ID 057 091 0

217 WASHINGTON ST
ALLIOS LLC
BK 31856 PG 458
MAP PARCEL ID 057 089

SLOTTED PAVEMENT MARKER LEGEND:

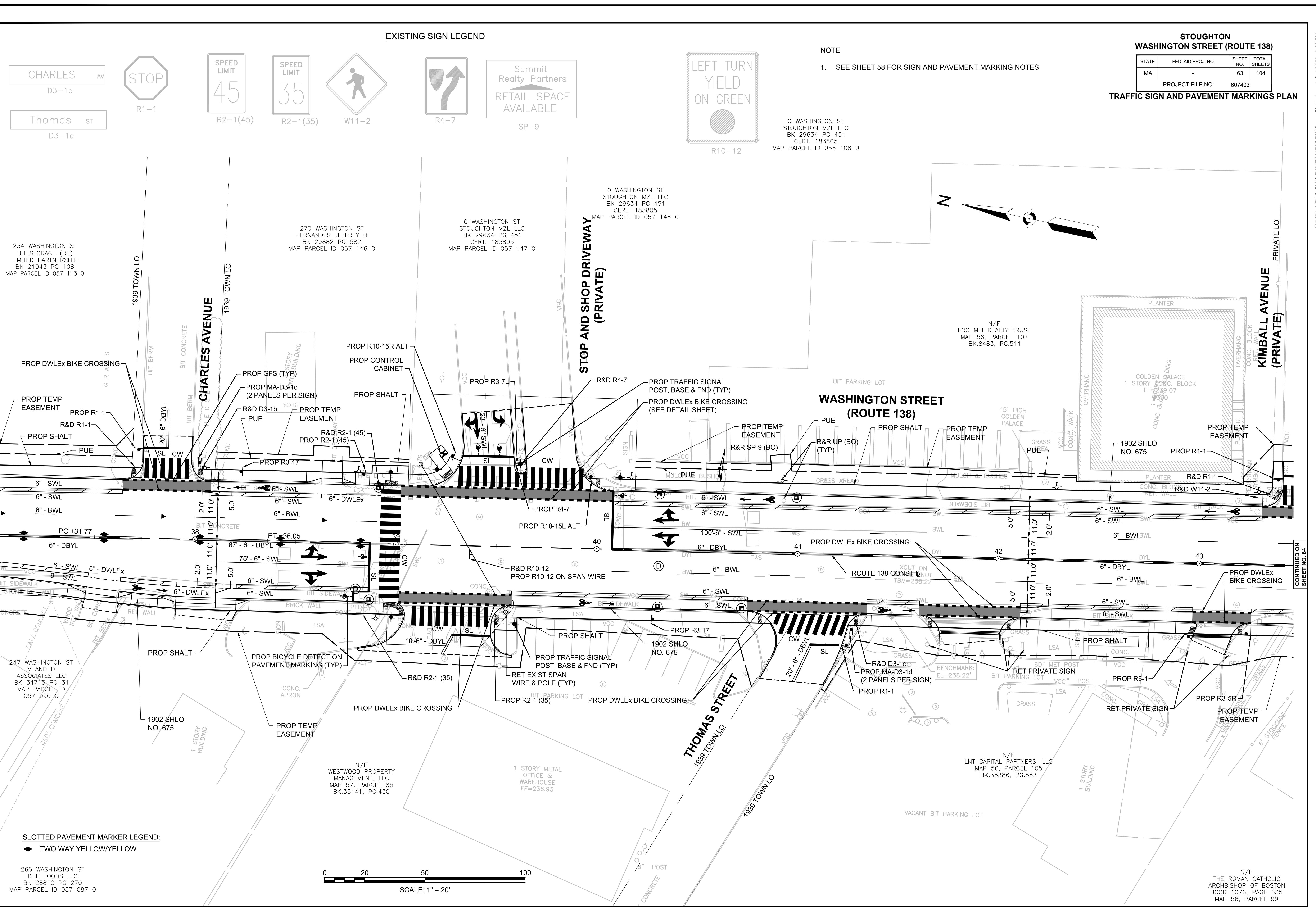
- ◆ TWO WAY YELLOW/YELLOW
- ◀ ONE WAY WHITE

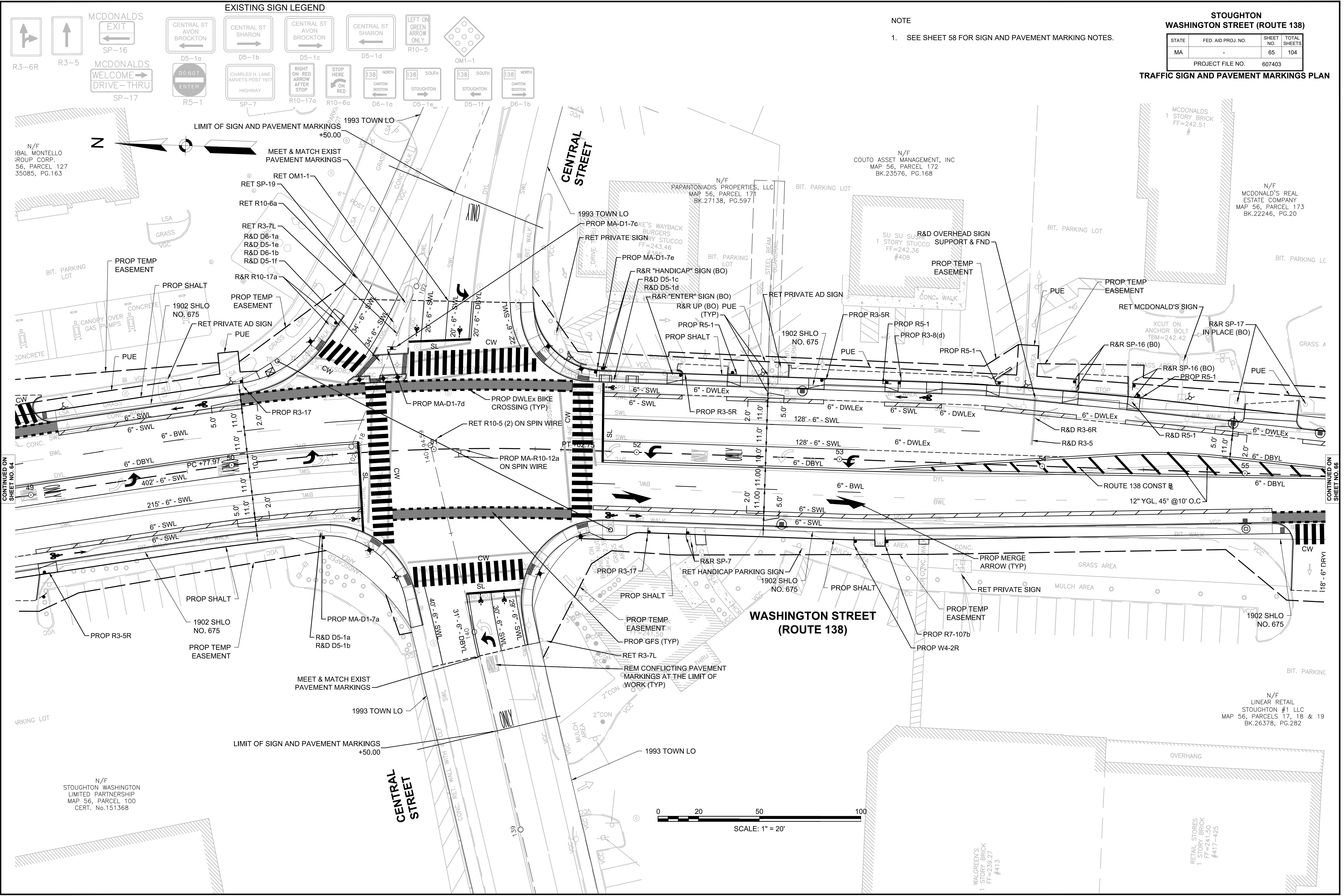
0 20 50 100

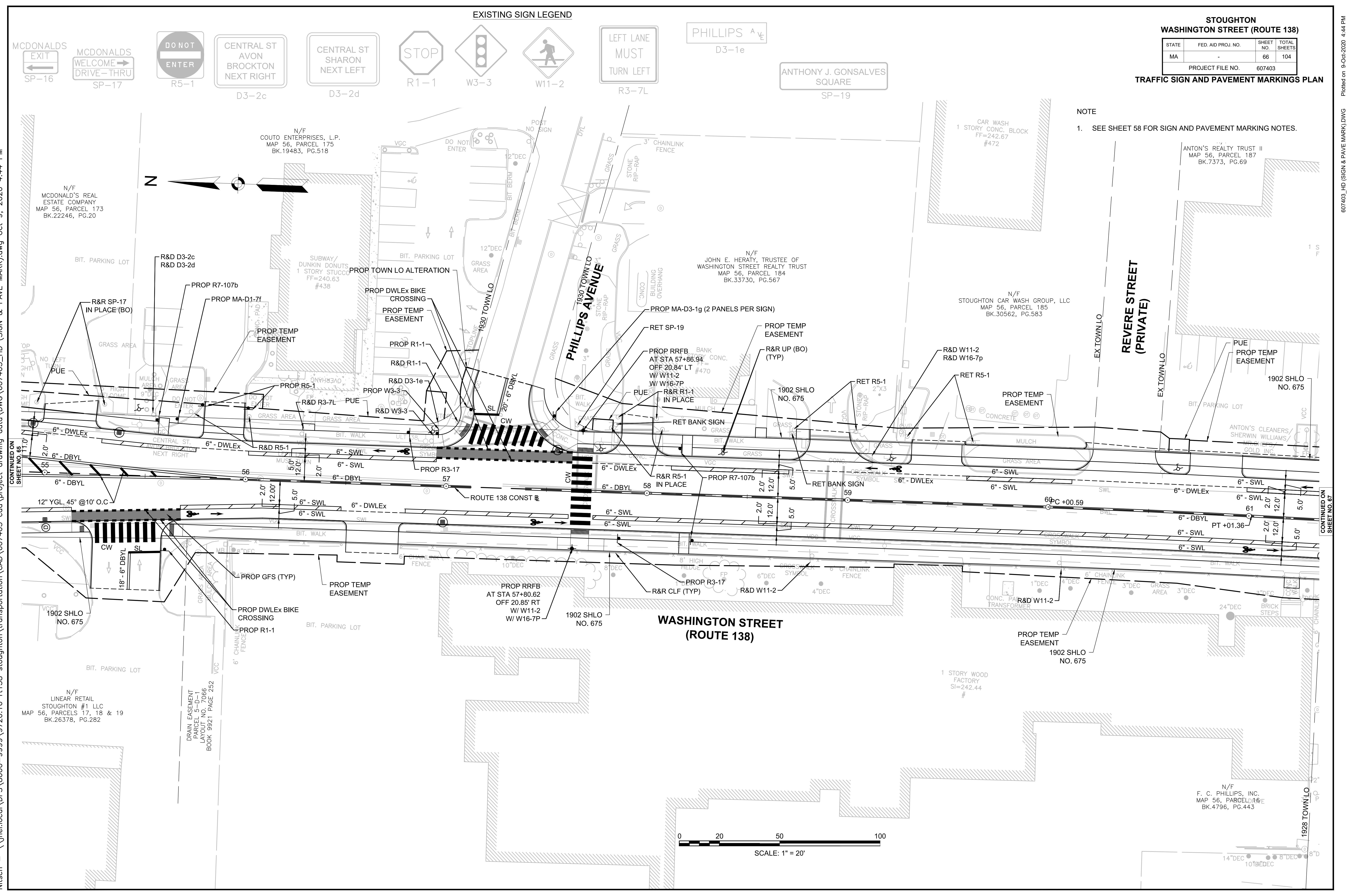
SCALE: 1" = 20'

265 WASHINGTON ST
D E FOODS LLC
BK 28810 PG 270
MAP PARCEL ID 057 087 0

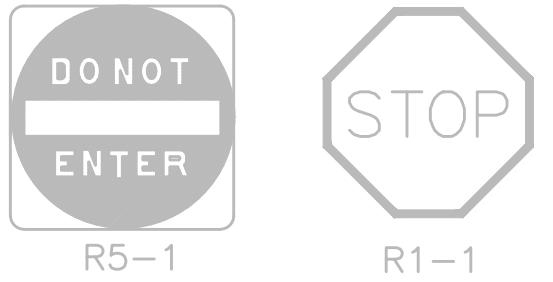
EXISTING SIGN LEGEND







EXISTING SIGN LEGEND



ENTERPRISE
SP-20

N

1. SEE SHEET 58 FOR SIGN AND PAVEMENT MARKING NOTES.

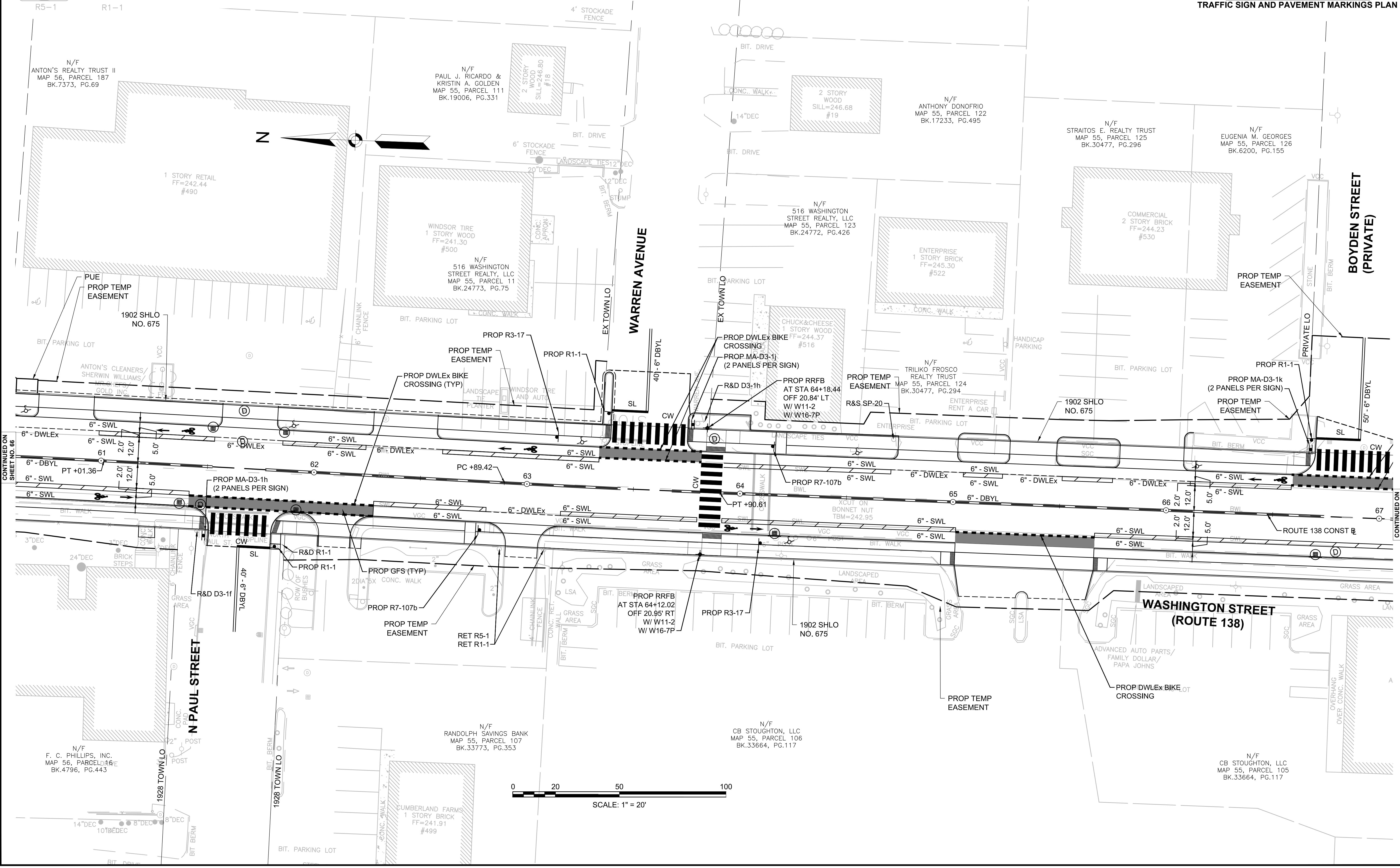
**STOUGHTON
WASHINGTON STREET (ROUTE 138)**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	67	104
PROJECT FILE NO.		607403	

TRAFFIC SIGN AND PAVEMENT MARKINGS PLAN

607403_HD (SIGN & PAVE MARK).DWG Plotted on 9-Oct-2020 4:45 PM

Nitsch - \jnei.local\DFS\8000-9999\9720.16 rt138 stoughton\transportation\CAD\607403 cad\project drawing data\DWG\607403_HD (SIGN & PAVE MARK).dwg Oct 9, 2020 4:45 PM



EXISTING SIGN LEGEND



NOTE

1. SEE SHEET 58 FOR SIGN AND PAVEMENT MARKING NOTES.

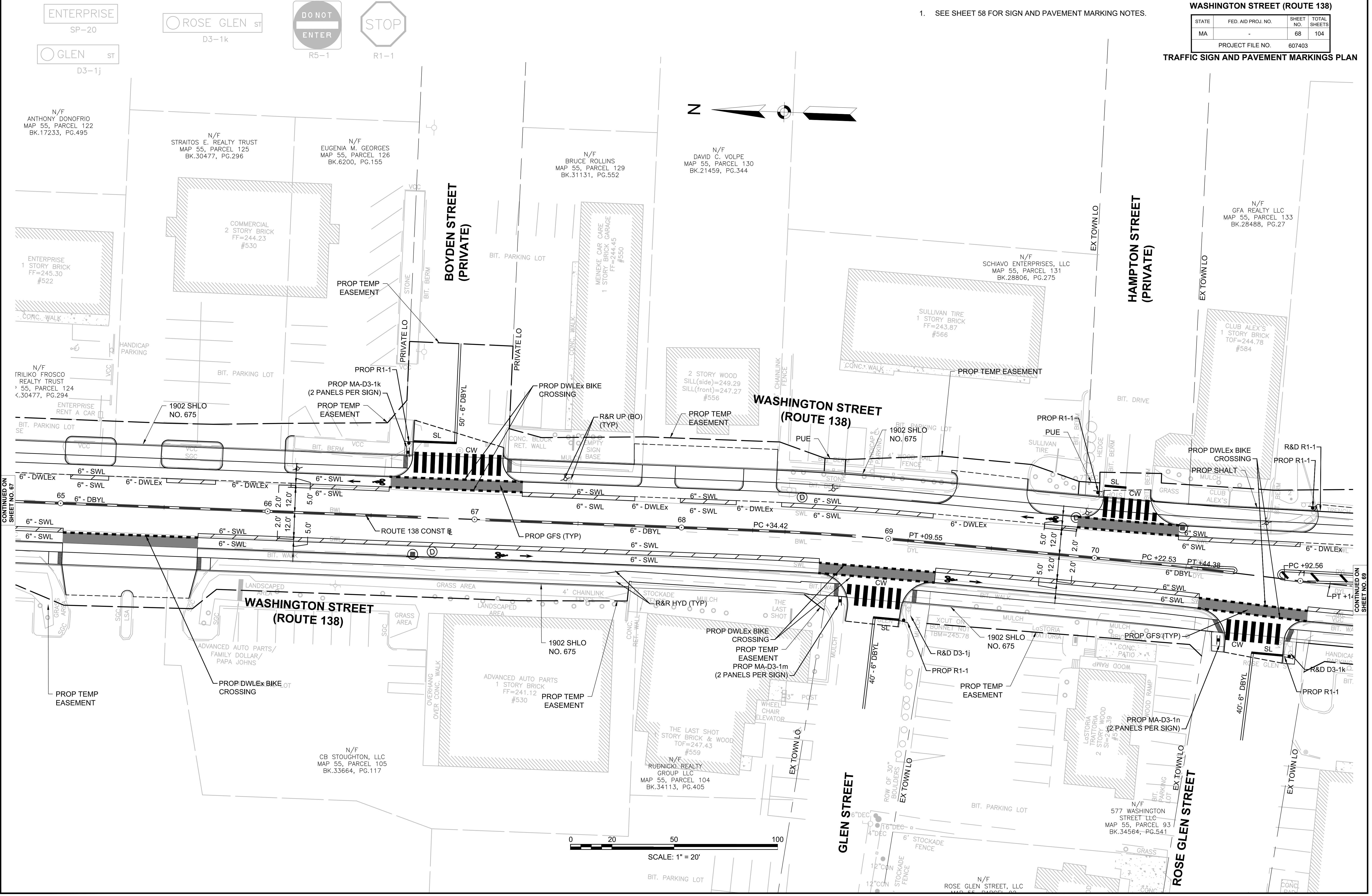
STOUGHTON
WASHINGTON STREET (ROUTE 138)

STATE	FED. AID PROJ. NO.	HEET NO.	TOTAL SHEETS
MA	-	68	104

PROJECT FILE NO. 607403

TRAFFIC SIGN AND PAVEMENT MARKINGS PLAN

CONTINUED ON SHEET NO. 67



PROPOSED TRAFFIC SIGN SUMMARY

IDENTIFI-CATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (INCHES)			NUMBER OF SIGNS REQUIRED	COLOR		POST SIZE AND NUMBER REQUIRED ②	UNIT AREA (S.F.)	AREA IN SQUARE FEET	
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.		BACK-GROUND	LEGEND				
MA-D3-1a ③	62"	12"	Washington St	6D/4D	2.75" 6D/4D 3.25"	①	3	GREEN	WHITE	WHITE	1 MOUNT ON MAST ARM SHAFT (PBS) P-5 2 REQ'D	INCLUDED UNDER ITEM 874.	
MA-D3-1b	48"	18"	York St	8D/5.33D	5" 8D/5.33D 5"		4	GREEN	WHITE	WHITE	4 MOUNT ON MAST ARM	INCLUDED UNDER ITEM 874.	
MA-D3-1c ③	52"	12"	Charles Ave	6D/4D	2.75" 6D/4D 3.25"		2	GREEN	WHITE	WHITE	P-5 1 REQ'D	INCLUDED UNDER ITEM 874.	
MA-D3-1d ③	52"	12"	Thomas St	6D/4D	2.75" 6D/4D 3.25"		2	GREEN	WHITE	WHITE	P-5 1 REQ'D	INCLUDED UNDER ITEM 874.	
MA-D3-1e ③	44"	12"	Kimball Ave	6D/4D	2.75" 6D/4D 3.25"		2	GREEN	WHITE	WHITE	P-5 1 REQ'D	INCLUDED UNDER ITEM 874.	
MA-D3-1f ③	50"	12"	Halliden St	6D/4D	2.75" 6D/4D 3.25"		2	GREEN	WHITE	WHITE	P-5 1 REQ'D	INCLUDED UNDER ITEM 874.	
MA-D3-1g ③	52"	12"	Phillips Ave	6D/4D	2.75" 6D/4D 3.25"		2	GREEN	WHITE	WHITE	P-5 1 REQ'D	INCLUDED UNDER ITEM 874.	
MA-D3-1h ③	58"	12"	North Paul St	6D/4D	2.75" 6D/4D 3.25"		2	GREEN	WHITE	WHITE	P-5 1 REQ'D	INCLUDED UNDER ITEM 874.	
MA-D3-1j ③	44"	12"	Warren Ave	6D/4D	2.75" 6D/4D 3.25"		2	GREEN	WHITE	WHITE	P-5 1 REQ'D	INCLUDED UNDER ITEM 874.	
MA-D3-1k ③	40"	12"	Boyden St	6D/4D	2.75" 6D/4D 3.25"		2	GREEN	WHITE	WHITE	P-5 1 REQ'D	INCLUDED UNDER ITEM 874.	
MA-D3-1m ③	38"	12"	Glen St	6D/4D	2.75" 6D/4D 3.25"		2	GREEN	WHITE	WHITE	P-5 1 REQ'D	INCLUDED UNDER ITEM 874.	
MA-D3-1n ③	56"	12"	Rose Glen St	6D/4D	2.75" 6D/4D 3.25"		2	GREEN	WHITE	WHITE	P-5 1 REQ'D	INCLUDED UNDER ITEM 874.	
MA-D3-1p ③	48"	12"	Lincoln St	6D/4D	2.75" 6D/4D 3.25"		2	GREEN	WHITE	WHITE	2 MOUNT W/ MA-D3-1a	INCLUDED UNDER ITEM 874.	
MA-D3-1q ③	48"	12"	Parkway	6D/4D	2.75" 6D/4D 3.25"	▼	2	GREEN	WHITE	WHITE	P-5 1 REQ'D	INCLUDED UNDER ITEM 874.	
MA-D1-7a	66"	96"	SEE SIGN DETAIL SHEET 72	SEE SIGN DETAIL SHEET 72			1	GREEN	WHITE	WHITE	1-5" TUBULAR STEEL POST (ITEM 841.1)	44.00	44.00
MA-D1-7b	66"	90"	SEE SIGN DETAIL SHEET 72	SEE SIGN DETAIL SHEET 72			1	GREEN	WHITE	WHITE	1-5" TUBULAR STEEL POST (ITEM 841.1)	44.00	44.00
MA-D1-7c	66"	108"	SEE SIGN DETAIL SHEET 72	SEE SIGN DETAIL SHEET 72			1	GREEN	WHITE	WHITE	1-5" TUBULAR STEEL POST (ITEM 841.1)	44.00	44.00
MA-D1-7d	66"	108"	SEE SIGN DETAIL SHEET 72	SEE SIGN DETAIL SHEET 72			1	GREEN	WHITE	WHITE	1 MOUNT BACK TO BACK W/MA-D1-7c	44.00	44.00
MA-D1-7e	66"	90"	SEE SIGN DETAIL SHEET 72	SEE SIGN DETAIL SHEET 72			1	GREEN	WHITE	WHITE	1-5" TUBULAR STEEL POST (ITEM 841.1)	44.00	44.00
MA-D1-7f	66"	96"	SEE SIGN DETAIL SHEET 72	SEE SIGN DETAIL SHEET 72			1	GREEN	WHITE	WHITE	1-5" TUBULAR STEEL POST (ITEM 841.1)	44.00	44.00

① SEE MUTCD 2009 EDITION, THE 2012 SUPPLEMENT TO THE 2004 EDITION OF THE STANDARD HIGHWAY SIGNS AND SECTION M9.30.0 TYPE III OF THE MASSDOT STANDARD SPECIFICATION FOR TEXT DIMENSIONS AND COLOR.

② SEE STANDARD DRAWINGS FOR SIGNS AND SUPPORTS, 1990.

③ STREET NAME SIGNS THAT ARE MOUTED ON P-5 POSTS SHALL BE ORDERED TWO SIGNS PER LOCATION AND SHALL BE MOUNTED WITH BOLT-THROUGH METHOD.

④ CONTRACTOR TO COORDINATE WITH BROCKTON AREA TRANSIT AUTHORITY (BAT) FOR BUS STOP SIGN STANDARDS.

⑤ CONTRACTOR TO COORDINATE WITH TOWN OF STOUGHTON FOR SEAL



STOUGHTON
WASHINGTON STREET (ROUTE 138)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	70	104

PROJECT FILE NO. 607403

TRAFFIC SIGN SUMMARY

Plotted on 9-Oct-2020 4:45 PM

607403-HD (SIGN & PAVE MARK).DWG

IDENTIFI-CATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (INCHES)			NUMBER OF SIGNS REQUIRED	BACK-GROUND	COLOR	LEGEND	BORDER	POST SIZE AND NUMBER REQUIRED ②	UNIT AREA (S.F.)	AREA IN SQUARE FEET
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.								
MA-M1-5a	30"	24"	138	SEE MASSDOT STANDARD SIGN DETAIL			1	WHITE	BLACK	BLACK	P-5 1 REQ'D		5.00	5.00
M3-1	24"	12"	NORTH	①	①	①	1	WHITE	BLACK	BLACK	1 MOUNT W/ MA-M1-5a		2.00	2.00
MA-R10-12a	30"	36"	LEFT TURN YIELD ON FLASHING	SEE MASSDOT STANDARD SIGN DETAIL			3	WHITE	BLACK	BLACK	1 MOUNT ON MAST ARM 2 MOUNT ON SPAN WIRE		7.50	22.50
MA-I-13	24"	30"	STATE HIGHWAY BEGINS				1	GREEN	WHITE	WHITE	P-5 1 REQ'D		5.00	5.00
MA-I-14	24"	30"	STATE HIGHWAY ENDS				1	GREEN	WHITE	WHITE	P-5 1 REQ'D		5.00	5.00
R10-15L ALT	30"	30"	TURNING VEHICLES YIELD TO PEDESTRIAN	①	①	①	1	WHITE	BLACK	BLACK	P-5 1 REQ'D		6.25	6.25
R10-15R ALT	30"	30"	TURNING VEHICLES YIELD TO CYCLIST				1	WHITE	BLACK	BLACK	P-5 1 REQ'D		6.25	6.25
R1-1	30"	30"	STOP				23	RED	WHITE	WHITE	P-5 23 REQ'D		6.25	143.75
R3-2	36"	36"	NO TURNING				1	WHITE	RED/BLACK	BLACK	P-5 1 REQ'D		9.00	9.00
R3-5R	30"	36"	RIGHT TURN ONLY				6	WHITE	BLACK	BLACK	P-5 6 REQ'D		7.50	45.00
R3-7L	30"	30"	LEFT LANE MUST TURN LEFT				3	WHITE	BLACK	BLACK	P-5 2 REQ'D 1 MOUNT ON SIGNAL POST		6.25	18.75
R3-8 (c)	30"	30"	RIGHT TURN ONLY				1	WHITE	BLACK	BLACK	P-5 1 REQ'D		6.25	6.25
R3-8 (d)	48"	30"	RIGHT TURN ONLY				3	WHITE	BLACK	BLACK	P-5 3 REQ'D		10.00	30.00
R3-17	24"	18"	BIKE LANE				18	BLACK	WHITE	WHITE	P-5 18 REQ'D		3.00	54.00
R3-17bP	24"	8"	ENDS				2	WHITE	BLACK	BLACK	2 MOUNTED W/ R3-17		1.33	2.66

PBS - PAINTED BOTH SIDES

PROPOSED TRAFFIC SIGN SUMMARY

STOUGHTON
WASHINGTON STREET (ROUTE 138)

STATE	FED. AID PROJ. NO.	sheet no.	total sheets
MA	-	71	104
PROJECT FILE NO. 607403			

TRAFFIC SIGN SUMMARY

IDENTIFI- CATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (INCHES)			NUMBER OF SIGNS REQUIRED	COLOR			POST SIZE AND NUMBER REQUIRED ②	UNIT AREA (S.F.)	AREA IN SQUARE FEET
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.		BACKGROUND	LEGEND	BORDER			
R4-7	24"	30"		①	①	①	1	WHITE	BLACK	BLACK	1 MOUNTED ON SIGNAL POST	5.00	5.00
R4-11	30"	30"					1	WHITE	BLACK	BLACK	P-5 1 REQ'D	6.25	6.25
R5-1	30"	30"		▼	▼	▼	6	RED	WHITE	WHITE	P-5 6 REQ'D	6.25	37.50
R7-107b ④	12"	30"		④	④	④	6	④	④	④	P-5 6 REQ'D	2.50	15.00
R10-12	30"	36"		①	①	①	1	WHITE	BLACK/GREEN	BLACK	1 MOUNT ON SPAN WIRE	7.50	7.50
W3-3	30"	30"					6	FLUORESCENT YELLOW	BLACK	BLACK	P-5 6 REQ'D	6.25	37.50
W4-2R	36"	36"					2	FLUORESCENT YELLOW	BLACK	BLACK	P-5 2 REQ'D	9.00	18.00
W11-2	36"	36"					2	FLUORESCENT YELLOW GREEN	BLACK	BLACK	P-5 2 REQ'D	9.00	18.00
W16-7P	24"	12"					2	FLUORESCENT YELLOW GREEN	BLACK	BLACK	2 MOUNT W/W11-2	2.00	4.00
W11-2	36"	36"					4	FLUORESCENT YELLOW GREEN	BLACK	BLACK	4 MOUNT W/ RRFB	PAID UNDER ITEM 824.221	
W16-7P	24"	12"		▼	▼	▼	4	FLUORESCENT YELLOW GREEN	BLACK	BLACK	4 MOUNT W/ RRFB	PAID UNDER ITEM 824.221	

① SEE MUTCD 2009 EDITION, THE 2012 SUPPLEMENT
TO THE 2004 EDITION OF THE STANDARD HIGHWAY
SIGNS AND SECTION M9.30.0 TYPE III OF THE
MASSDOT STANDARD SPECIFICATION FOR TEXT DIMENSIONS AND COLOR.

② SEE STANDARD DRAWINGS FOR SIGNS AND
SUPPORTS, 1990.

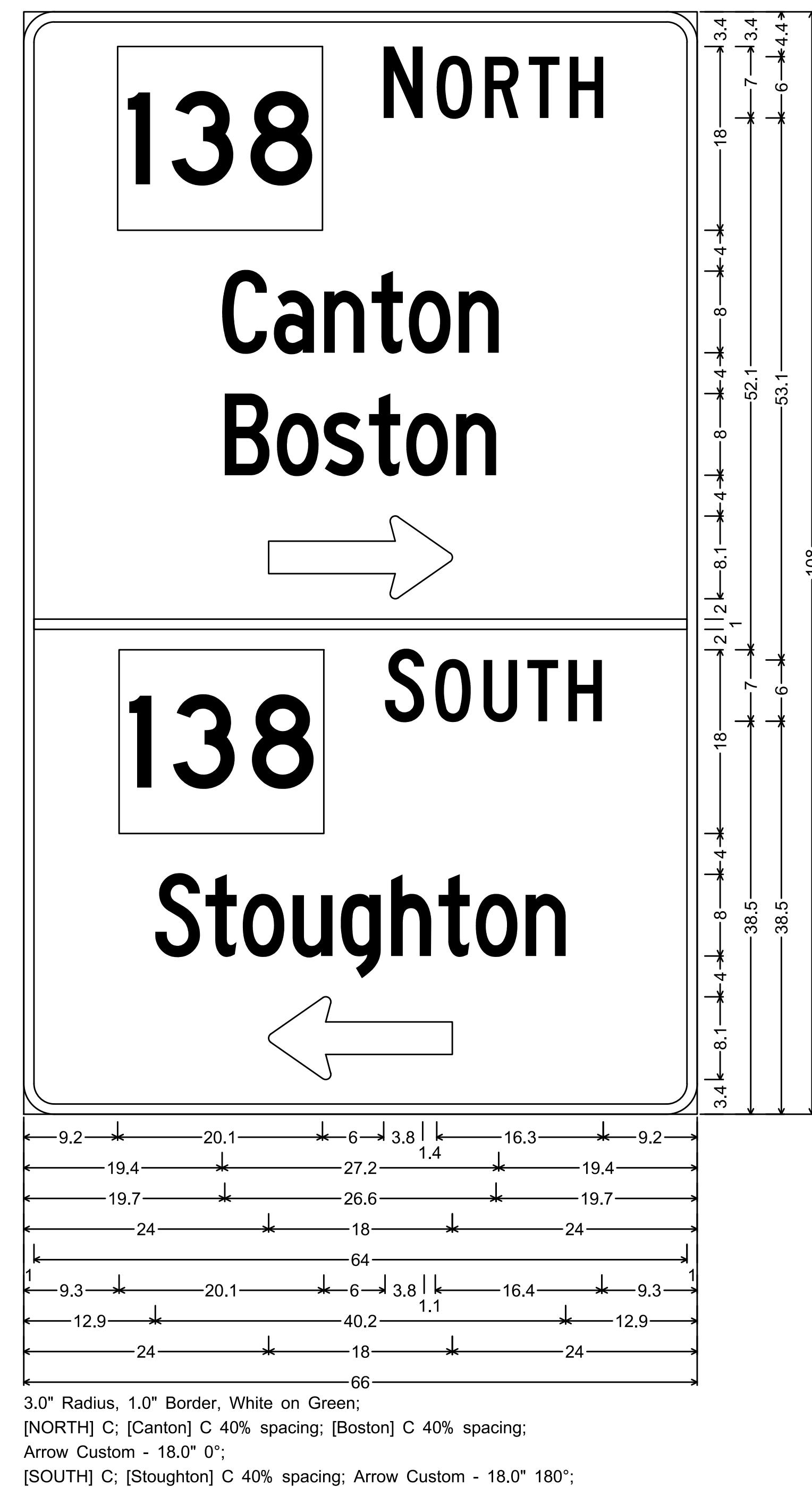
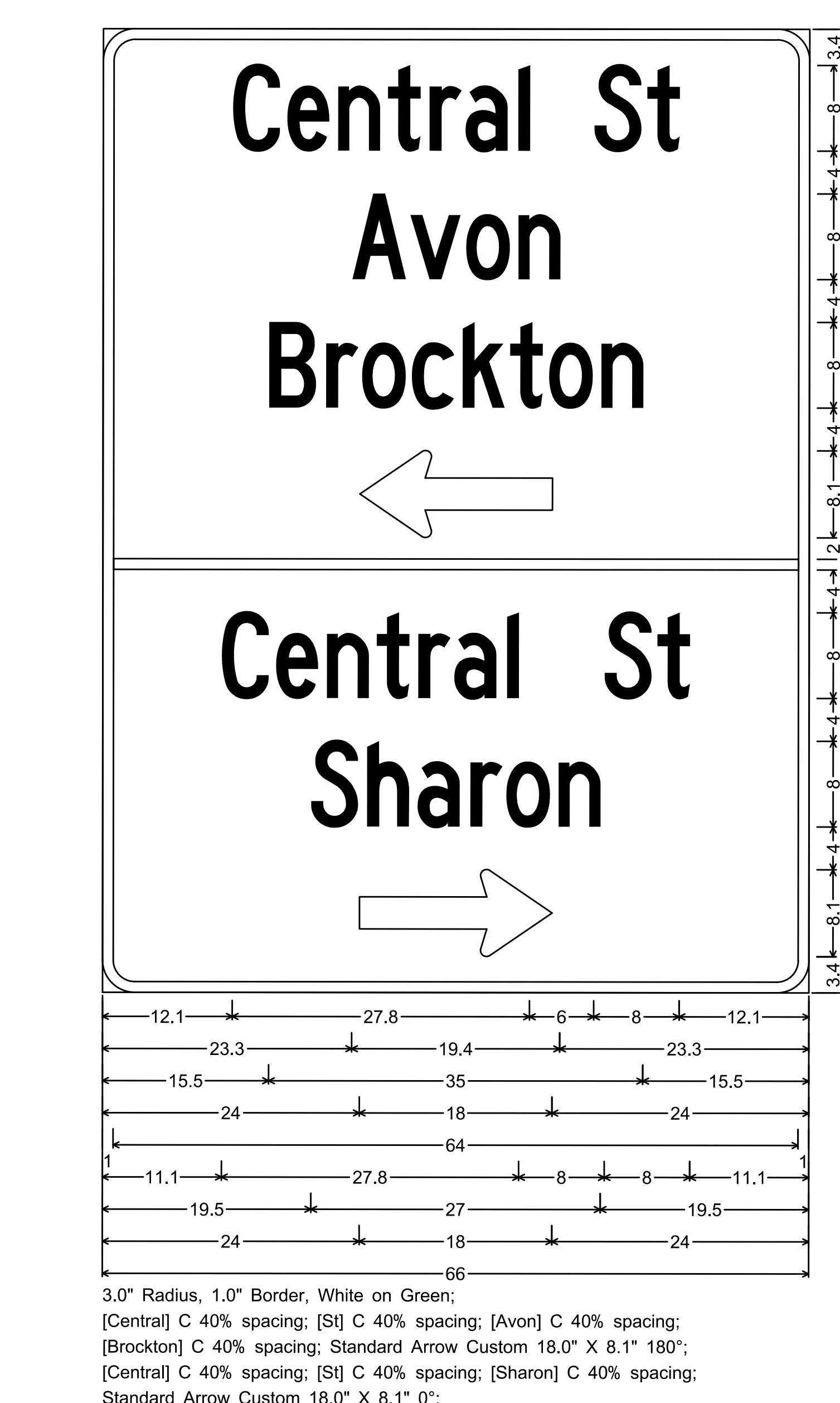
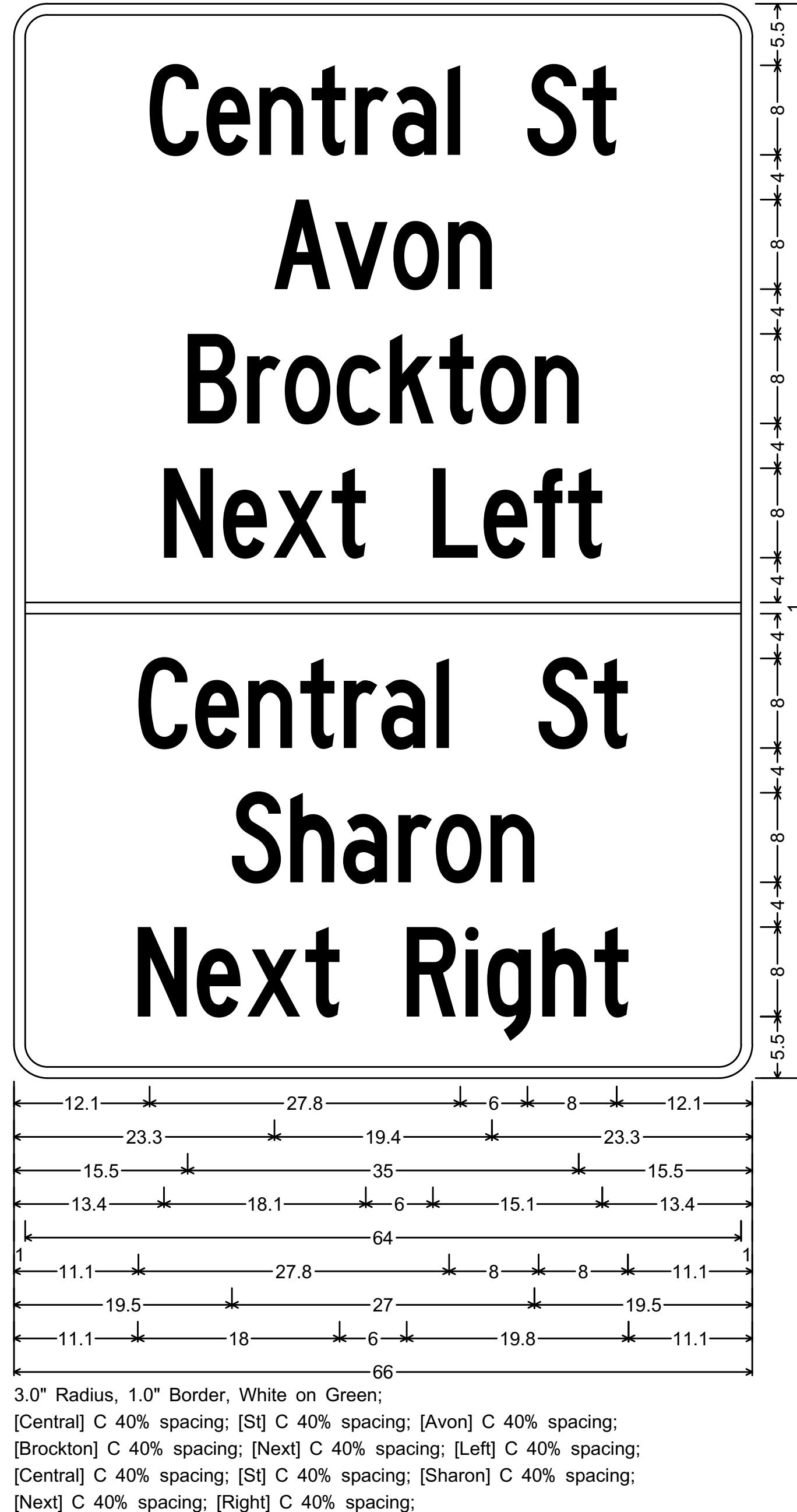
④ CONTRACTOR TO COORDINATE WITH BROCKTON AREA TRANSIT AUTHORITY (BAT) FOR BUS STOP SIGN STANDARDS.

STOUGHTON
WASHINGTON STREET (ROUTE 138)

STATE	FED. AID PROJ. NO.	HEET NO.	TOTAL SHEETS
MA	-	72	104

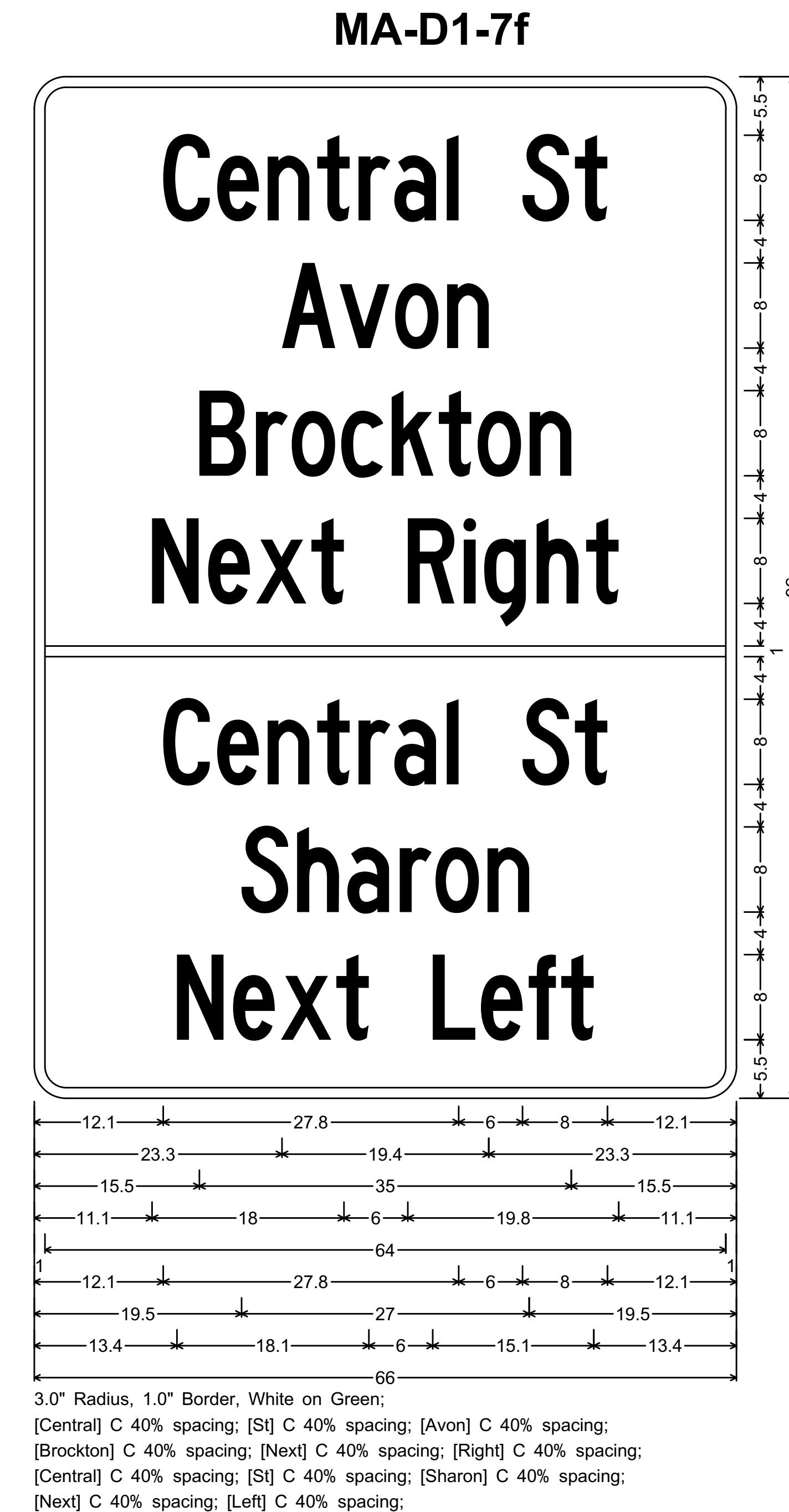
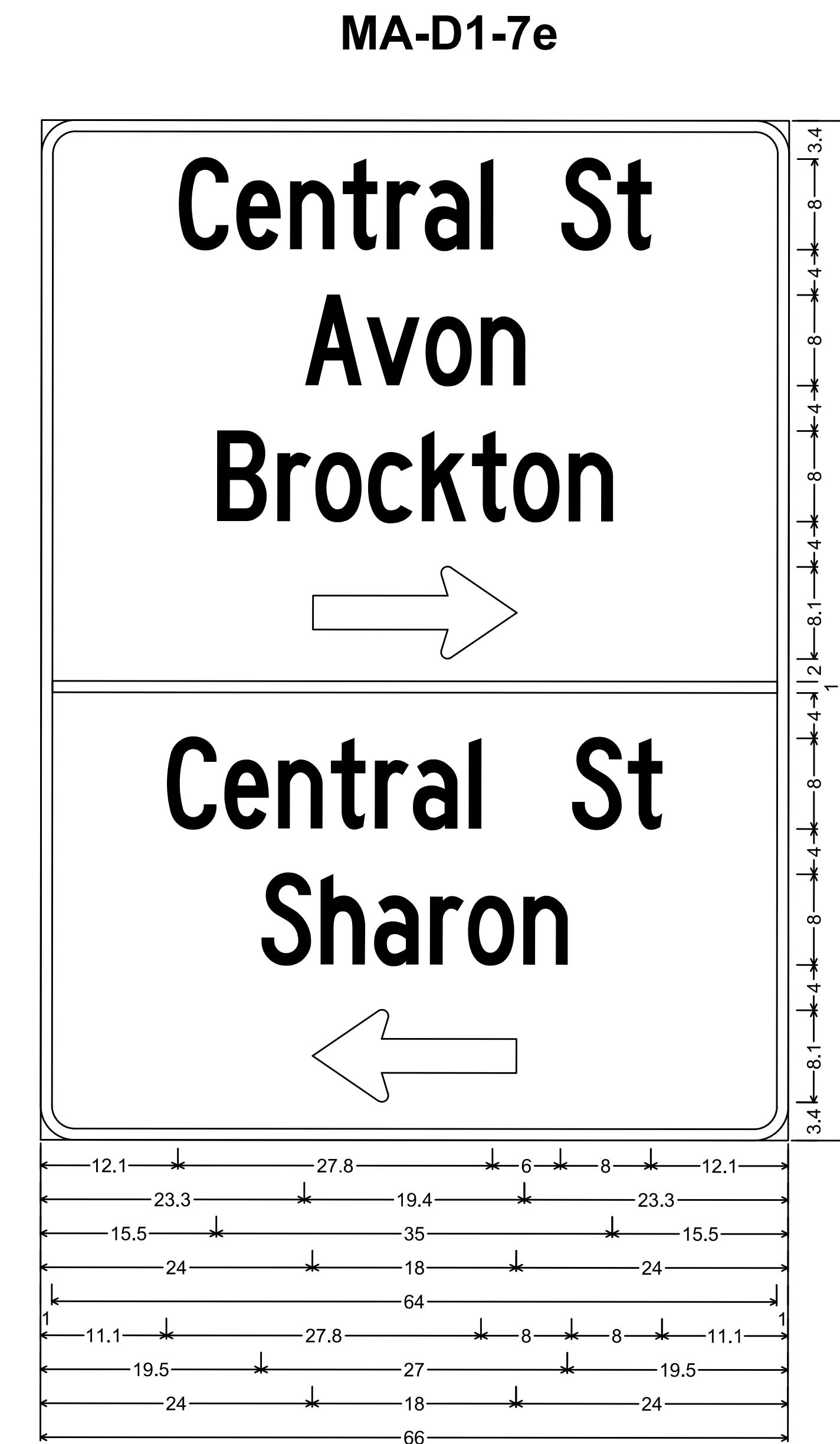
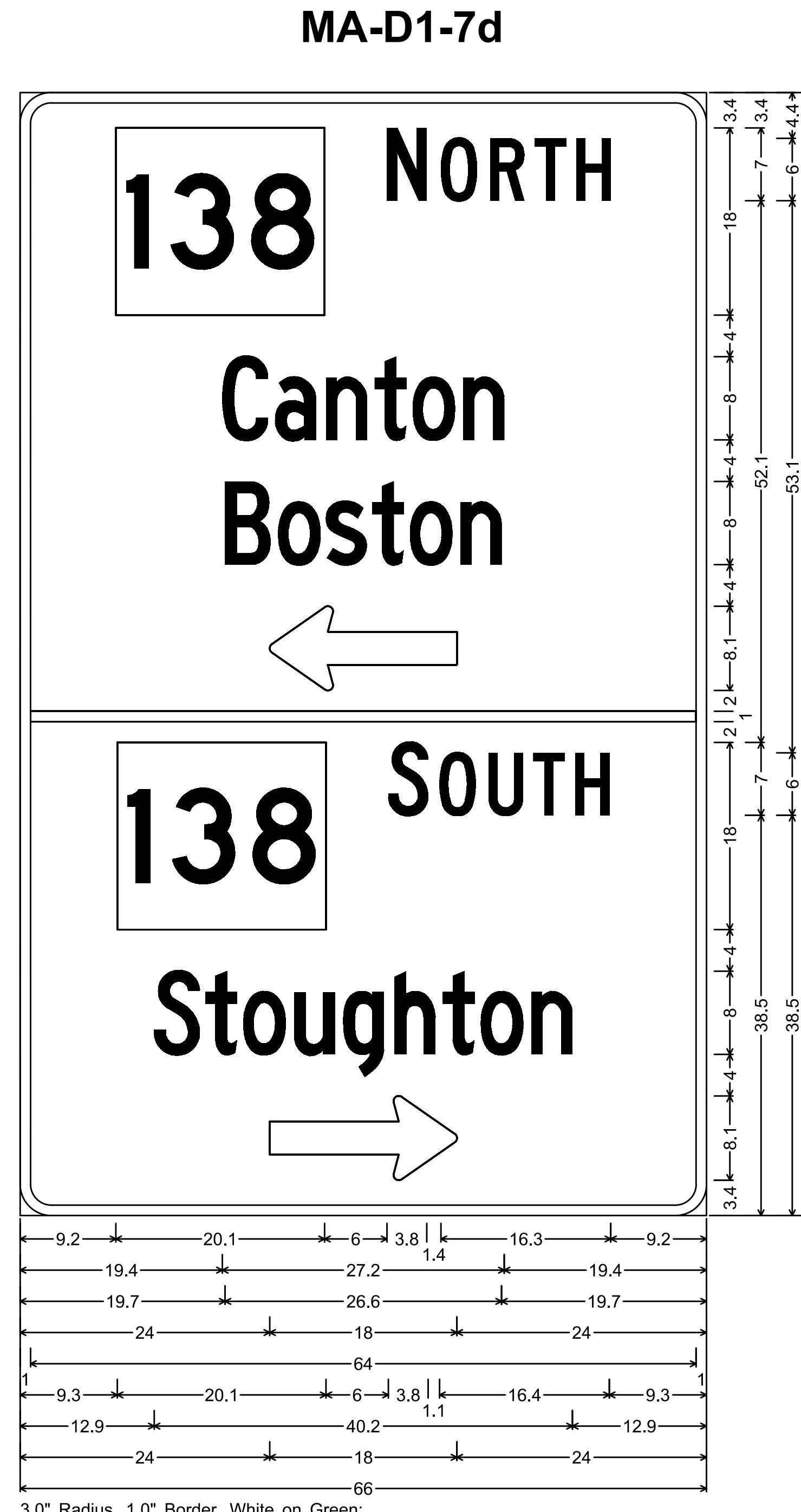
PROJECT FILE NO. 607403

TRAFFIC SIGN DETAIL



NOT TO SCALE

NOTE: ALL DIMENSION IN INCHES UNLESS OTHERWISE NOTED.

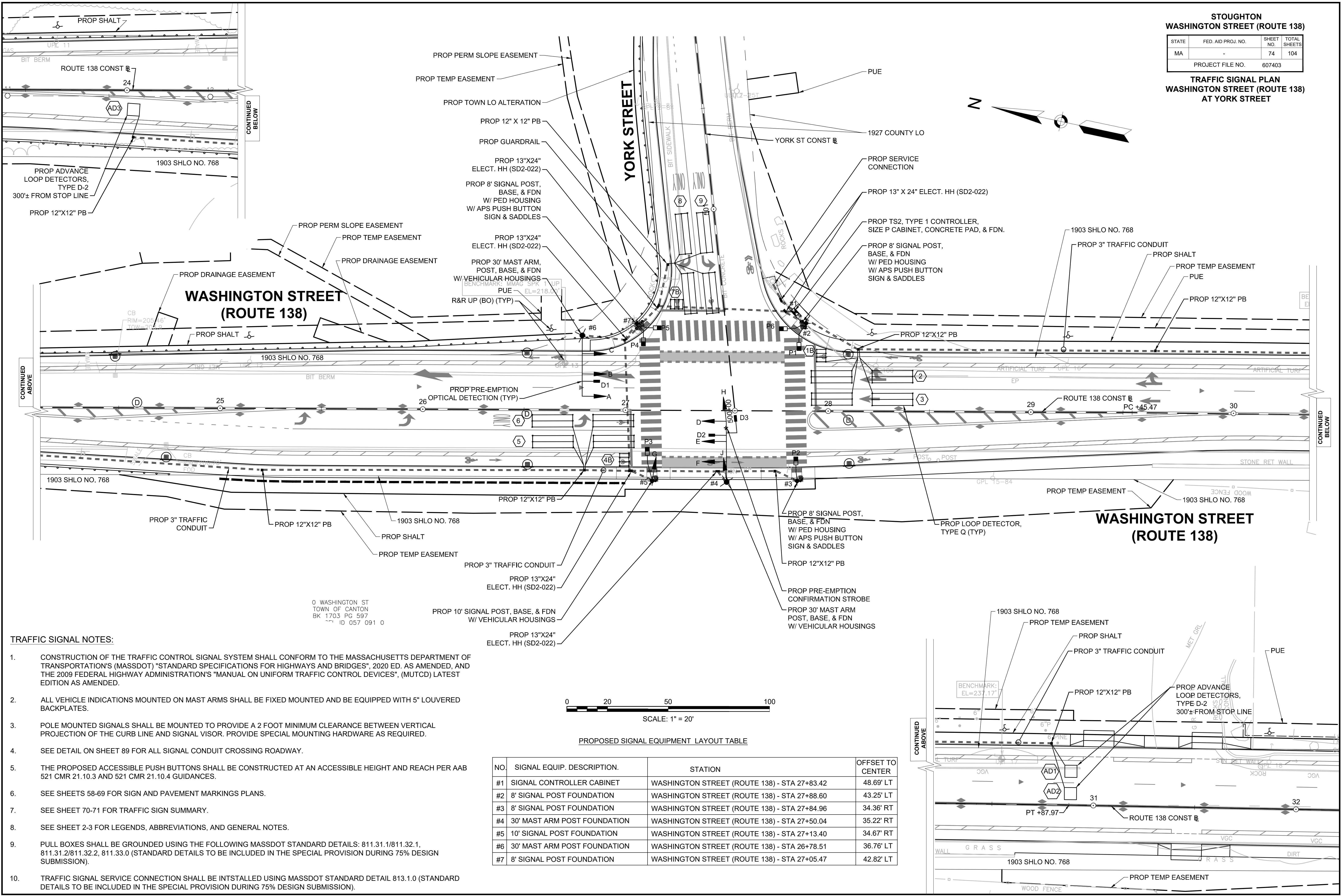


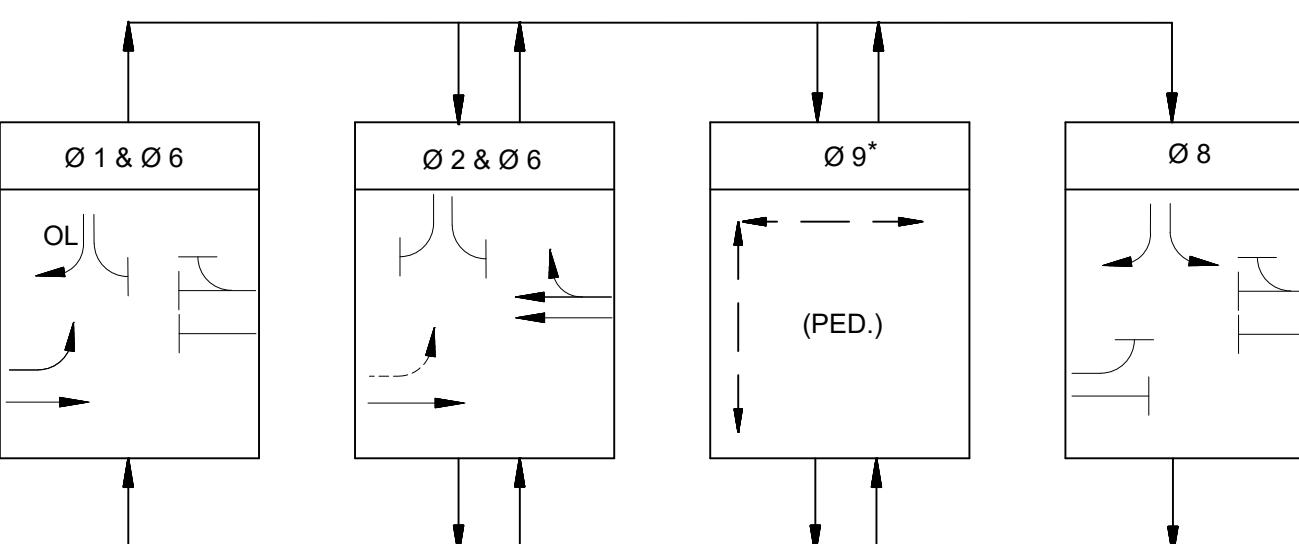
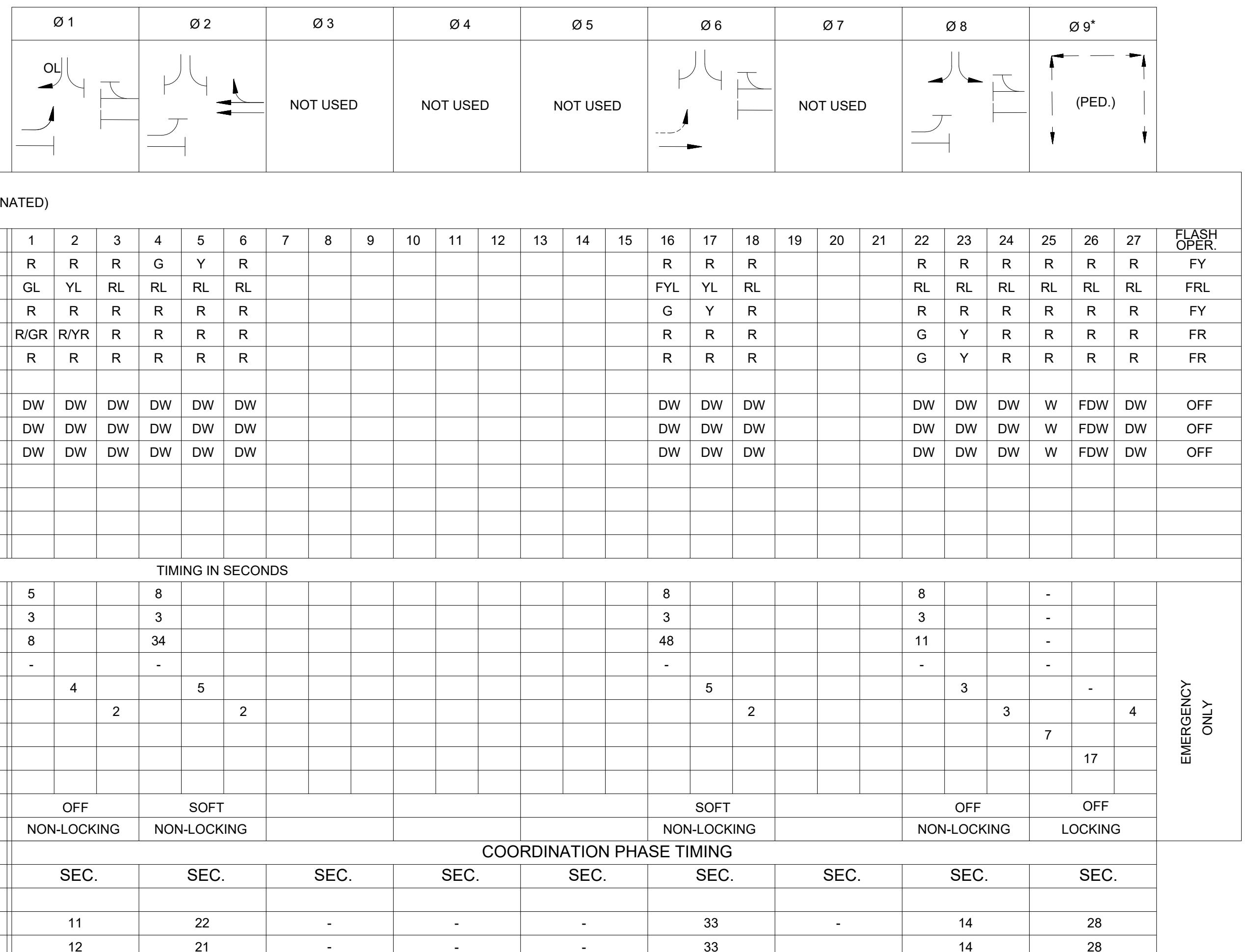
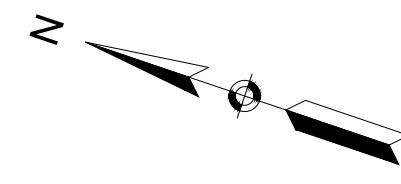
**STOUGHTON
WASHINGTON STREET (ROUTE 138)**

STATE	FED. AID PROJ. NO.	HEET NO.	TOTAL SHEETS
MA	-	73	104

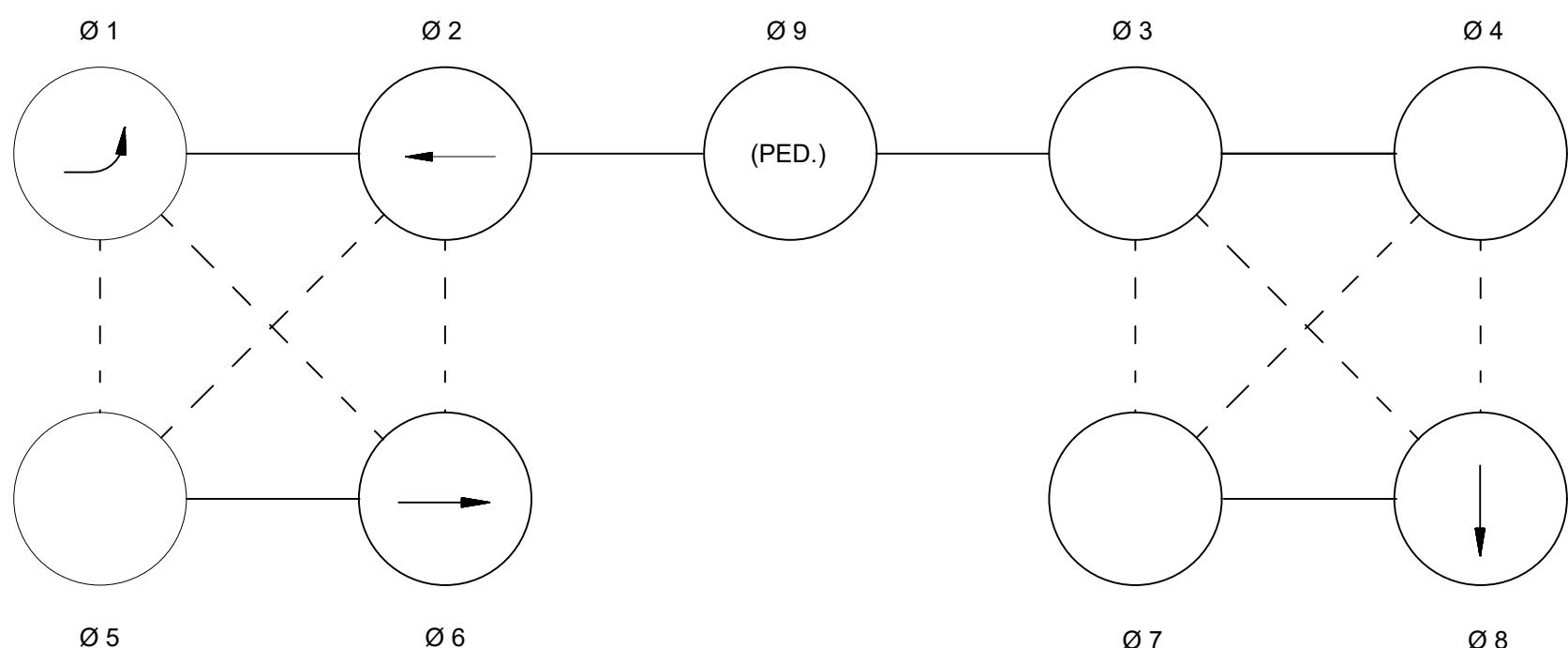
PROJECT FILE NO. 607403

TRAFFIC SIGN DETAIL

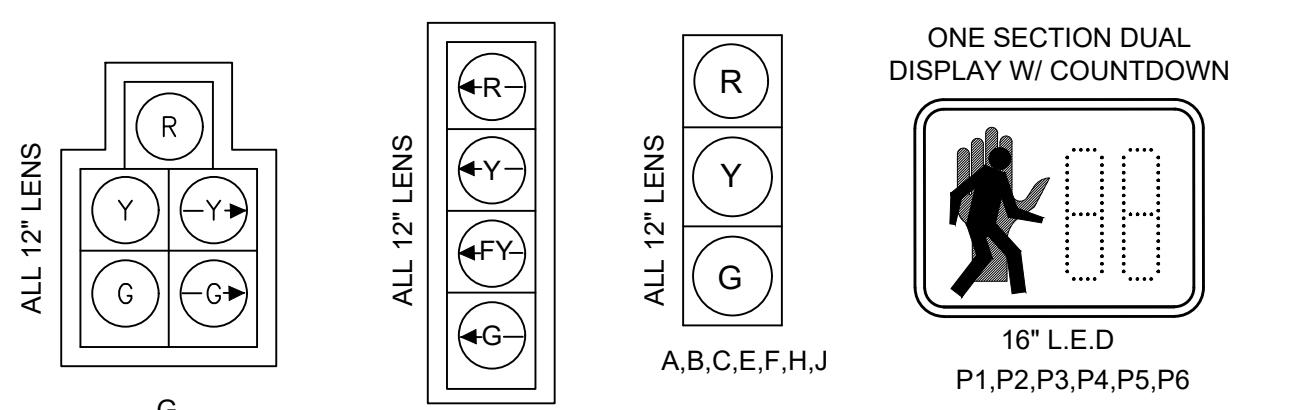




NEMA DUAL RING PHASING NOTES:



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.



NOTES:

1. ALL SIGNALS SHALL HAVE CUT AWAY TUNNEL VISORS.
2. ALL SIGNALS SHALL HAVE 12" LED WITH 5" LOUVERED BACK PLATES.
3. ALL BACKPLATES SHALL HAVE A 3" RETROREFLECTIVE BORDER.

FIRE PREEMPTION SCHEDULE

APPROACH	DETECTOR	PREEMPTION PHASE	NEXT PHASE CALLED
NORTHBOUND	D1	2	8
SOUTHBOUND	D2	1+6	2+6
WESTBOUND	D3	8	2+6

EMERGENCY VEHICLE PREEMPTION OPERATION:

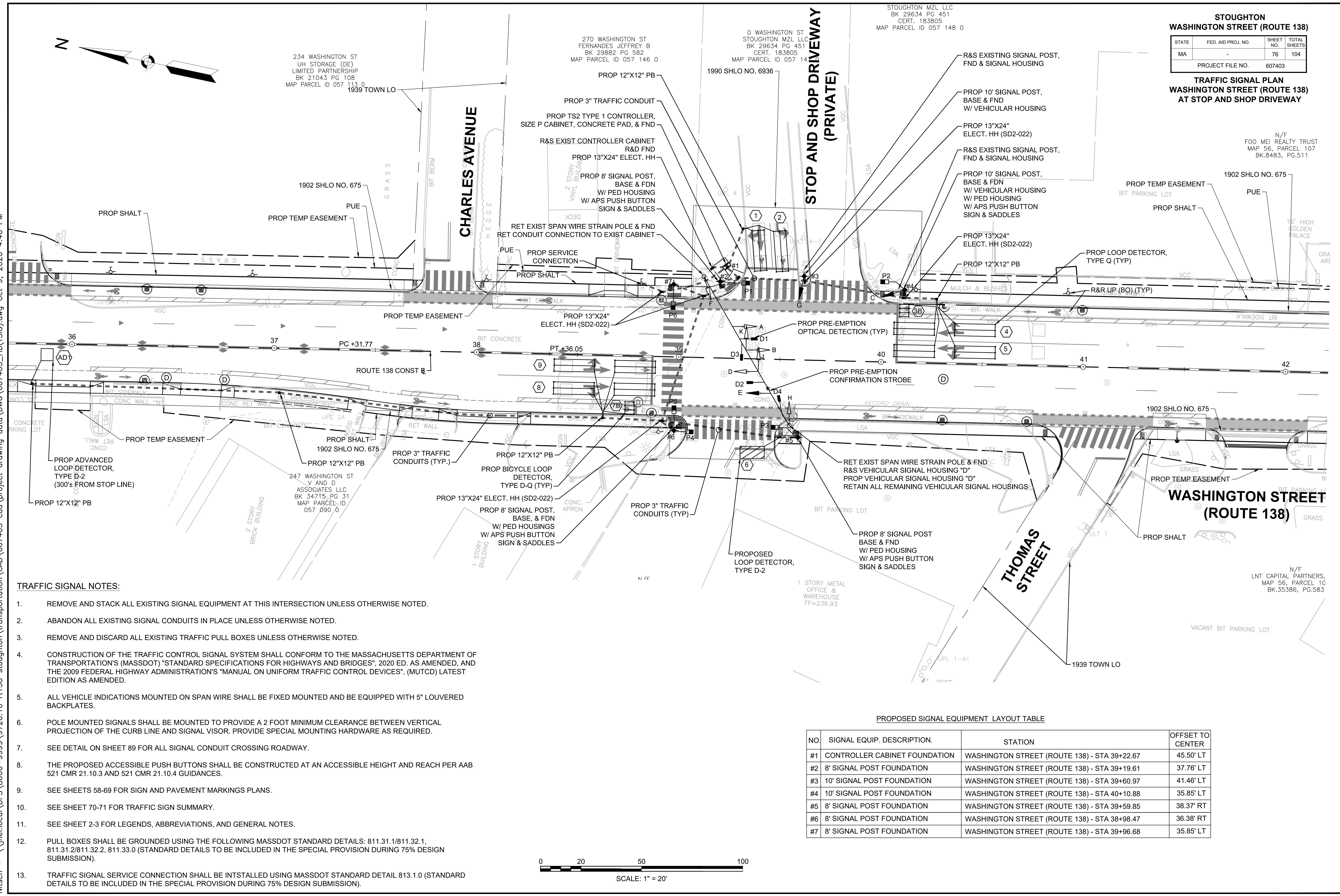
1. EMERGENCY VEHICLE PREEMPTION SHALL BE ACTUATED BY AN OPTICAL SIGNAL FROM AN OPTICAL Emitter MOUNTED ON AN EMERGENCY VEHICLE AND RECEIVED BY AN OPTICAL DETECTOR LOCATED AT INTERSECTION. A SEPARATE RECEIVING DETECTOR IS REQUIRED FOR EACH DETECTED APPROACH.
2. PREEMPTION SIGNALS FROM MULTIPLE APPROACHES SHALL BE SERVICED ON A FIRST DETECTED FIRST SERVED BASIS.
3. IN RESPONSE TO A PREEMPTION SIGNAL RECEIVED AT AN INTERSECTION BY AN OPTICAL DETECTOR, THE CONTROLLER SHALL TIME THE CLEARANCE INTERVALS OF THE ACTIVE PHASE (IF DIFFERENT THAT TO BE SERVICED) AND ADVANCE TO AND/OR HOLD IN EMERGENCY VEHICLE PREEMPTION PHASE UNTIL PREEMPTION SIGNAL CEASES. THE CONTROLLER SHALL THEN TIME CLEARANCES AND SIMILARLY SERVICE OTHER EMERGENCY VEHICLE PREEMPTION SEQUENCES IN THE ORDER RECEIVED (IF RECEIVED) OTHERWISE, RESUME NORMAL PREFERENTIAL PHASE SEQUENCE.
4. PREEMPTION MINIMUM GREENS SHALL BE SIX SECONDS.
5. NORMAL CLEARANCES SHALL BE PROVIDED ON PHASES THAT ARE TERMINATED BY PREEMPTION DEMAND.
6. ACTUAL TIMMING FOR PREEMPTION SHALL BE DETERMINED IN THE FIELD IN COORDINATION WITH THE FIRE DEPARTMENT AND SHALL BE APPROVED BY MASSDOT PRIOR TO OPERATION.

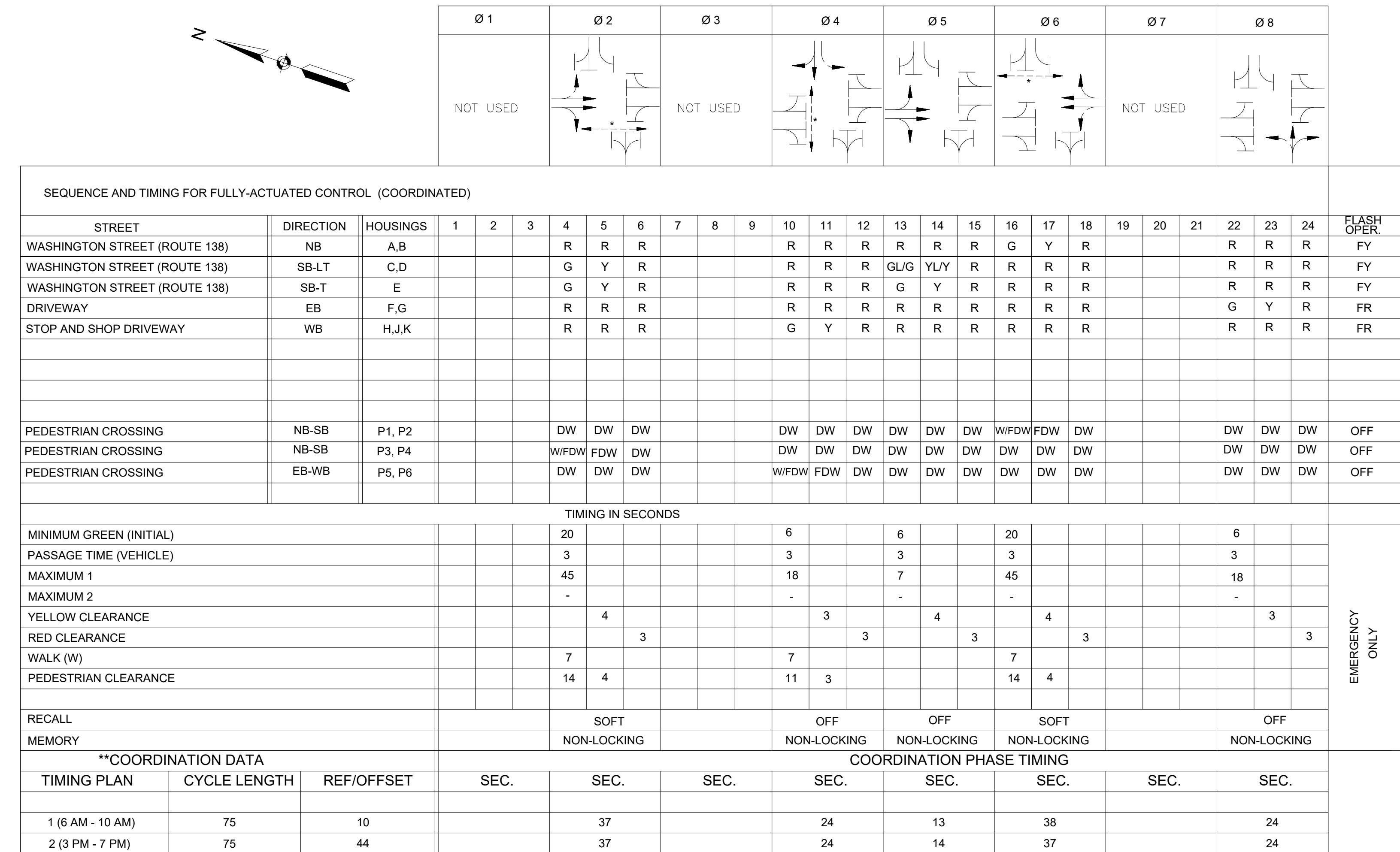
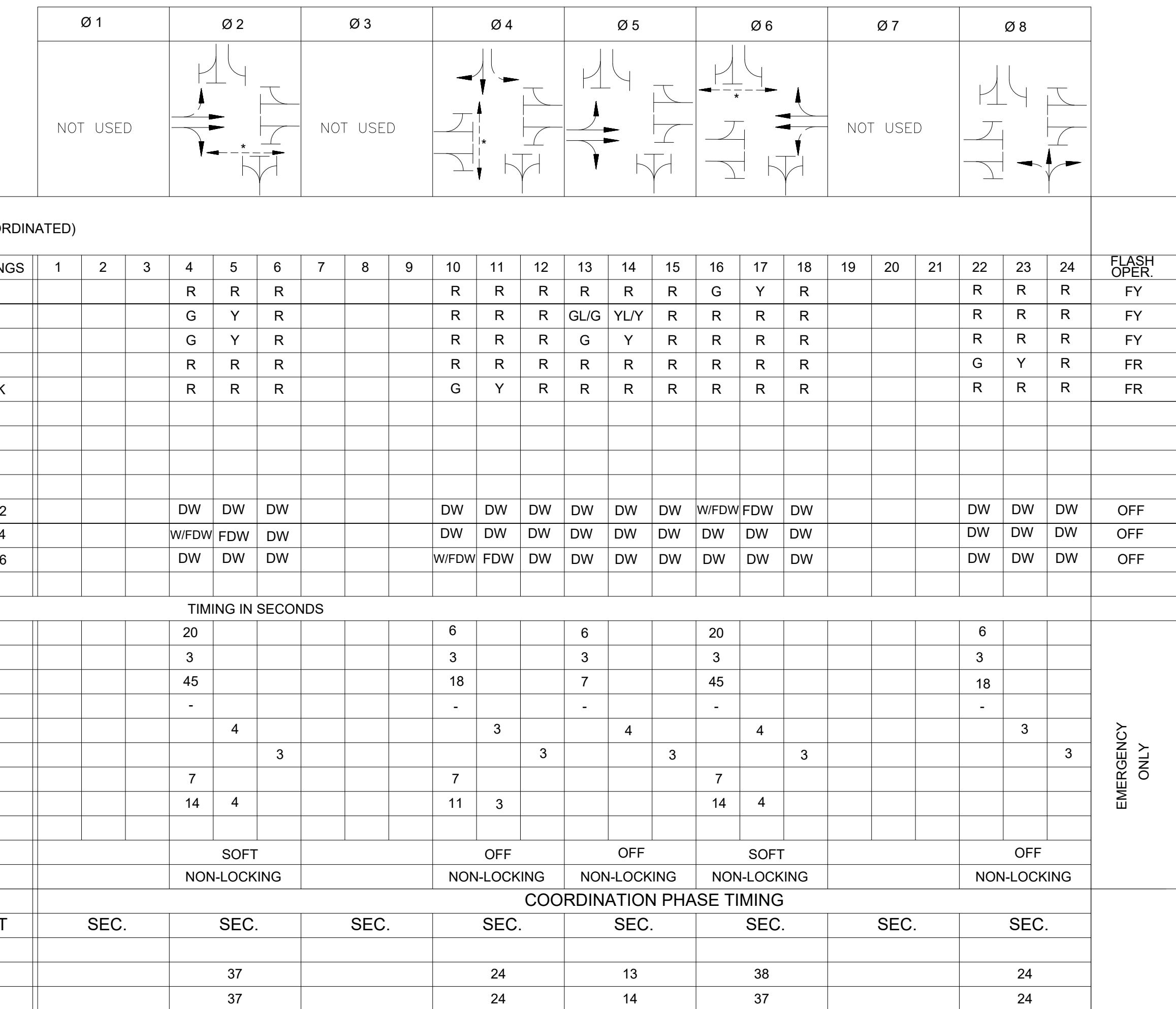
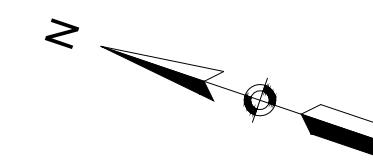
MAJOR ITEMS REQUIRED		
PAY ITEM	QUANTITY	ITEM
816.01	1	CONTROLLER NEMA 8 PHASE TS2-TYPE 1, CAB., CONCRETE PAD, & FDN.
	1	SERVICE CONNECTION, TYPE OVERHEAD
	3	8' SIGNAL POLE, BASE, & FDN.
	1	10' SIGNAL POLE, BASE, & FDN.
	2	30 FT TYPE II, GALV. STEEL MAST ARM ASSEMBLY , BASE & FDN.
	1	1 WAY, 4 SECTION, SIGNAL HOUSING (12" L.E.D.)
	1	1 WAY, 5 SECTION, SIGNAL HOUSING (12" L.E.D.)
	7	1 WAY, 3 SECTION, SIGNAL HOUSING (12" L.E.D.)
	7	5" 3-SECTION BACKPLATES (LOUVERED) WITH 3" RETROREFLECTIVE BORDER
	1	5" 4-SECTION BACKPLATES (LOUVERED) WITH 3" RETROREFLECTIVE BORDER
	1	5" 5-SECTION BACKPLATES (LOUVERED) WITH 3" RETROREFLECTIVE BORDER
	6	16" PEDESTRIAN COUNTDOWN HOUSING, TYPE L.E.D. (INT'L SYMBOL)
	6	PEDESTRIAN PUSH BUTTON, SIGN & SADDLES (APS)
	8	DUAL CHANNEL LOOP DETECTOR AMPLIFIER (CARD RACK)
	18	ROADWAY LOOP DETECTOR (SEE LOOP DETECTOR DATA TABLE)
	3	EMERGENCY VEHICLE PRE-EMPTION RECEIVER-SINGLE CHANNEL
	2	EMERGENCY VEHICLE PRE-EMPTION PHASE SELECTOR MODULE-DUAL CHANNEL
	2	PRE-EMPTION CARD RACK
	1	EMERGENCY VEHICLE PRE-EMPTION CONFIRMATION STROBE (WHITE)
	1	GPS TIME UNIT
811.22	6	13" X 24" ELECTRIC HANDHOLE - SD2.022
811.31	8	12" X 12" PULL BOX

LOOP DETECTOR DATA

SEE PLAN SHEET-LOOP DETECTOR DETAILS FOR LOOP CONSTRUCTION, SPLICING, DETAILS & NOTES. DELAY TIME EFFECTIVE ONLY DURING CALLED OPEN TIME IN SEC.

DETAILS & NOTES. DELAY TIME EFFECTIVE ONLY DURING CALLED & RED. TIME IN SEC.										
DETECTOR NUMBER	AMPLIFIER NUMBER	CHANNEL NUMBER	LOOP SIZE (LXW)	NUM. OF TURNS	Ø CALLED	Ø EXT.	MODE A=PULSE B=PRES.	DELAY TIME	EXT. TIME	
1B	1	1	1@4.5'X6'	4-8-4	2	2	B	-	-	
2	2	1	2@20'X6'	2-4-2	2	2	B	-	-	
3	2	2	2@20'X6'	2-4-2	2	2	B	-	-	
4B	3	1	3@6'X6'	4-8-4	6	6	B	-	-	
5	4	1	2@20'X6'	2-4-2	6	6	B	-	-	
6	4	2	3@6'X6'	2-4-2	1	1	B	-	-	
7B	5	1	1@4.5'X6'	4-8-4	8	8	B	-	-	
8	6	1	2@20'X6'	2-4-2	8	8	B	-	-	
9	6	2	2@20'X6'	2-4-2	8	8	B	-	-	
AD1	7	1	1@6'X6'	3	-	2	A	-	3	
AD2	7	2	1@6'X6'	3	-	2	A	-	3	
AD3	8	1	1@6'X6'	3	-	6	A	-	3	





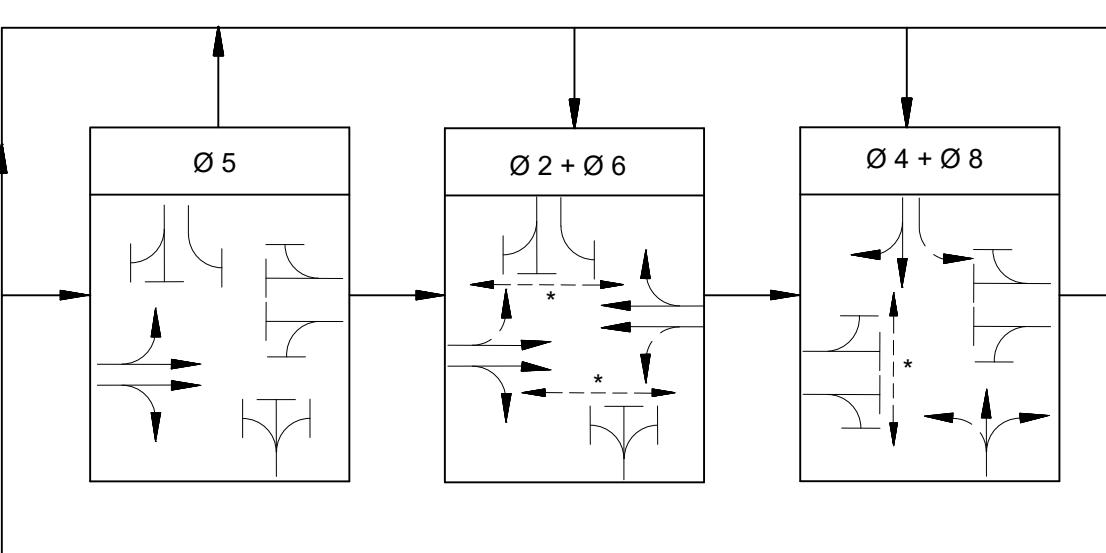
FIRE PREEMPTION SCHEDULE

APPROACH	DETECTOR	PREEMPTION PHASE	NEXT PHASE CALLED
NORTHBOUND	D1	6	2 + 6
SOUTHBOUND	D2	5	2 + 6
EASTBOUND	D3	8	4 + 8
WESTBOUND	D4	4	4 + 8

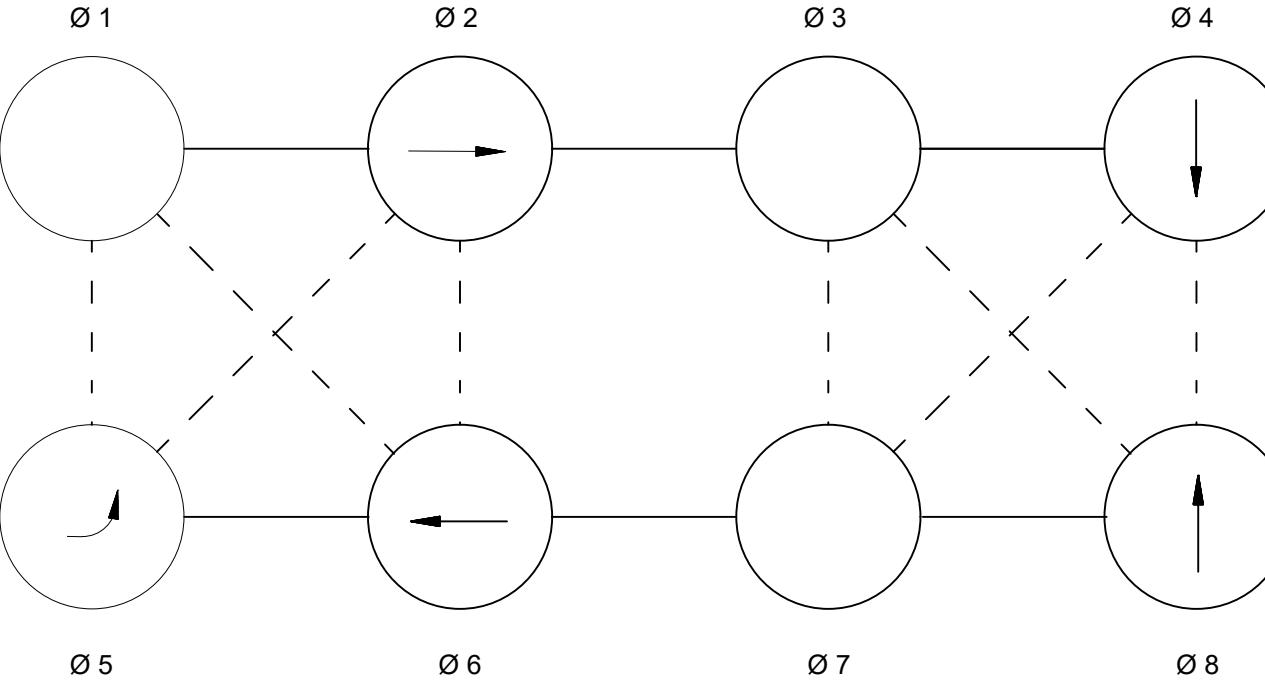
EMERGENCY VEHICLE PREEMPTION OPERATION:

1. EMERGENCY VEHICLE PREEMPTION SHALL BE ACTUATED BY AN OPTICAL SIGNAL FROM AN OPTICAL Emitter MOUNTED ON AN EMERGENCY VEHICLE AND RECEIVED BY AN OPTICAL DETECTOR LOCATED AT INTERSECTION. A SEPARATE RECEIVING DETECTOR IS REQUIRED FOR EACH DETECTED APPROACH.
2. PREEMPTION SIGNALS FROM MULTIPLE APPROACHES SHALL BE SERVICED ON A FIRST DETECTED FIRST SERVED BASIS.
3. IN RESPONSE TO A PREEMPTION SIGNAL RECEIVED AT AN INTERSECTION BY AN OPTICAL DETECTOR, THE CONTROLLER SHALL TIME THE CLEARANCE INTERVALS OF THE ACTIVE PHASE (IF DIFFERENT THAT TO BE SERVICED) AND ADVANCE TO AND/OR HOLD IN EMERGENCY VEHICLE PREEMPTION PHASE UNTIL PREEMPTION SIGNAL CEASES. THE CONTROLLER SHALL THEN TIME CLEARANCES AND SIMILARLY SERVICE OTHER EMERGENCY VEHICLE PREEMPTION SEQUENCES IN THE ORDER RECEIVED (IF RECEIVED) OTHERWISE, RESUME NORMAL PREFERENTIAL PHASE SEQUENCE.
4. PREEMPTION MINIMUM GREENS SHALL BE SIX SECONDS.
5. NORMAL CLEARANCES SHALL BE PROVIDED ON PHASES THAT ARE TERMINATED BY PREEMPTION DEMAND.
6. ACTUAL TIMING FOR PREEMPTION SHALL BE DETERMINED IN THE FIELD IN COORDINATION WITH THE FIRE DEPARTMENT AND SHALL BE APPROVED BY MASSDOT PRIOR TO OPERATION.

PREFERENTIAL PHASING SEQUENCE



NEMA DUAL RING PHASING 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.

MAJOR ITEMS REQUIRED		
PAY ITEM	QUANTITY	ITEM
1	1	CONTROLLER NEMA 8 PHASE TS2-TYPE 1, CAB., CONCRETE PAD, & FDN.
1	1	SERVICE CONNECTION, TYPE OVERHEAD
2	1	8' SIGNAL POLE, BASE, & FDN.
4	1	10' SIGNAL POLE, BASE, & FDN.
2	1	1 WAY, 3 SECTION, SIGNAL HOUSING (12" L.E.D.)
1	1	1 WAY, 5 SECTION, SIGNAL HOUSING (12" L.E.D.)
2	1	5" 3-SECTION BACKPLATES (LOUVERED) WITH 3" RETROREFLECTIVE BORDER
1	1	5" 5-SECTION BACKPLATES (LOUVERED) WITH 3" RETROREFLECTIVE BORDER
6	1	16' PEDESTRIAN COUNTDOWN HOUSING, TYPE L.E.D. (INT'L SYMBOL)
6	1	PEDESTRIAN PUSH BUTTON, SIGN & SADDLES (APS)
7	1	DUAL CHANNEL LOOP DETECTOR AMPLIFIER (CARD RACK)
14	1	ROADWAY LOOP DETECTOR (SEE LOOP DETECTOR DATA TABLE)
4	1	EMERGENCY VEHICLE PRE-EMPTION RECEIVER-SINGLE CHANNEL
2	1	EMERGENCY VEHICLE PRE-EMPTION PHASE SELECTOR MODULE-DUAL CHANNEL
1	1	PRE-EMPTION CARD RACK
1	1	EMERGENCY VEHICLE PRE-EMPTION CONFIRMATION STROBE (WHITE)
1	1	GPS TIME UNIT
811.22	8	13" X 24" ELECTRIC HANDHOLE - SD.2022
811.31	5	12" X 12" PULL BOX

Plus all necessary duct, cable, labor, miscellaneous material and equipment to complete the installation.

STOUGHTON
WASHINGTON STREET (ROUTE 138)
STATE FED. AID PROJ. NO. SHEET NO. TOTAL SHEETS
MA - 77 104
PROJECT FILE NO. 607403

TRAFFIC SIGNAL DATA PLAN
WASHINGTON STREET (ROUTE 138)
AT STOP AND SHOP DRIVEWAY

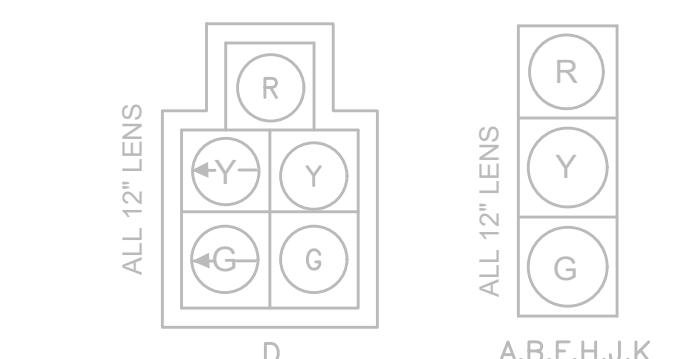
LOOP DETECTOR DATA

SEE PLAN SHEET-LOOP DETECTOR DETAILS FOR LOOP CONSTRUCTION, SPLICING, DETAILS & NOTES. DELAY TIME EFFECTIVE ONLY DURING CALLED Ø RED. TIME IN SEC.

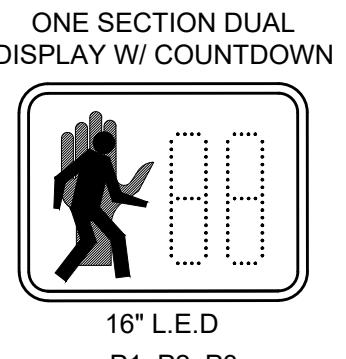
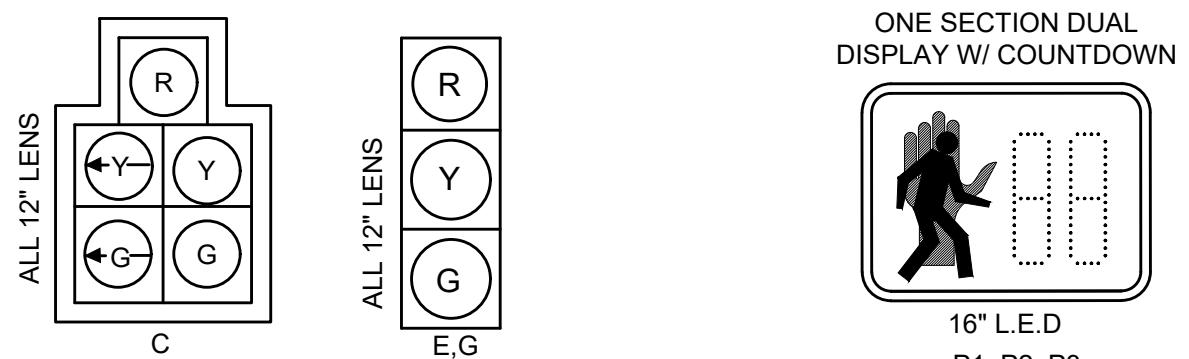
DETECTOR NUMBER	AMPLIFIER NUMBER	CHANNEL NUMBER	LOOP SIZE (LXW)	NUM. OF TURNS	Ø CALLED	Ø EXT.	MODE A=PULSE B=PREST.	DELAY TIME	EXT. TIME
1	1	1	1@20'X6'	2-4-2	4	4	B	-	-
2	1	2	1@20'X6'	2-4-2	4	4	B	-	-
3B	2	1	1@4.5'X6'	4-8-4	6	6	B	-	-
4	3	1	2@20'X6'	2-4-2	6	6	B	-	-
5	3	2	2@20'X6'	2-4-2	6	6	B	-	-
6	4	1	1@6'X16'	3	8	8	B	-	-
7B	5	1	1@4.5'X6'	4-8-4	2	2	B	-	-
8	6	1	2@20'X6'	2-4-2	2	2	B	-	-
9	6	2	2@20'X6'	2-4-2	5	SWITCH 2	B	-	-
AD1	7	1	1@6'X6'	3	2	2	A	-	3

DETECTOR #9 SHALL CALL AND EXTEND Ø5, AND SWITCH TO EXTEND Ø2 ONLY DURING Ø2.

EXISTING SIGNAL IDENTIFICATION TO BE RETAINED

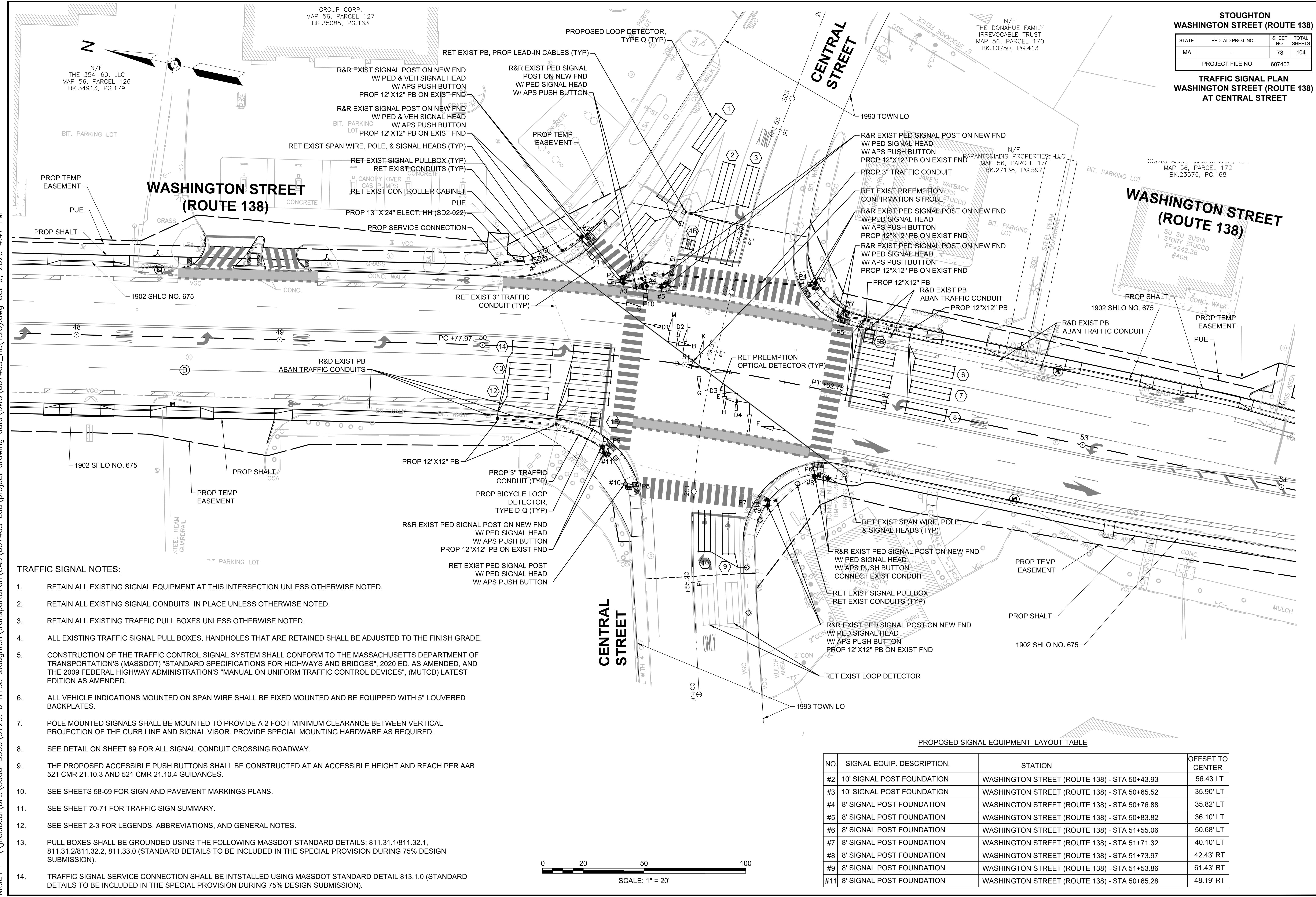


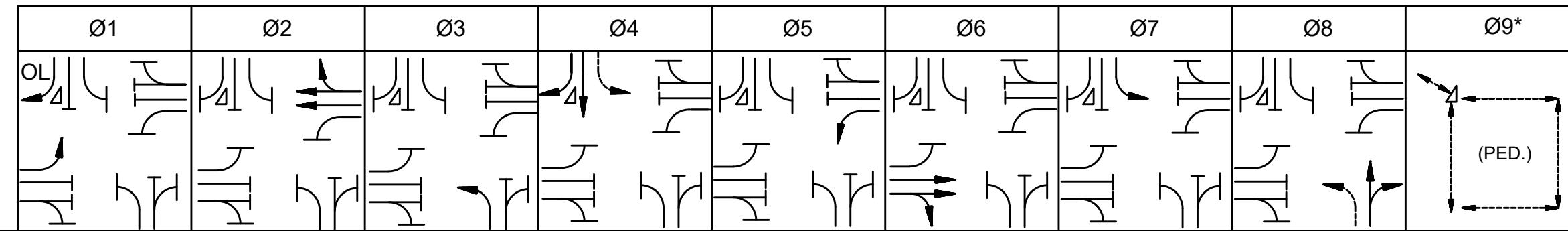
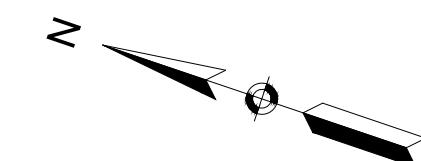
PROPOSED SIGNAL IDENTIFICATION



ONE SECTION DUAL DISPLAY W/ COUNTDOWN
16' L.E.D.
P1, P2, P3,
P4, P5, P6

1. ALL SIGNALS SHALL HAVE CUT AWAY VISORS.
2. ALL SIGNALS SHALL HAVE 12" LED WITH 5" LOUVERED BACK PLATES.
3. ALL PEDESTRIAN INDICATIONS SHALL HAVE SUN CAP VISORS.





SEQUENCE AND TIMING FOR SEMI-ACTUATED CONTROL (COORDINATE-MASTER)

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.
WASHINGTON STREET (ROUTE 138)	NB-LT	A	RL	RL	GL	YL	RL	RL	RL	RL	FRL																			
WASHINGTON STREET (ROUTE 138)	NB	B,C	R	R	R	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	FY			
WASHINGTON STREET (ROUTE 138)	SB-LT	D	GL	YL	RL	RL	RL	RL	RL	RL	RL	RL	RL	RL	RL	RL	RL	RL	RL	RL	RL	RL	RL	RL	RL	RL	RL	FRL		
WASHINGTON STREET (ROUTE 138)	SB	E,F	R	R	R	R	R	R	R	R	R	R	R	R	G	Y	R	R	R	R	R	R	R	R	R	R	FY			
CENTRAL STREET	EB-LT	G	RL	RL	RL	RL	RL	GL	YL	RL	RL	RL	RL	RL	RL	RL	RL	RL	RL	RL	YL	RL	RL	RL	RL	RL	FRL			
CENTRAL STREET	EB	H,J	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	FR			
CENTRAL STREET	WB-LT	K	RL	FYL	YL	RL	RL	RL	RL	GL	YL	RL	RL	RL	FRL															
CENTRAL STREET	WB-T	L,M	R	R	R	R	R	R	R	R	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	FR			
CENTRAL STREET	WB-R	N,P	GR	YR	RR	RR	RR	RR	RR	GR	YR	RR	RR	RR	FRR															
PEDESTRIAN CROSSING	NB-SB	P1,P2,P3,P4	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	W	FDW	DW	OFF											
PEDESTRIAN CROSSING	EB-WB	P5,P6	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	W	FDW	DW	OFF											
PEDESTRIAN CROSSING	NB-SB	P7,P8	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	W	FDW	DW	OFF											
PEDESTRIAN CROSSING	EB-WB	P9,P10	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	W	FDW	DW	OFF											

TIMING IN SECONDS

MINIMUM GREEN (INITIAL)	6	8	6	6	6	8	6	6	-
PASSAGE TIME (VEHICLE)	3	3	3	3	3	3	3	3	-
MAXIMUM 1	12	27	6	37	15	24	6	35	-
MAXIMUM 2	-	-	-	-	-	-	-	-	-
YELLOW CLEARANCE	3	4	4	3	4	4	4	4	-
RED CLEARANCE	3	1	2	2	3	1	2	2	4
WALK (W)								7	
PEDESTRIAN CLEARANCE									26
RECALL	OFF	SOFT	OFF	OFF	SOFT	OFF	OFF	OFF	
MEMORY	NON-LOCKING	LOCKING							

**COORDINATION DATA

COORDINATION PHASE TIMING									
TIMING PLAN	CYCLE LENGTH	REF/OFFSET	SEC.						
1 (6 AM - 10 AM)	150	0	14	38	15	46	29	23	12
2 (3 PM - 7 PM)	150	0	34	27	12	40	17	44	12

NOTES:

MAX 1: ALL OTHER TIMES

* PEDESTRIAN PHASE PUSH BUTTON ACTUATED ONLY.

**SEE SHEET 80 FOR TIME-SPACE DIAGRAM AND COORDINATION PLAN

MASTER CONTROLLER: LOCATED AT THIS LOCATION

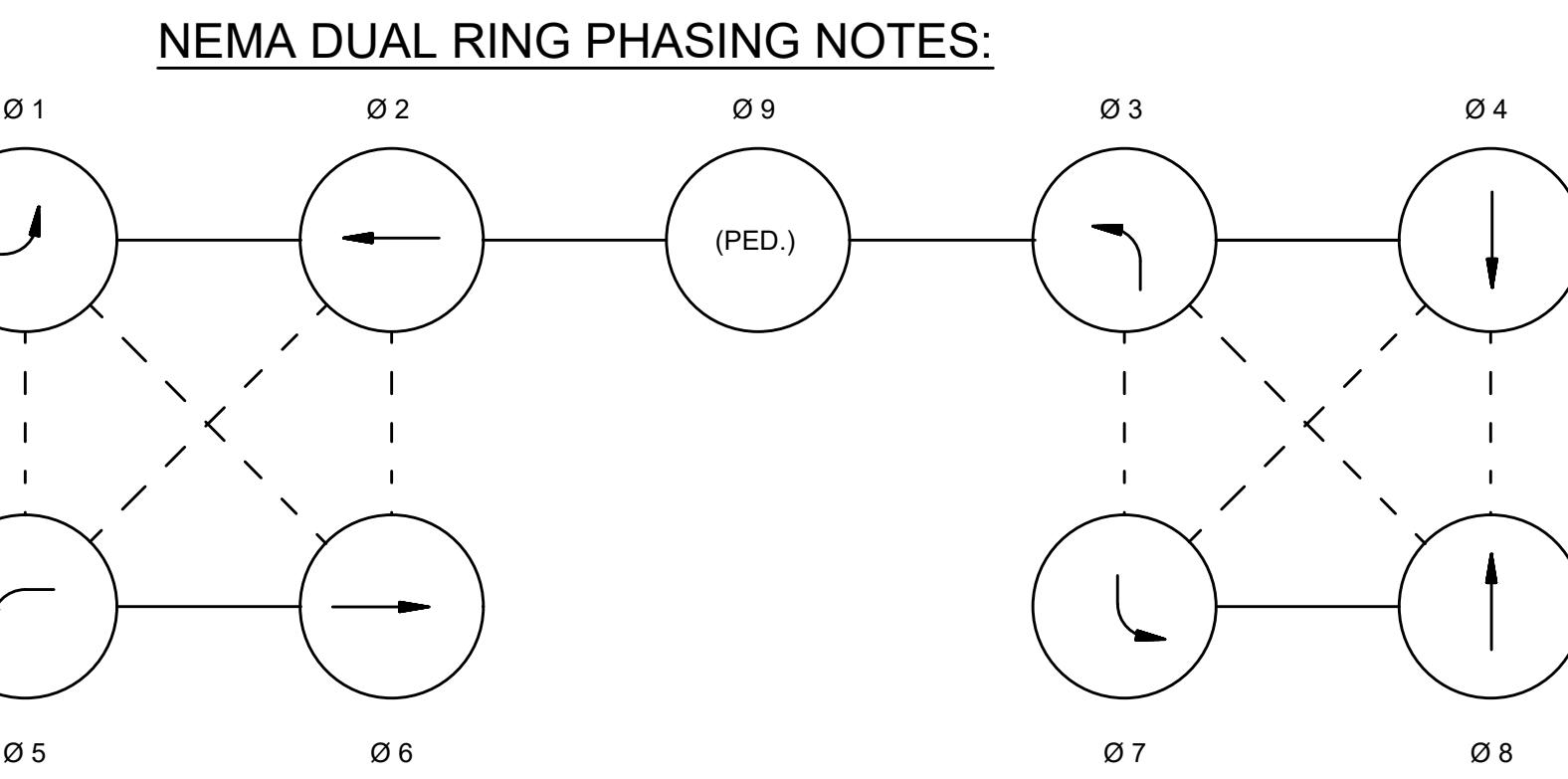
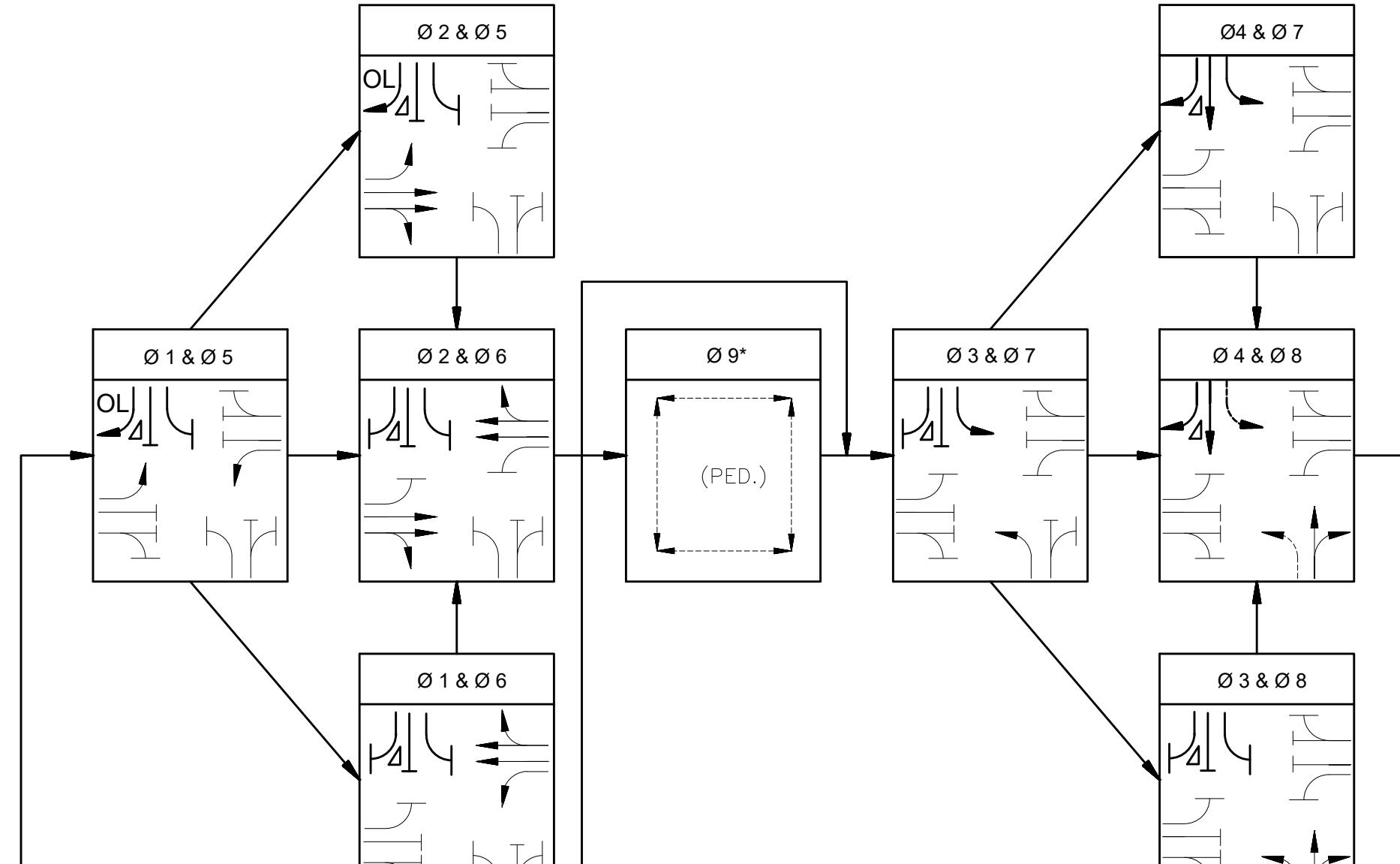
FIRE PREEMPTION SCHEDULE

APPROACH	DETECTOR	PREEMPTION PHASE	NEXT PHASE CALLED
WESTBOUND	D2	4	4 + 8
EASTBOUND	D4	8	4 + 8
NORTHBOUND	D1	2	2 + 6
SOUTHBOUND	D3	6	2 + 6

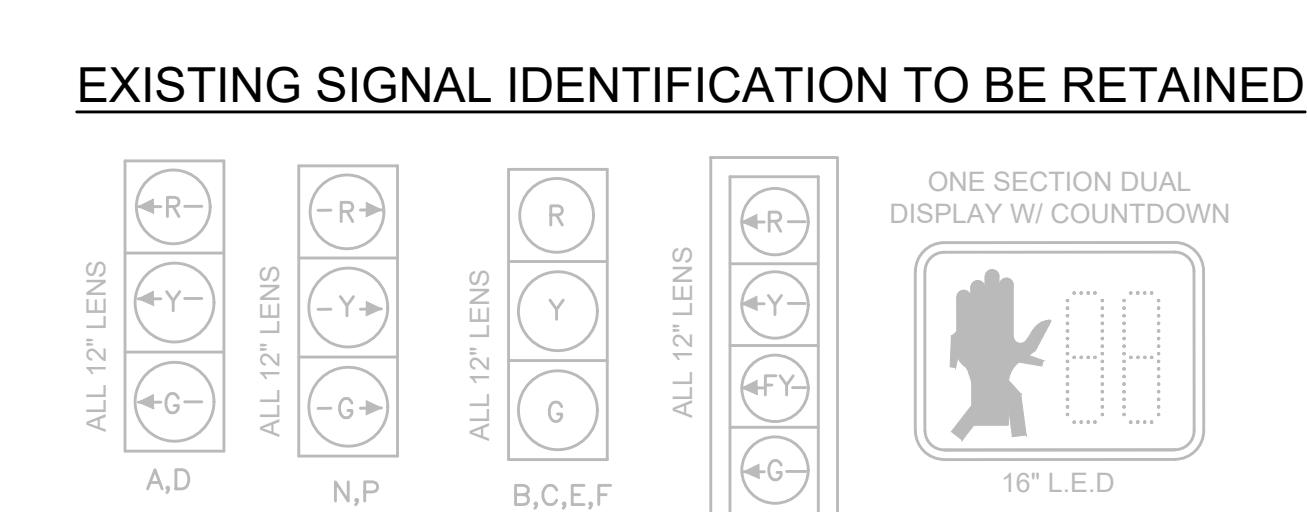
EMERGENCY VEHICLE PREEMPTION OPERATION:

1. EMERGENCY VEHICLE PREEMPTION SHALL BE ACTUATED BY AN OPTICAL SIGNAL FROM AN OPTICAL Emitter MOUNTED ON AN EMERGENCY VEHICLE AND RECEIVED BY AN OPTICAL DETECTOR LOCATED AT INTERSECTION. A SEPARATE RECEIVING DETECTOR IS REQUIRED FOR EACH DETECTED APPROACH.
2. PREEMPTION SIGNALS FROM MULTIPLE APPROACHES SHALL BE SERVICED ON A FIRST DETECTED FIRST SERVED BASIS.
3. IN RESPONSE TO A PREEMPTION SIGNAL RECEIVED AT AN INTERSECTION BY AN OPTICAL DETECTOR, THE CONTROLLER SHALL TIME THE CLEARANCE INTERVALS OF THE ACTIVE PHASE (IF DIFFERENT THAT TO BE SERVICED) AND ADVANCE TO AND/OR HOLD IN EMERGENCY VEHICLE PREEMPTION PHASE UNTIL PREEMPTION SIGNAL CEASES. THE CONTROLLER SHALL THEN TIME CLEARANCES AND SIMILARLY SERVICE OTHER EMERGENCY VEHICLE PREEMPTION SEQUENCES IN THE ORDER RECEIVED (IF RECEIVED) OTHERWISE, RESUME NORMAL PREFERENTIAL PHASE SEQUENCE.
4. PREEMPTION MINIMUM GREENS SHALL BE SIX SECONDS.
5. NORMAL CLEARANCES SHALL BE PROVIDED ON PHASES THAT ARE TERMINATED BY PREEMPTION DEMAND.
6. ACTUAL TIMMING FOR PREEMPTION SHALL BE DETERMINED IN THE FIELD IN COORDINATION WITH THE FIRE DEPARTMENT AND SHALL BE APPROVED BY MHD PRIOR TO OPERATION.

PREFERENTIAL PHASING SEQUENCE



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 TURN.
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.

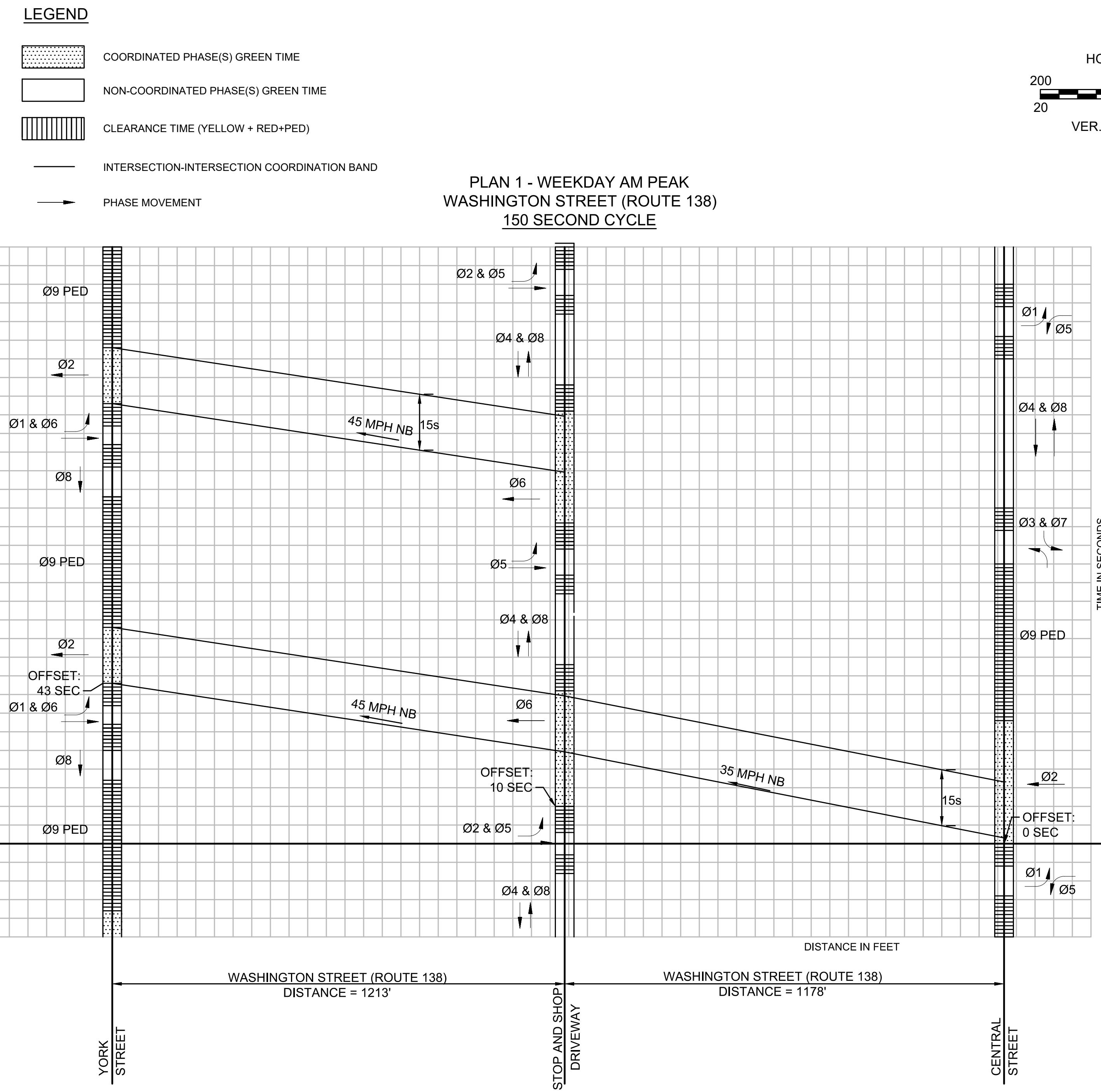


1. RET ALL SIGNAL INDICATIONS
2. ALL SIGNAL INDICATIONS ON SIGNAL POSTS THAT TO BE REMOVED AND RESET SHALL BE ADJUSTED IF DETERMINED BY THE ENGINEER.

MAJOR ITEMS REQUIRED	
PAY ITEM	QUANTITY
816.03	ITEM
1	MODIFY & RE-PROGRAM TRAFFIC SIGNAL CONTROLLER
1	SERVICE CONNECTION, TYPE OVERHEAD
9	REMOVED AND RESET TRAFFIC SIGNAL POST
9	SIGNAL POST FDN.
10	DUAL CHANNEL LOOP DETECTOR AMPLIFIER (CARD RACK)
24	ROADWAY LOOP DETECTOR (SEE LOOP DETECTOR DATA TABLE)
1	GPS TIME UNIT
811.31	11
811.32	1
Plus all necessary duct, cable, labor, miscellaneous material and equipment to complete the installation.	

STOUGHTON
WASHINGTON STREET (ROUTE 138)
STATE FED. AID PROJ. NO. SHEET NO. TOTAL SHEETS
MA - 79 104
PROJECT FILE NO. 607403

TRAFFIC SIGNAL DATA PLAN
WASHINGTON STREET (ROUTE 138)
AT CENTRAL STREET



WASHINGTON STREET (ROUTE 138)
AT YORK STREET
COORDINATION DATA (SECONDS)

	PLAN 1 (AM)	PLAN 2 (PM)
CYCLE LENGTH	75	75
OFFSET	43	33
SPLIT 01 & 06	11	12
SPLIT 02 & 06	22 (50)	21 (49)
SPLIT 08	14	14
SPLIT 09 PED	28	28
COORDINATED PHASE	02 & 06	02 & 06

YORK STREET COORDINATION NOTES:

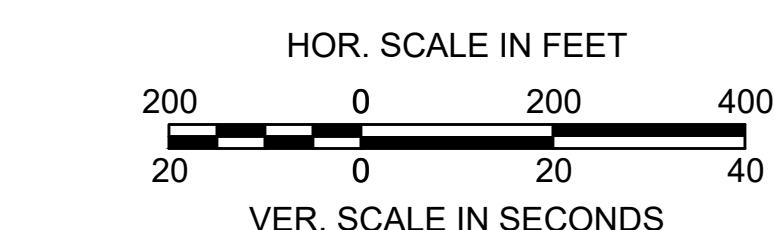
1. ALL OFFSETS REFERENCED TO THE BEGINNING OF GREEN OF THE COORDINATED PHASES.
2. TIMING IN PARENTHESES REPRESENTS SPLITS WITHOUT PEDESTRIAN PHASE ACTUATION.

WASHINGTON STREET (ROUTE 138)
AT STOP AND SHOP DRIVEWAY
COORDINATION DATA (SECONDS)

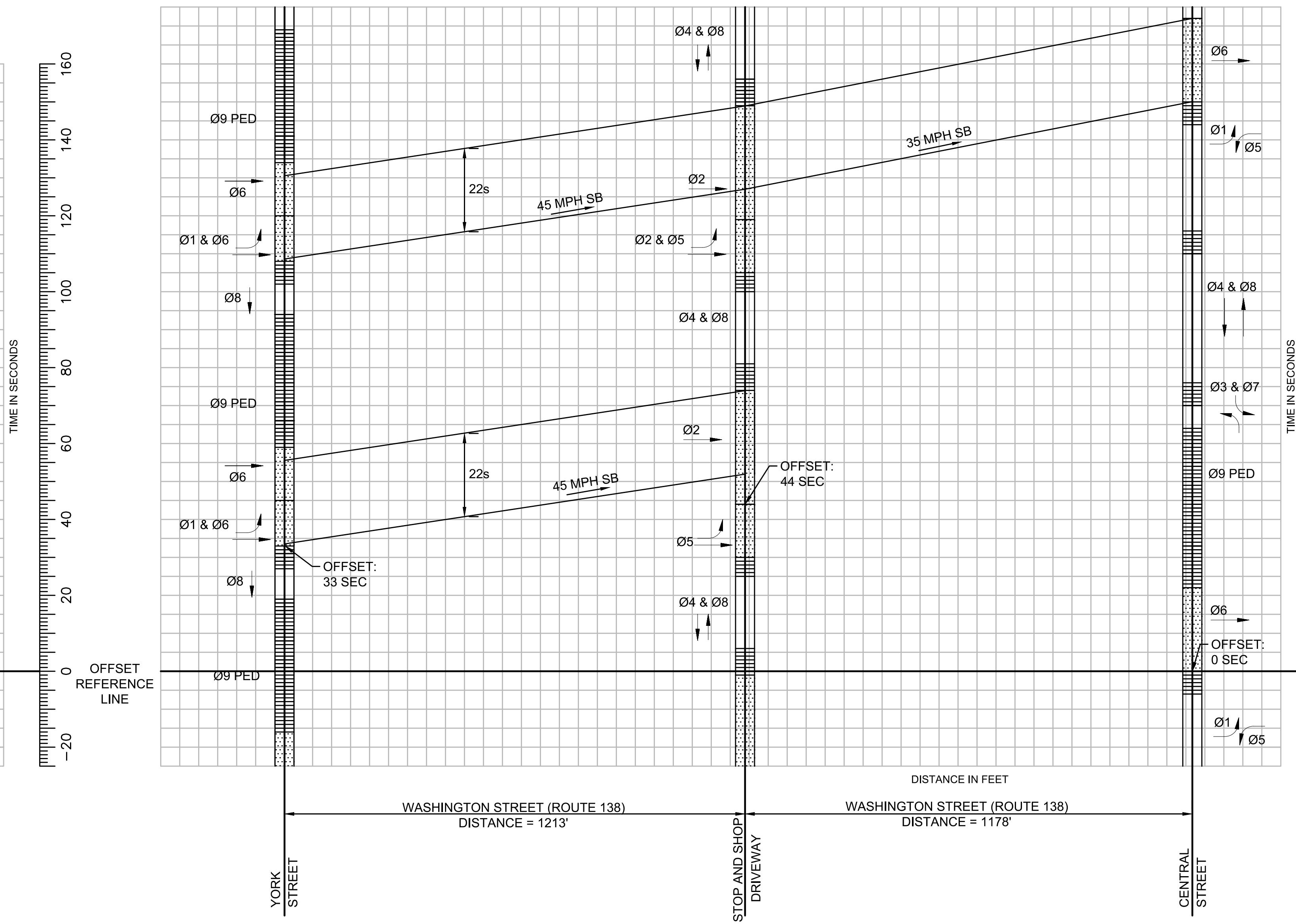
	PLAN 1 (AM)	PLAN 2 (PM)
CYCLE LENGTH	75	75
OFFSET	10	44
SPLIT 01 & 06	14	14
SPLIT 02 & 06	37	37
SPLIT 04 & 08	24	24
COORDINATED PHASE	02 & 06	02 & 06

STOP AND SHOP DRIVEWAY COORDINATION NOTES:

1. ALL OFFSETS REFERENCED TO THE BEGINNING OF GREEN OF THE COORDINATED PHASES.



PLAN 1 - WEEKDAY PM PEAK
WASHINGTON STREET (ROUTE 138)
150 SECOND CYCLE



WASHINGTON STREET (ROUTE 138)
AT CENTRAL STREET
COORDINATION DATA (SECONDS)

	PLAN 1 (AM)	PLAN 2 (PM)
CYCLE LENGTH	150	150
OFFSET	0	0
SPLIT 01	14	34
SPLIT 02	38 (75)	27(64)
SPLIT 03	15	12
SPLIT 04	46	40
SPLIT 05	29	17
SPLIT 06	23 (60)	44 (81)
SPLIT 07	12	12
SPLIT 08	49	40
SPLIT 09 PED	37	37
COORDINATED PHASE	02 & 06	02 & 06

CENTRAL STREET COORDINATION NOTES:

1. MASTER CONTROLLER TO BE LOCATED AT THIS LOCATION (CENTRAL STREET).
2. ALL OFFSETS REFERENCED TO THE BEGINNING OF GREEN OF THE COORDINATED PHASES.
3. TIMING IN PARENTHESES REPRESENTS SPLITS WITHOUT PEDESTRIAN PHASE ACTUATION.

STOUGHTON
WASHINGTON STREET (ROUTE 138)

STATE	FED. AID PROJ. NO.	HEET NO.	TOTAL SHEETS
MA	-	80	104

PROJECT FILE NO. 607403

TRAFFIC SIGNAL PLAN
TIME-SPACE DIAGRAM

Plotted on 9-Oct-2020 4:47 PM

607403-HD(TSIG).DWG

TIME IN SECONDS

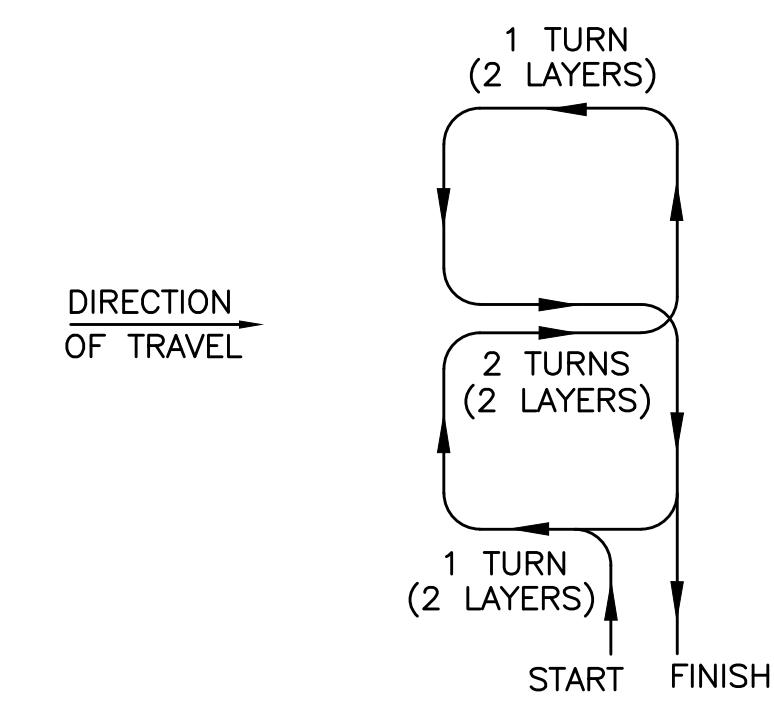
DAILY COORDINATION PROGRAM

	MONDAY THRU FRIDAY	SATURDAY	SUNDAY
PLAN 1 150" CYCLE	06:00 - 10:00	-	-
PLAN 2 150" CYCLE	15:00 - 19:00	-	-
FREE OPERATION	ALL OTHER TIMES	-	-
FLASH OPERATION	-	-	-

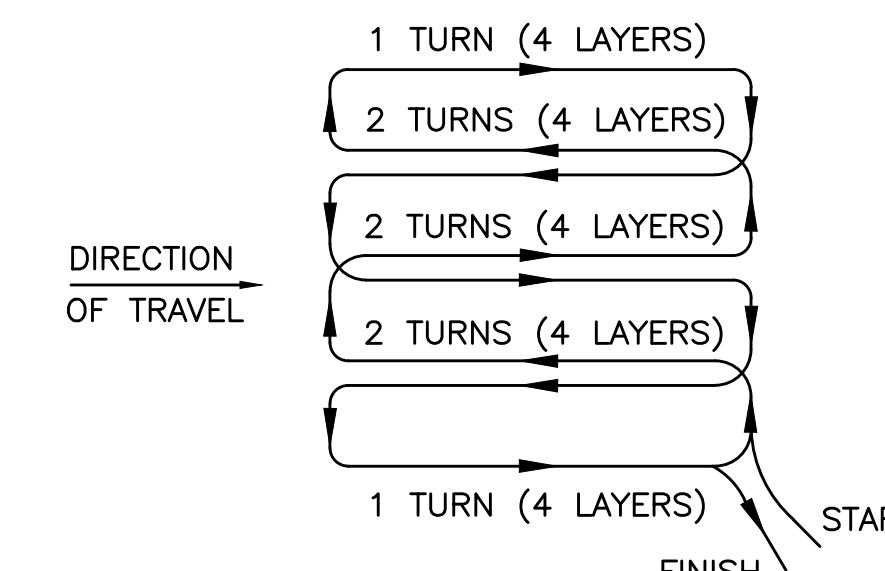
DAILY COORDINATION NOTES:

1. MAX 1 TO RUN DURING FREE OPERATION.

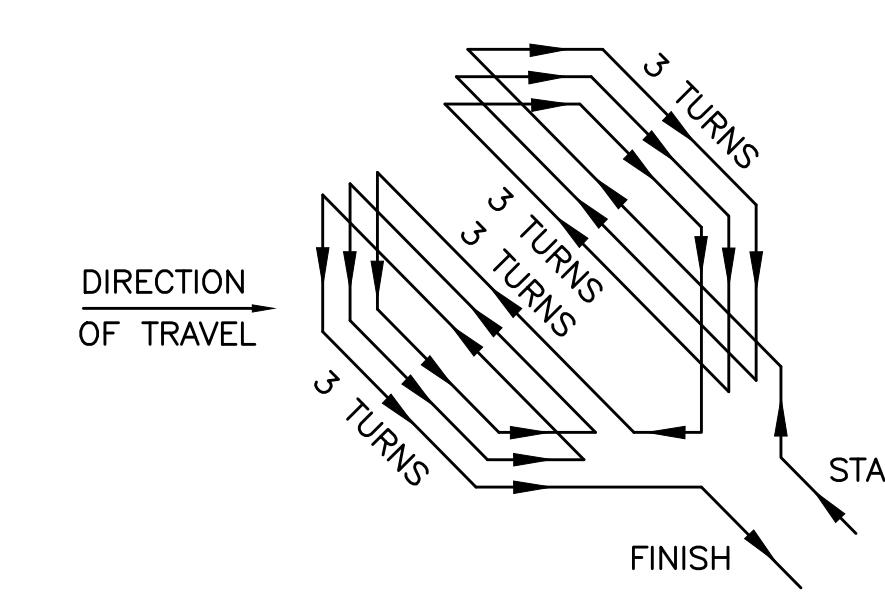
WINDING DETAILS



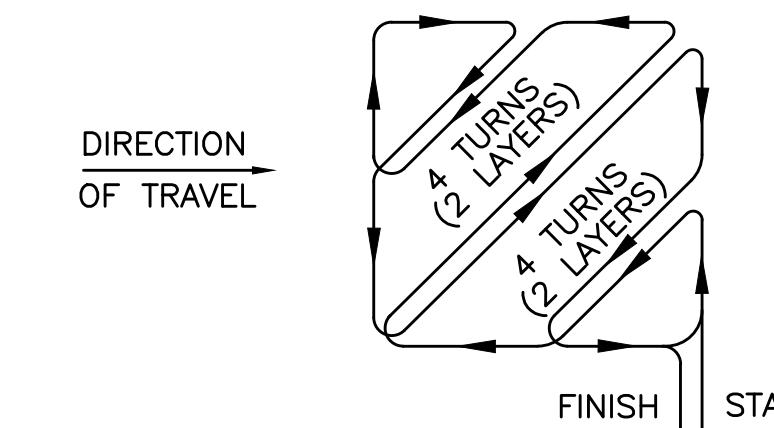
TYPE Q DETECTOR



TYPE D-Q DETECTOR

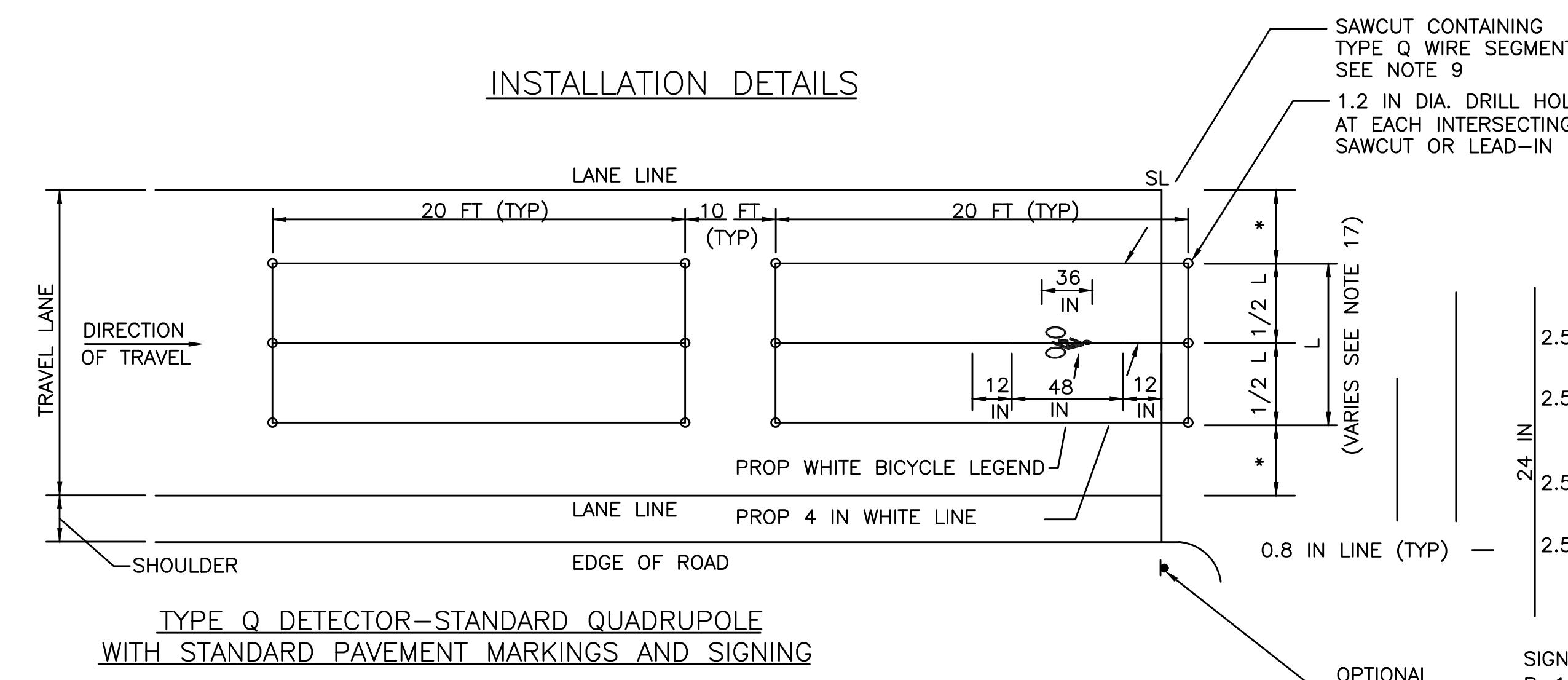


TYPE D-1 DETECTOR

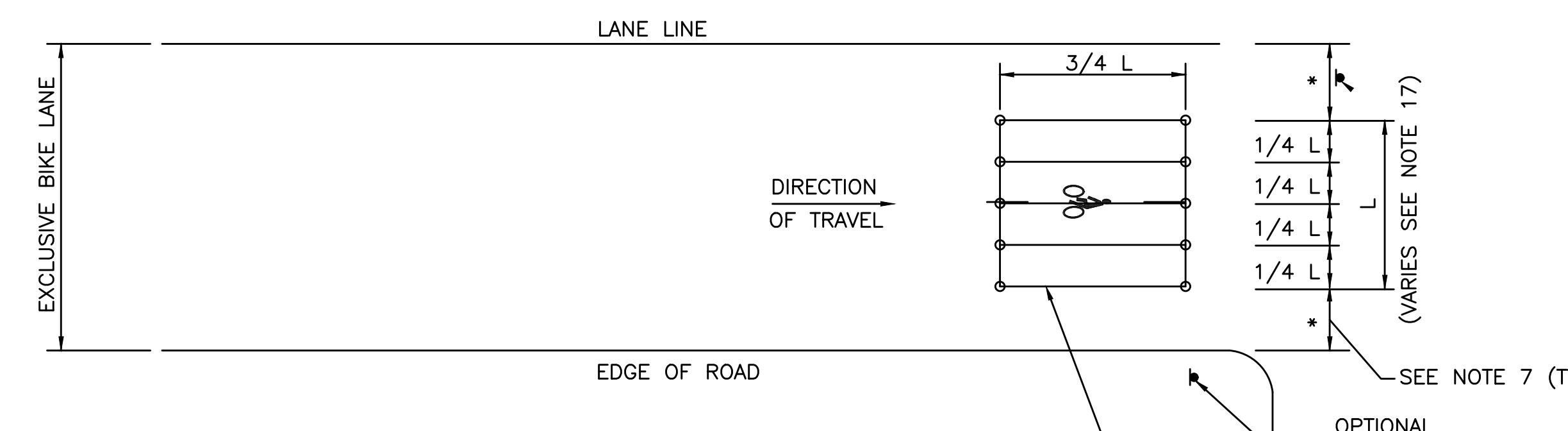


TYPE D-2 DETECTOR

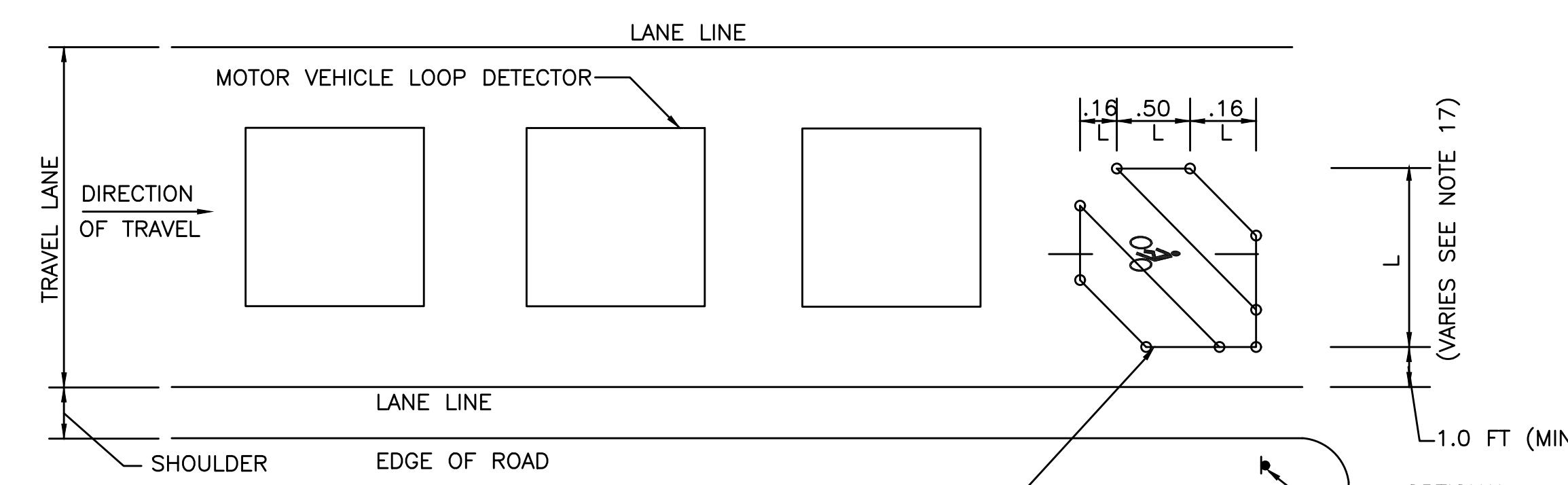
INSTALLATION DETAILS



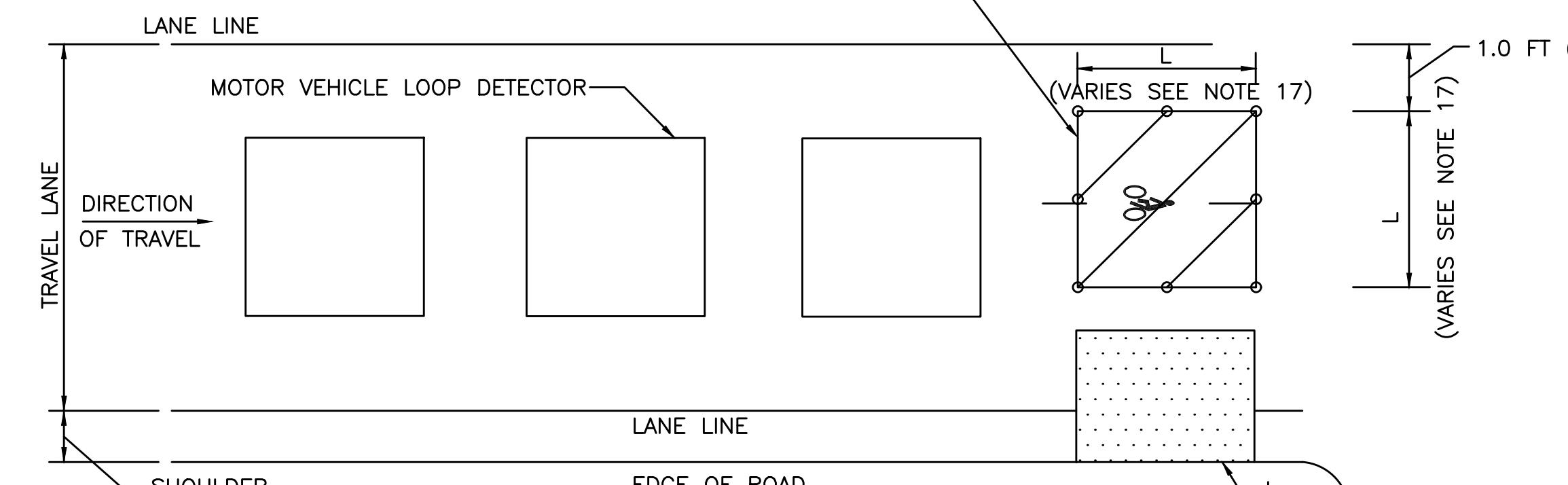
TYPE Q DETECTOR-STANDARD QUADRUPOLE
WITH STANDARD PAVEMENT MARKINGS AND SIGNING



TYPE D-Q DETECTOR-DOUBLE QUADRUPOLE



RIGHT JUSTIFIED (SEE NOTE 12)
TYPE D-1 AND D-2 DETECTORS
(TYPE D1 SHOWN)

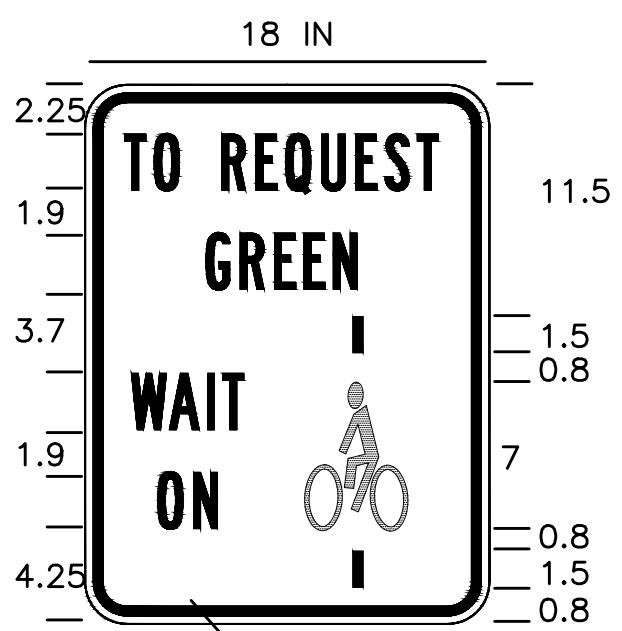


LEFT JUSTIFIED (SEE NOTE 13)
TYPE D-1 AND D-2 DETECTORS
(TYPE D2 SHOWN)

SAWCUT CONTAINING
TYPE Q WIRE SEGMENTS
SEE NOTE 9

1.2 IN DIA. DRILL HOLE
AT EACH INTERSECTING
SAWCUT OR LEAD-IN

SIGN R10-22

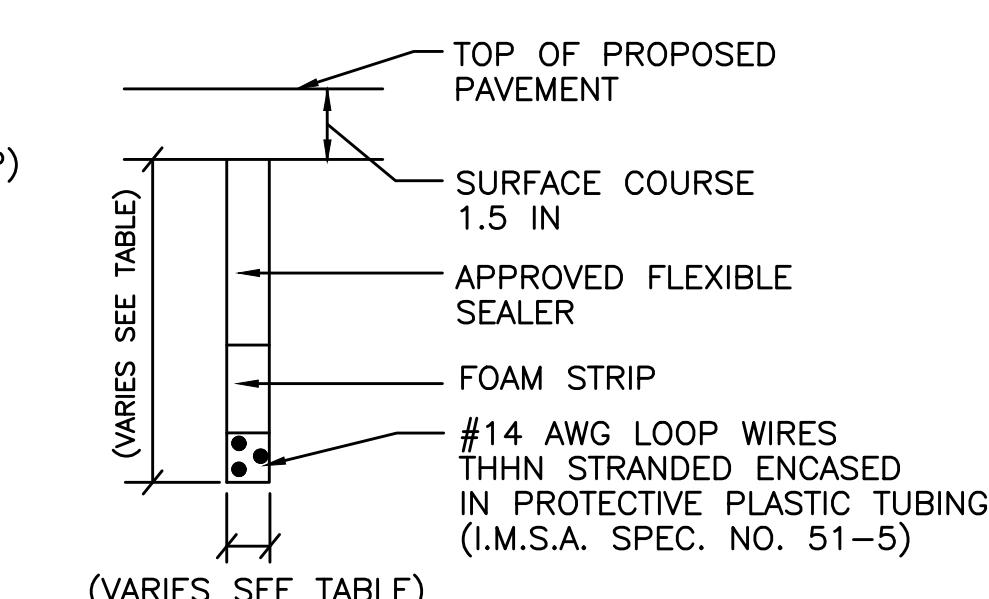


SIGN BORDER:
R=1.5, TH=0.5, INS=.38

WHITE BACKGROUND
BLACK LEGEND AND LINES

NOTE: ALL SIGN DIMENSIONS IN INCHES

NOTE: SIGN PANEL NOT SHOWN TO SCALE



SECTION THRU LOOP DETECTOR

TURNS OF WIRE	SLOT SIZE	
	DEPTH (IN)	WIDTH (IN)
1	1.5	0.5
2	1.5	0.5
3	1.5	0.5
4	2.0	0.5
5	2.0	0.5
6	2.0	0.5
7	2.0	0.5
8	2.0	0.5

STOUGHTON WASHINGTON STREET (ROUTE 138)

STATE	FED. AID PROJ. NO.	HEET NO.	TOTAL SHEETS
MA	-	81	104

PROJECT FILE NO. 607403

TRAFFIC SIGNAL DETAILS BICYCLE LOOP DETECTOR DETAILS

NOTES:

1. REFER TO VEHICLE LOOP DETECTOR DETAIL SHEET FOR ADDITIONAL NOTES AND CONSTRUCTION DETAILS.
2. ALL DETAILS ARE GRAPHICAL WITH NO SCALE.
3. THE NUMBER, SIZE, LOCATION AND LENGTH OF DETECTION AREA VARIES AND SHALL BE DETERMINED BY THE DESIGNER REFER TO TRAFFIC SIGNAL PLAN.
4. BICYCLE LOOPS SHALL BE CONNECTED TO SEPARATE LOOP DETECTOR AMPLIFIERS CAPABLE OF HIGHER LEVELS OF SENSITIVITY.
5. BICYCLE LOOPS SHALL BE INSTALLED IN THE BASE COURSE OF EXISTING PAVEMENT. THE EXISTING PAVEMENT SHALL BE COLD PLANED TO THE BASE COURSE AND SAWCUT FOR LOOP INSTALLATION.
6. SIGNS AND PAVEMENT MARKINGS SHALL BE INSTALLED FOR ALL BICYCLE DETECTORS TO INFORM CYCLISTS OF THE DETECTION AREA.

* 7. OFFSETS FROM LANE LINE EQUAL UNLESS OTHERWISE NOTED. SEE PLANS.

8. TYPE Q DETECTORS SHALL BE WIRED IN A FIGURE EIGHT PATTERN WITH A DOUBLE LAYER DESIGN ("2-4-2") WITH 2 TURNS IN THE PERIMETER SLOTS AND 4 TURNS IN THE CENTER SLOT AS SHOWN IN THE WINDING DETAIL.

9. BICYCLES WILL BE DETECTED WITHIN 4 IN. OF THE INTERIOR LONGITUDINAL LOOP WIRES FOR TYPE Q AND D-Q DETECTORS.

10. PROVIDE 3 TURNS FOR TYPE D-1 DETECTORS.

11. INSTALL 2 LAYERS OF WIRE WOUND IN THE SAME DIRECTION IN BOTH LAYERS FOR TYPE D-2 DETECTORS. THE RESULT IS 4 TURNS IN EACH DIAGONAL.

12. RIGHT JUSTIFIED LOOP DETECTORS SHALL BE CONSIDERED FOR THE FOLLOWING CONDITIONS:

- a) BICYCLE STOPPING ON THE RIGHT SIDE OF A THRU TRAVEL LANE.
- b) BICYCLE STOPPING ON THE RIGHT SIDE OF AN EXCLUSIVE LEFT TURN LANE.

13. LEFT JUSTIFIED LOOP DETECTORS SHALL BE CONSIDERED FOR THE FOLLOWING CONDITIONS:

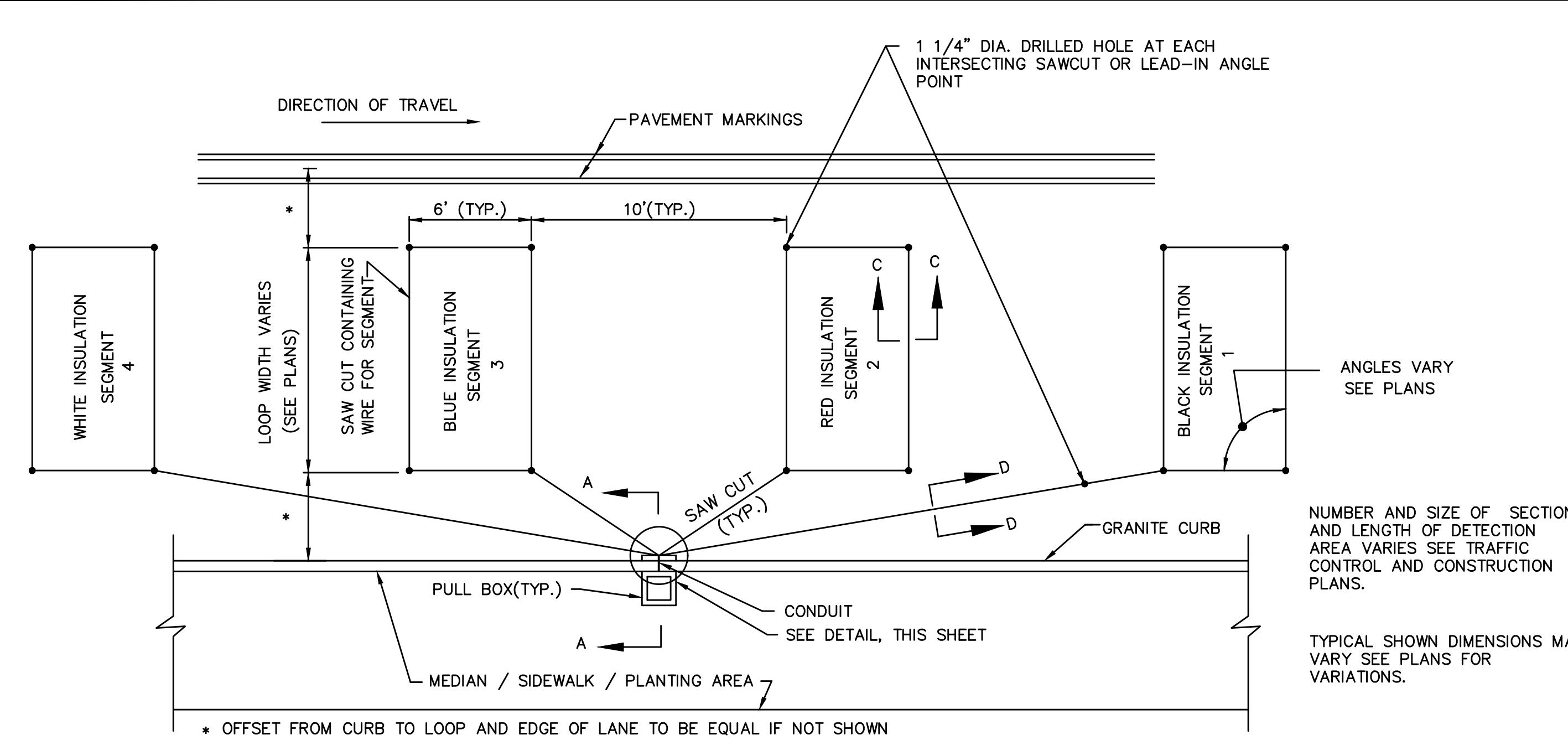
- a) BICYCLE STOPPING ON THE LEFT SIDE OF A SHARED LEFT/THRU LANE.
- b) BICYCLE STOPPING JUST TO THE RIGHT OF THE CENTERLINE WHEN TURNING LEFT ON A TWO-LANE ROADWAY.

14. RECTANGULAR LOOP DETECTORS SHALL BE CONSIDERED FOR BICYCLES STOPPING ON EITHER THE LEFT OR RIGHT SIDE OF A TWO-LANE ROADWAY. THE MINIMUM OFFSET FROM LANE LINE OR CURB LINE SHALL BE 1.0 FT.

15. PAVEMENT CORES OR TEST PITS MAY BE REQUIRED TO DETERMINE THE DEPTH OF EXISTING PAVEMENT AND CONFIRM THAT THE DETECTION OPTION CHOSEN AND CORRESPONDING WINDING PATTERN CAN BE ACCOMMODATED.

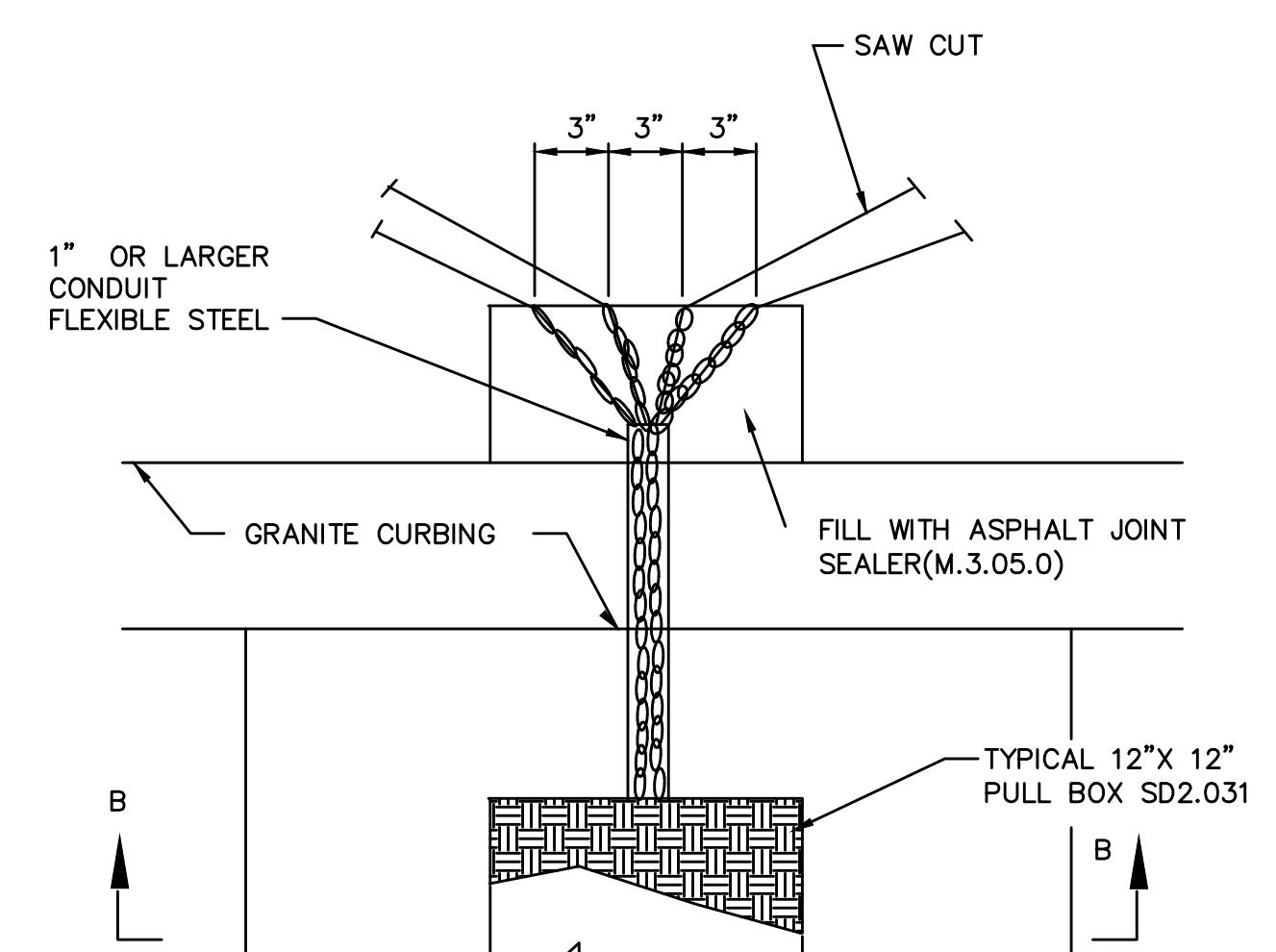
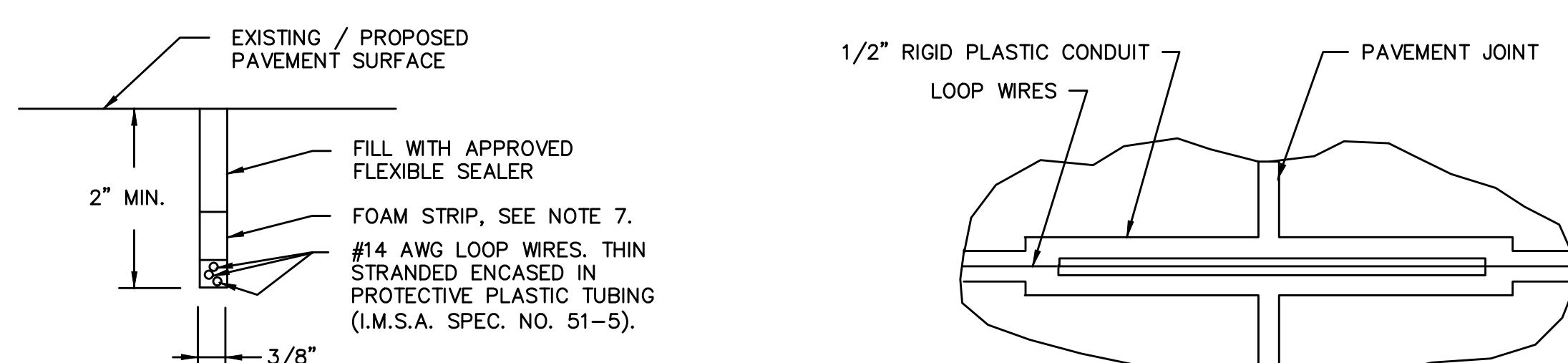
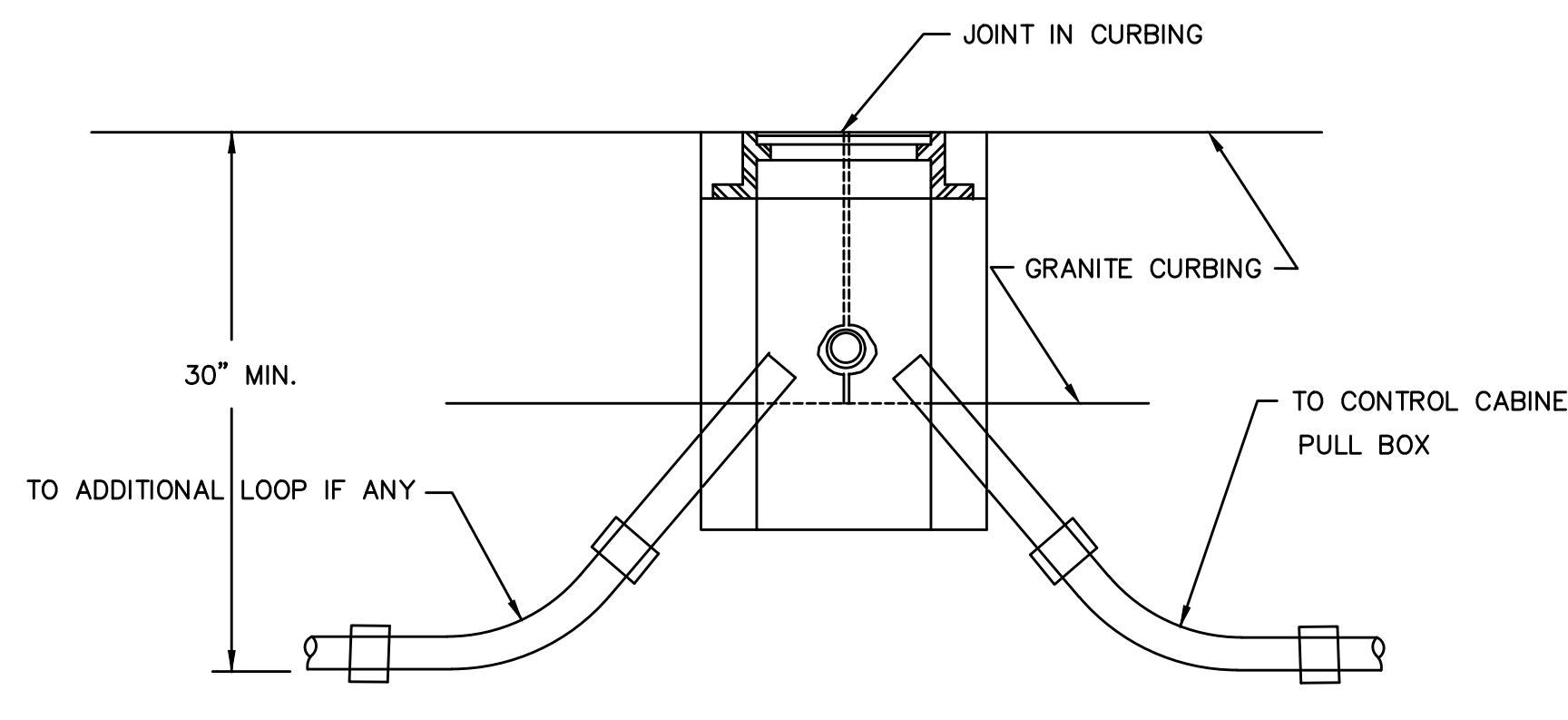
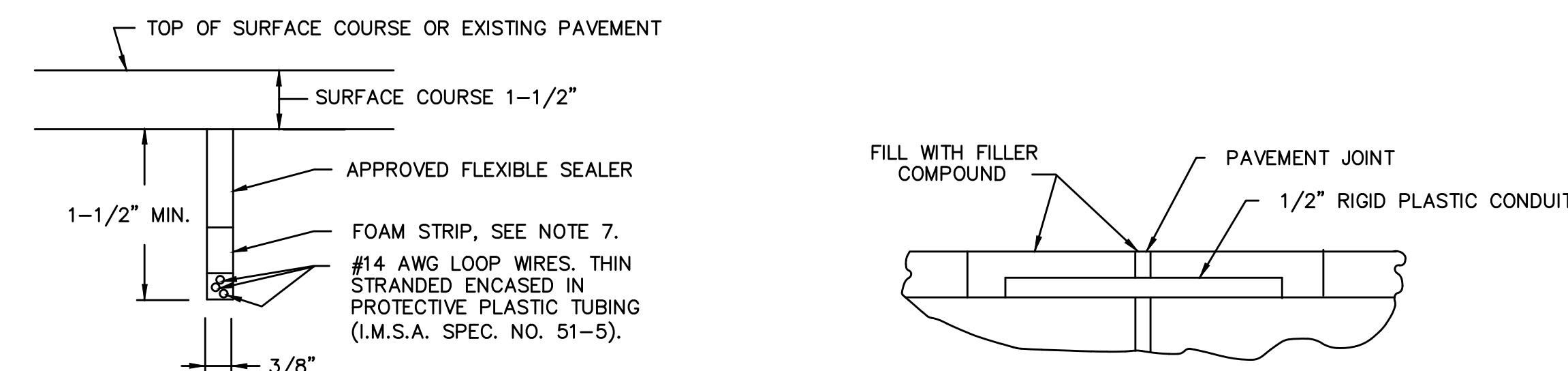
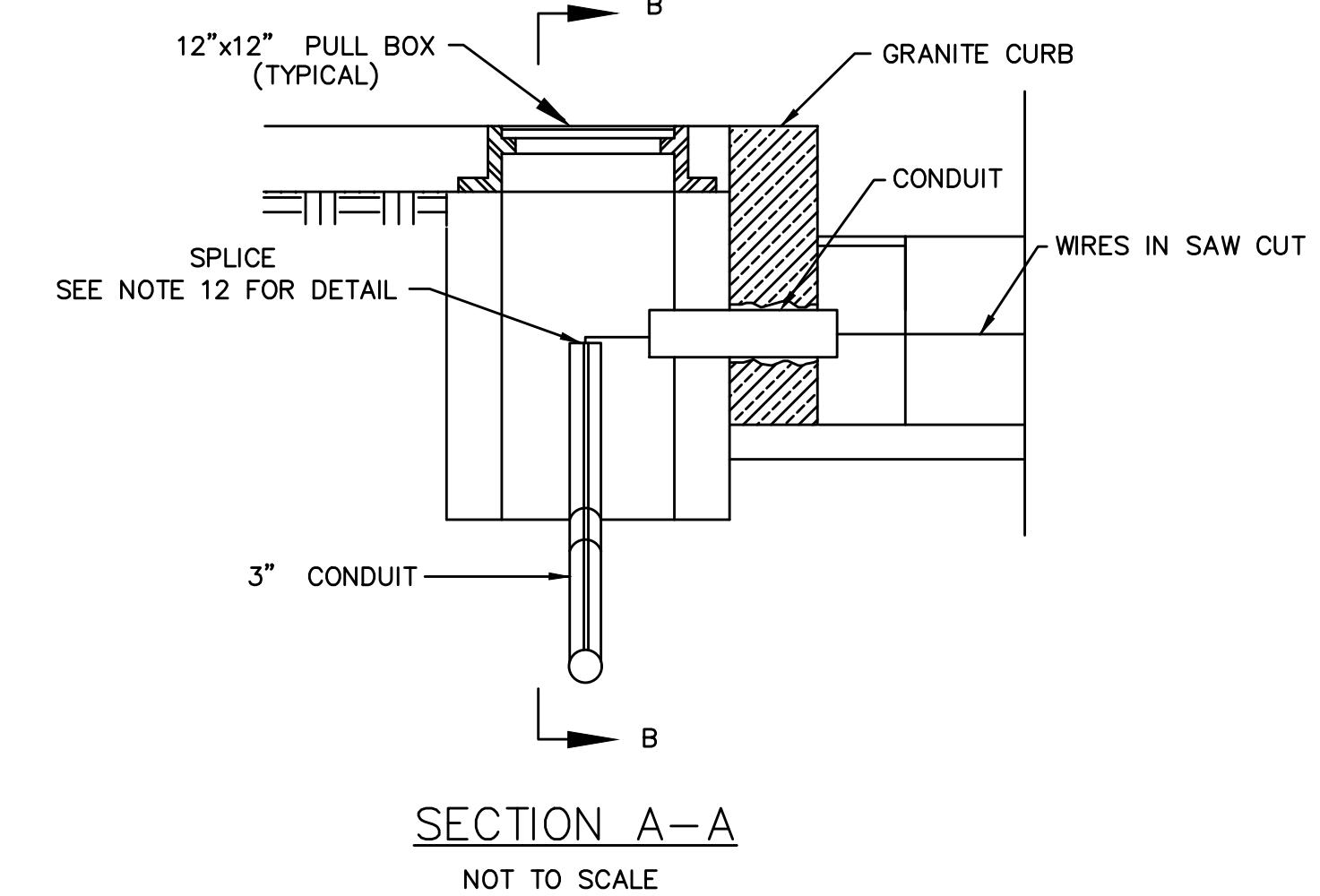
16. THESE DETAILS APPLY TO BICYCLE LOOPS INSTALLED IN ROADWAYS. PUSH BUTTON ACTUATION SHALL BE CONSIDERED FOR RECREATIONAL BIKE PATHS.

17. THE MINIMUM DIMENSION FOR L SHALL BE 6 FT MIN. FOR DETECTORS TYPE D-Q, D-1 & D-2. FINAL DIMENSIONS SHALL BE DETERMINED BY THE DESIGN ENGINEER.



NUMBER AND SIZE OF SECTIONS AND LENGTH OF DETECTION AREA VARIES SEE TRAFFIC CONTROL AND CONSTRUCTION PLANS.

TYPICAL SHOWN DIMENSIONS MAY VARY SEE PLANS FOR VARIATIONS.



SECTION C-C & D-D
LOOPS IN SURFACE COURSE
(FOR AREAS OUTSIDE LIMITS OF PAVEMENT WORK ONLY)

PLAN
TREATMENT AT PAVEMENT JOINTS
NOT TO SCALE

DETAIL - PLAN VIEW
NOT TO SCALE

DETECTOR NOTES

1. IN HANDBOLE, SPLICE ALL SEGMENTS TO TYPE II-SHIELDED LOOP DETECTOR LEAD-IN CABLE. SEGMENTS SHALL BE SPLICED IN PARALLEL, IN SERIES, OR IN A COMBINATION OF PARALLEL & SERIES AS SHOWN ON THE PLAN SHEET FOR EACH DETECTOR. NUMBER OF TURNS OF WIRE SHALL ALSO BE AS SHOWN ON THE PLAN SHEET FOR EACH DETECTOR. SEE NOTE 12.
2. SEE SPECIAL PROVISIONS FOR REQUIREMENTS OF DETECTOR AMPLIFIER.
3. LEAD IN WIRES SHALL BE TWISTED FROM SEGMENT TO SPLICE WITH SHIELDED CABLE. FIVE TURNS PER FOOT. LEAD-IN SHALL BE TYPE II (M8.16. II).
4. BEFORE STARTING ANY SPLICING, THE ELECTRICAL CONTRACTOR SHALL FURNISH DATA SHEETS ON THE MATERIALS AND/OR METHODS TO BE USED IN ACCORDANCE WITH THE DEPARTMENTS STANDARD OPERATING PROCEDURES FOR APPROVAL OF SHOP DRAWINGS, SEE SECTION 815.64, ESPECIALLY PARAGRAPH 1.
5. THE METALLIC SHIELD WHICH SHALL ENCASE THE DETECTOR LEADS FROM A SPLICE (TYPICALLY LOCATED IN A PULL BOX NEAR THE ROADWAY COMPONENT OF THE DETECTOR) TO THE CONTROLLER, AND THE DRAIN WIRE UNDER THE METALLIC SHIELD, SHALL NOT BE GROUNDED TO THE EARTH GROUNDING BUS IN THE CONTROLLER, AND THE SHIELD AND DRAIN WIRE SHALL BE CAREFULLY INSULATED FROM THE TRANSFORMER NEUTRAL OR FROM EARTH GROUND AT ALL OTHER POINTS ALONG ITS LENGTH. SPECIFICALLY, THIS INCLUDES CAREFUL INSULATION OF THE EXPOSED PORTION OF THE SHIELD AND THE DRAIN WIRE AT THE END AWAY FROM THE CONTROLLER WHERE IT IS SPLICED TO WIRES LEADING TO THE ROADWAY COMPONENT OF THE DETECTOR. THIS IS IMPORTANT TO AVOID A GROUND RETURN LOOP.
6. FILL ALL CONDUIT OPENINGS WITH DUCT SEAL.
7. AFTER SAW CUTS ARE COMPLETE, BLOW OUT WATER WITH OIL-FREE COMPRESSED AIR UNTIL CUTS ARE CLEAN AND DRY. INSERT WIRE INTO CLEAN SLOT WITH A BLUNT, SMOOTH, ROUND-EDGED TOOL OF WOOD OR PLASTIC SUCH AS PAINT STIRRER. DO NOT USE A SCREWDRIVER, THEN INSERT FOAM PLASTIC HOLD DOWN STRIPS, SIMILAR TO ETHA FOAM SB. STRIPS SHALL BE ABOUT 2" LONG, PLACED IN THE SLOT ABOUT EVERY 2 FEET THEN POUR SEALER, TAKING CARE TO ELIMINATE BUBBLES.
8. THE COMBINED ROADWAY LOOP, TWISTED LEAD-IN WIRES, SPLICE AND SHIELDED LEAD-IN CABLE SHALL HAVE A RESISTANCE TO GROUND AT LEAST 100 MEGAOMHS. SEE SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS.
9. DETAIL IS THE SAME FOR INSTALLATION OF SINGLE (ONE SEGMENT) SMALL WIRE LOOP DETECTOR.
10. CUT LOOPS IN BINDER AND FILL WITH APPROVED FLEXIBLE SEALER.
11. DETECTOR WIRE SHALL BE A DIFFERENT COLOR FOR EACH SEGMENT OF A DETECTOR GROUP. SEE DETAIL.
12. SPLICING PATTERN P= SERIES/PARALLEL: SPLICE SEGMENTS 1 AND 3 OF AN INDIVIDUAL DETECTOR IN SERIES. SPLICE SEGMENTS 2 AND 4 IN SERIES. SPLICE THE RESULTANT TWO GROUPS IN PARALLEL. SPLICE THE RESULTANT COMBINATION TO ONE LEAD-IN CABLE. CONNECT THIS CABLE TO AN OTHERWISE UNUSED AMPLIFIER CHANNEL.

SPLICING PATTERN S= SERIES: SPLICE ALL SEGMENTS (TYPICALLY FOUR, BUT MAY BE LESS) OF AN INDIVIDUAL DETECTOR IN SERIES. SPLICE THE RESULTANT COMBINATION TO ONE LEAD-IN CABLE TO AN OTHERWISE UNUSED AMPLIFIER CHANNEL.

STOUGHTON WASHINGTON STREET (ROUTE 138)			
STATE	FED. AID PROJ. NO.	HEET NO.	TOTAL SHEETS
MA	-	82	104

PROJECT FILE NO. 607403

TRAFFIC SIGNAL DETAILS
ROADWAY LOOP DETECTOR DETAILS

TRAFFIC MANAGEMENT NOTES:

- 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.
- 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.
- NO CONSTRUCTION VEHICLES SHALL BE PARKED WITHIN THE TRAVEL WAY WITHOUT PROPER PROTECTION AND APPROVAL OF THE ENGINEER.
- TEMPORARY CONSTRUCTION SIGNING AND ALL OTHER TRAFFIC CONTROL DEVICES SHALL BE IN PLACE PRIOR TO THE START OF ANY WORK.
- 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.
- 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.
- 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 AND SIMILAR OPERATIONS.
- THE CONTRACTOR SHALL PROVIDE IMMEDIATE ACCESS TO EMERGENCY VEHICLES AT ALL TIMES.
- GRADE DIFFERENCES IN EXCESS OF 2" DURING NON-WORKING HOURS WILL REQUIRE DELINEATION BY USE OF DRUMS.
- 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.
- CONSTRUCTION SIGNS NOT APPLICABLE TO VARIOUS STAGES OF CONSTRUCTION SHALL BE REMOVED OR COVERED.
- 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.
- 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.
- ALL CONSTRUCTION SIGNING AND OTHER TRAFFIC MAINTENANCE DEVICES SHALL CONFORM WITH THE 2009 MUTCD AS AMENDED, NCHRP 350, AND MASSDOT STANDARDS.
- 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.
- ALL DISTANCES MAY BE ADJUSTED TO FIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER. HOWEVER, MINIMUM DISTANCES, WHERE INDICATED, SHOULD BE MAINTAINED.
- 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.
- 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).
- 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.
- ORANGE CONSTRUCTION FLAGS MAY BE USED ON ADVANCE WARNING SIGNS AS DIRECTED BY THE ENGINEER. FLAGS SHALL BE A MINIMUM OF 16" X 16".
- MAINTAIN EXISTING PAVEMENT MARKINGS WHERE APPLICABLE. WHEN LANES SHIFT, IF NECESSARY, EXISTING MARKINGS SHALL BE REMOVED AND TEMPORARY PAVEMENT MARKING SHALL BE PROVIDED.
- 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.
- 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.
- 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. (20' SPACING TYPICAL ON TAPER, 35' SPACING TYPICAL ON TANGENTS.)
- CHANNELIZATION WILL BE ACCOMPLISHED THROUGH THE USE OF REFLECTORIZED PLASTIC DRUMS WITH SEQUENTIAL FLASHING WARNING LIGHTS.
- THE FIRST TEN PLASTIC DRUMS OF A TAPER SHALL BE MOUNTED WITH SEQUENTIAL FLASHING WARNING LIGHTS.
- ALL SIGNS SHALL BE MOUNTED ON THEIR OWN STANDARD SIGN SUPPORTS.
- POLICE DETAIL SHALL BE USED WHILE SETTING UP THE TEMPORARY TRAFFIC CONTROL DEVICES ON THE ROADWAY.
- EACH WORK ZONE SHALL HAVE MA-R2-10a, MA-R2-10e, AND W-20 SERIES SIGNS WHERE APPLICABLE.
- 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.
- THE ADVISORY SPEED LIMIT, IF REQUIRED, SHALL BE DETERMINED BY THE ENGINEER.
- ALL DRIVEWAYS AND STREETS SHALL REMAIN OPEN AT ALL TIMES EXCEPT FOR SHORT PERIODS AS APPROVED BY THE ENGINEER.
- SEE SHEETS 84 AND 85 FOR ADDITIONAL TYPICAL TEMPORARY TRAFFIC CONTROL PLAN DETAILS.

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)
FREWAYS AND EXPRESSWAYS*	1,000 (300)	1,500 (450)	2,640 (800)

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

** DISTANCES ARE SHOWN IN FEET (METERS). THE COLUMN HEADINGS A, B, AND C ARE THE DISTANCES 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.

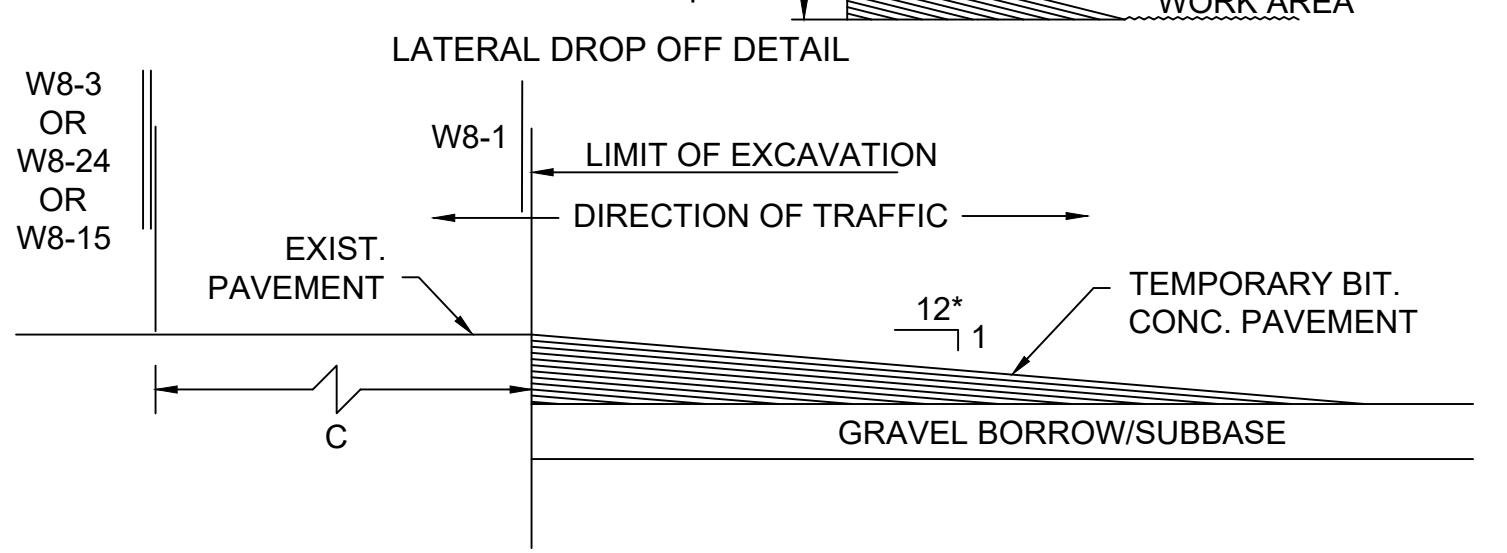
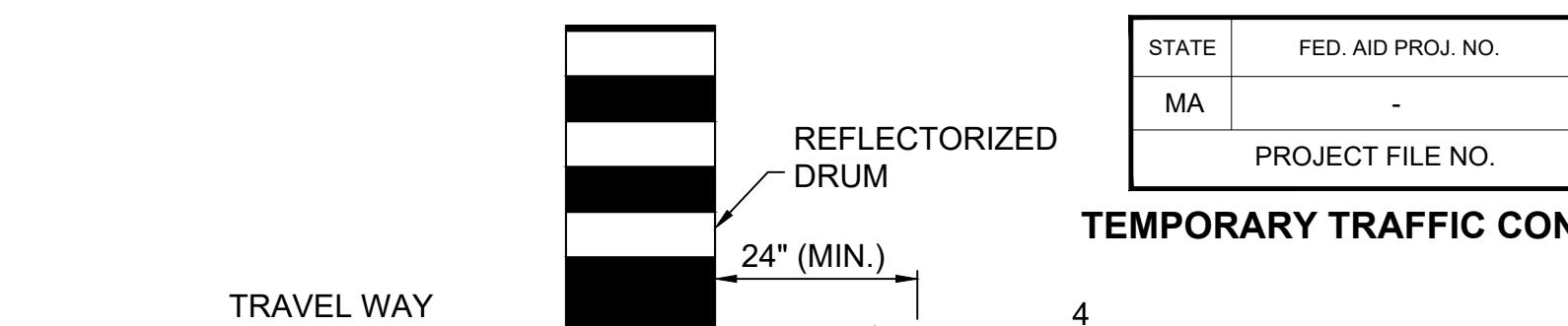
STOUGHTON

WASHINGTON STREET (ROUTE 138)

STATE	FED. AID PROJ. NO.	HEET NO.	TOTAL SHEETS
MA	-	83	104

PROJECT FILE NO. 607403

TEMPORARY TRAFFIC CONTROL PLANS



* - INCREASE SLOPE RATIO
FOR HIGHER SPEEDS

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.
DOWNTSTREAM 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 ANTICIPATED 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

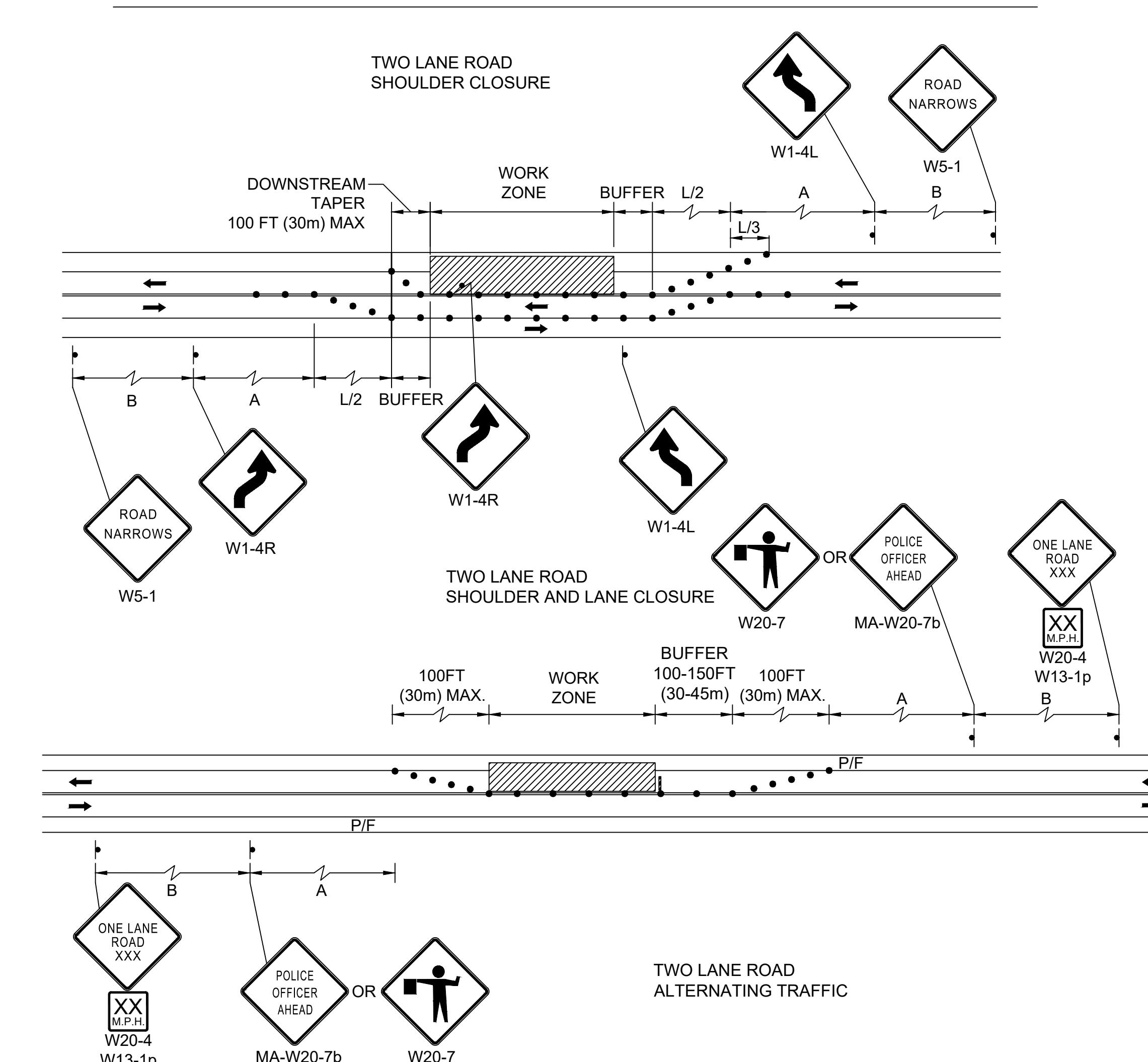
*POSTED SPEED, OFF-PEAK 85TH-PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED

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.

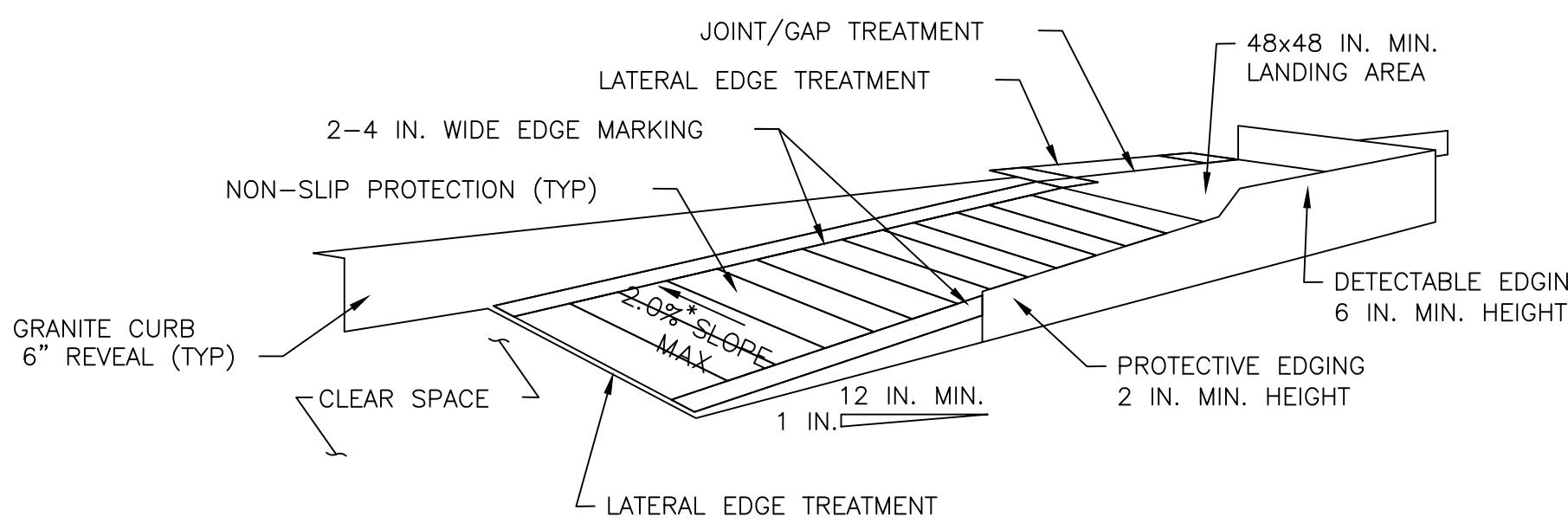
LEGEND:

- REFLECTORIZED PLASTIC DRUM OR 36" CONE
- WORK ZONE
- DIRECTION OF TRAFFIC
- IMPACT ATTENUATOR
- MEDIAN BARRIER
- MEDIAN BARRIER WITH WARNING LIGHTS
- WORK VEHICLE
- TRUCK MOUNTED ATTENUATOR
- TRAFFIC OR PEDESTRIAN SIGNAL
- SIGN

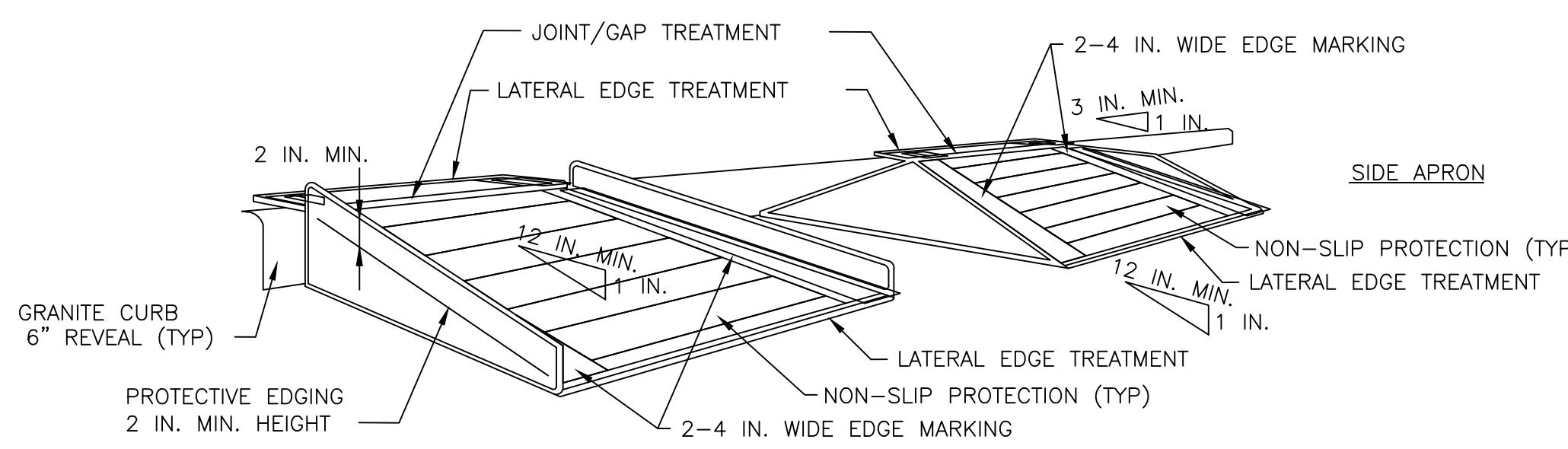


NOTES:

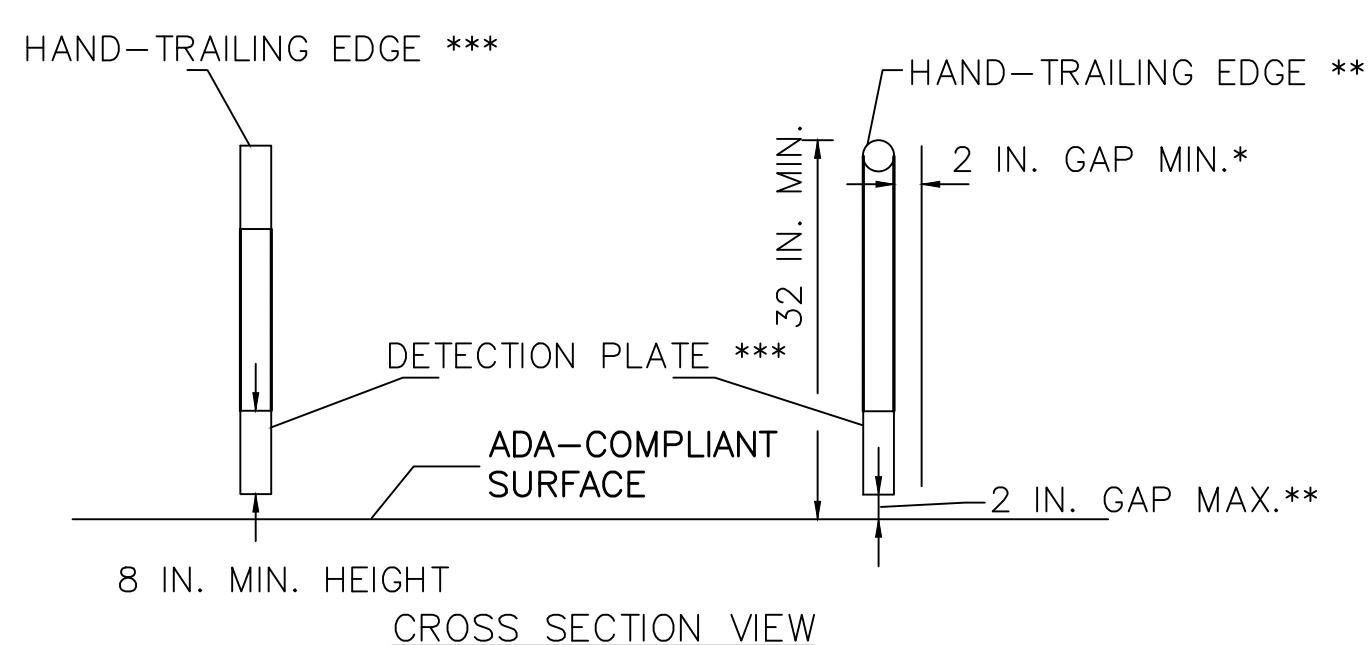
1. CURB RAMPS SHALL BE 60 IN. MINIMUM WIDTH WITH A FIRM, STABLE AND NON-SLIP SURFACE.
2. PROTECTIVE EDGING WITH A 2 IN. MINIMUM HEIGHT SHALL BE INSTALLED WHEN THE CURB RAMP OR LANDING PLATFORM HAS A VERTICAL DROP OF 6 IN. OR GREATER OR HAS A SIDE APRON SLOP STEEPER THAN 1:3 (33%). PROTECTIVE EDGING SHOULD 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. CURB RAMPS AND LANDINGS SHOULD HAVE A 1:50 (2%) MAX CROSS-SLOPE.
5. CLEAR SPACE OF 48x48 IN. MINIMUM SHALL BE PROVIDED ABOVE AND BELOW THE CURB RAMP.
6. THE CURB RAMP WALKWAY EDGE SHALL BE MARKED WITH A CONTRASTING COLOR 2 TO 4 IN. WIDE MARKING. THE MARKING IS OPTIONAL WHERE COLOR CONTRASTING EDGING IS USED.
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.



TEMPORARY CURB RAMP—PARALLEL TO CURB



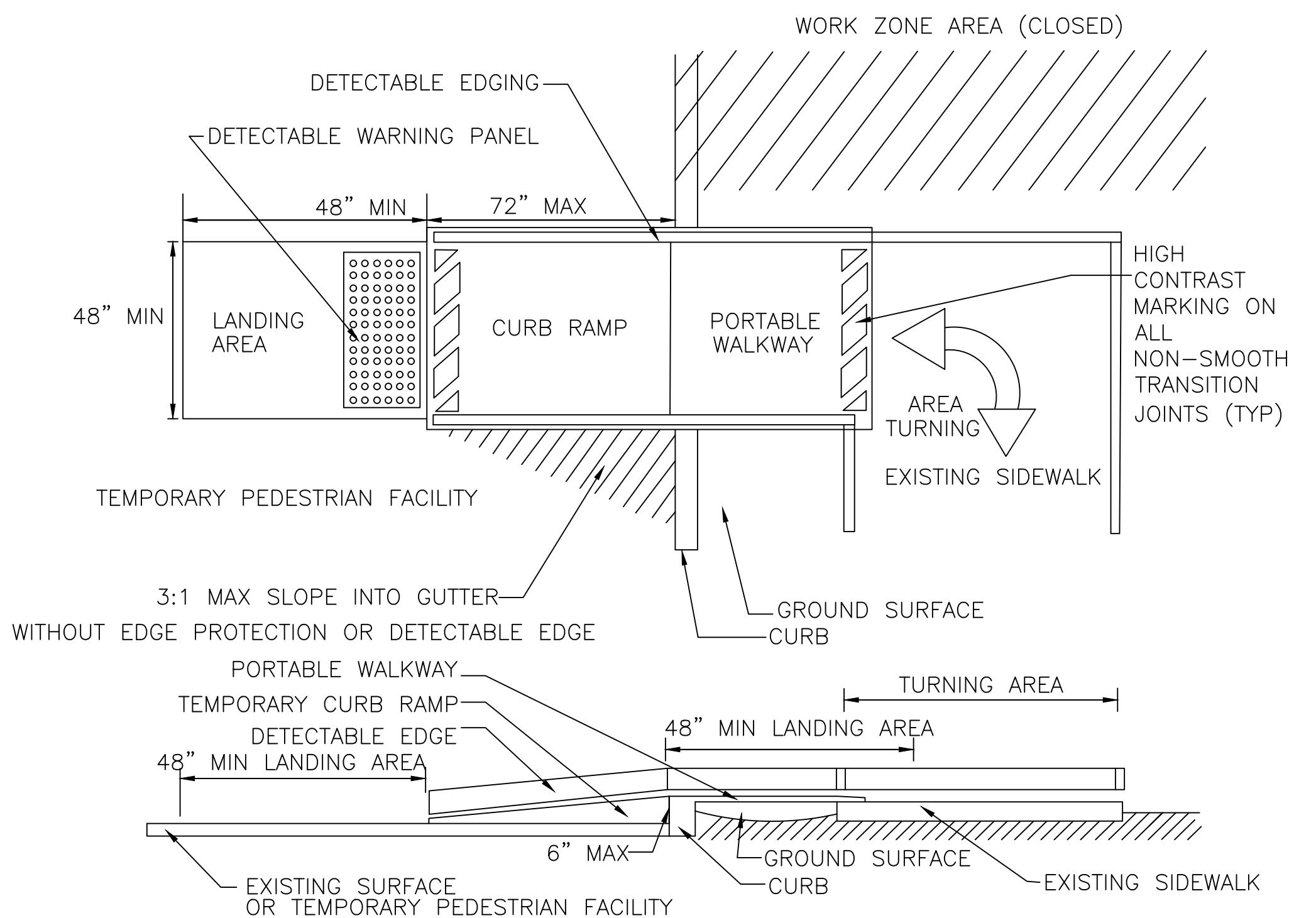
TEMPORARY CURB RAMP—PERPENDICULAR TO CURB



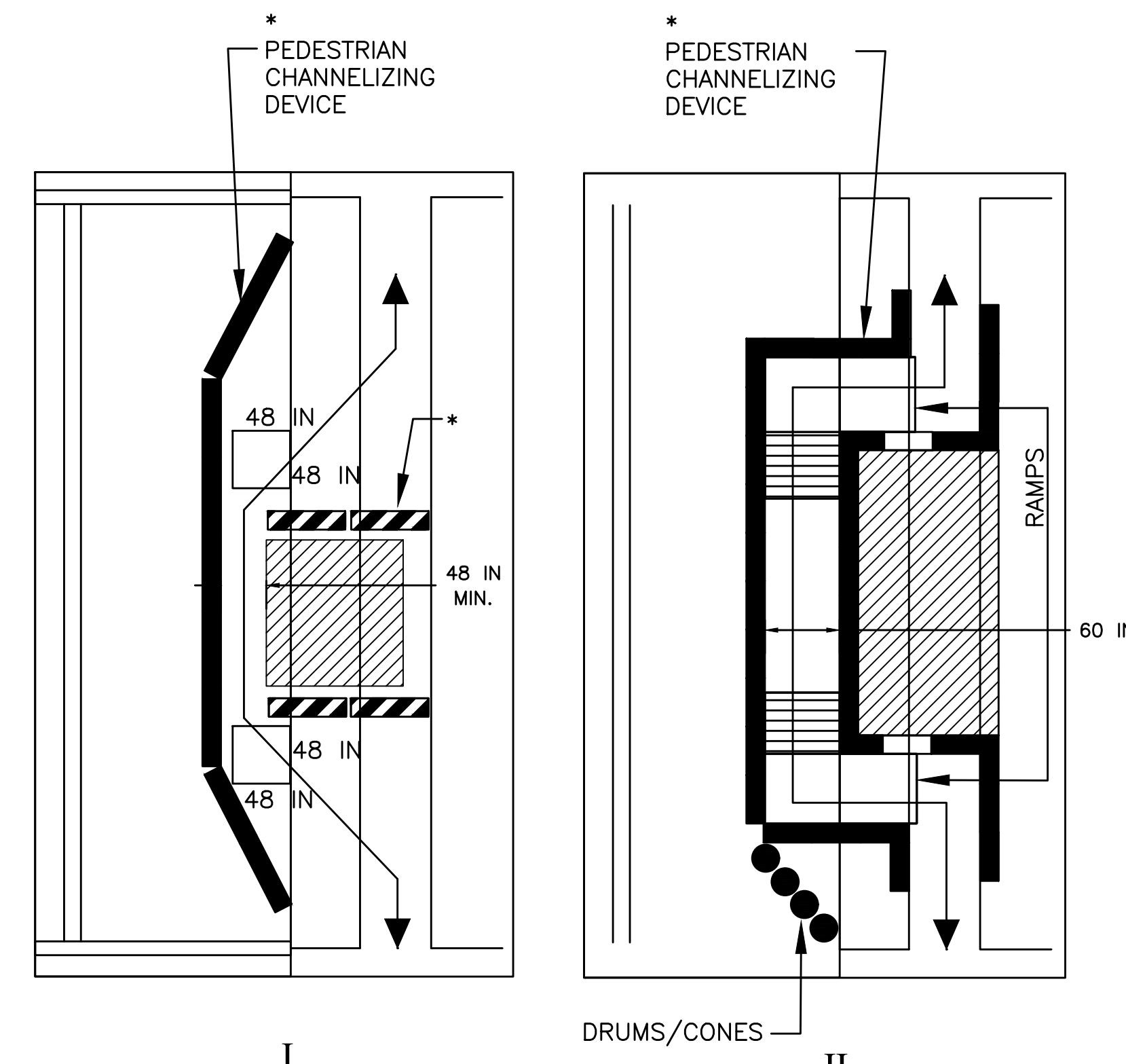
PEDESTRIAN CHANNELIZING DEVICE

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.



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.

STOUGHTON WASHINGTON STREET (ROUTE 138)			
STATE	FED. AID PROJ. NO.	HEET NO.	TOTAL SHEETS
MA	-	84	104

PROJECT FILE NO. 607403

TEMPORARY TRAFFIC CONTROL PLANS

**STOUGHTON
WASHINGTON STREET (ROUTE 138)**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	85	104
PROJECT FILE NO.		607403	

TEMPORARY TRAFFIC CONTROL PLANS

The diagram illustrates a road construction site with a double lane approach far side closure. The left side shows a 'DOUBLE LANE APPROACH FAR SIDE CLOSURE INSIDE LANE' configuration. A 'W20-5L' sign indicates a lane closure, with points A and B marked on the road. A 'LEFT LANE CLOSED XXX' sign is placed at point B. A 'W4-2L' sign is located further up the approach. A 'R3-7L' sign with 'LEFT LANE MUST TURN LEFT' text is positioned near the closure. A '100 FT (30m)' distance marker is shown above the sign. A 'W20' sign is also present. The right side shows a 'DOUBLE LANE APPROACH FAR SIDE CLOSURE RIGHT LANE' configuration. A 'W4' sign is shown. A 'R3-7R' sign with 'RIGHT LANE MUST TURN RIGHT' text is positioned near the closure. A 'MA-W4-7L' sign with 'THRU TRAFFIC MERGE LEFT' text is located further up the approach. A 'W20' sign is also present. Arrows indicate the flow of traffic and the location of the closure.

The diagram illustrates a traffic configuration for a 'DOUBLE LANE APPROACH HALF ROAD CLOSURE'. The top section shows a cross-section of the road with two solid lines and two dashed lines. Arrows indicate traffic flow: a downward arrow on the left dashed line, a downward arrow on the right dashed line, an upward arrow on the right solid line, and an upward arrow on the left solid line. To the left, a 'BUFFER' zone is indicated with a zigzag line. A vertical dimension 'L' is shown from the bottom to the top of the dashed lines. A horizontal dimension 'A' is shown from the left dashed line to the right solid line. A horizontal dimension 'B' is shown from the top of the dashed lines to the top of the solid lines. A horizontal dimension 'L/2' is shown from the center of the dashed lines to the center of the solid lines. A shaded rectangular area is labeled 'P'. To the right, a diamond-shaped sign reads 'POLICE OFFICER AHEAD' with a horizontal dimension 'A' below it. A horizontal dimension 'L' is also shown for the distance between the center of the dashed lines and the end of the sign. The bottom section shows a similar cross-section with a 'RIGHT LANE MUST TURN RIGHT' sign (R3-7R) and a 'THRU TRAFFIC MERGE LEFT' sign (MA-W4-7L). A 'POLICE OFFICER AHEAD' sign (MA-W20) is also present. Vertical dimensions 'A', 'B', and 'B' are indicated on the left side of the bottom section.

LEGEND:

TEMPORARY

- 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

The diagram illustrates a single lane approach intersection center closure. The top part shows a top-down view of the intersection with various traffic signs and dimensions. The bottom part shows a side view of the intersection, highlighting the center closure and the resulting traffic flow. The signs include:

- ROAD NARROWS (W5-1)
- POLICE OFFICER AHEAD (MA-W20-7b)
- R4-7 (bend warning sign)
- ROAD NARROWS (W5-1)
- POLICE OFFICER AHEAD (MA-W20-7b)
- ROAD NARROWS (W5-1)
- POLICE OFFICER AHEAD (MA-W20-7b)
- R4-7 (bend warning sign)

Dimensions shown in the diagram include:

- B (vertical distance from the bottom of the 'ROAD NARROWS' sign to the top of the 'POLICE OFFICER AHEAD' sign)
- A (vertical distance from the bottom of the 'POLICE OFFICER AHEAD' sign to the bottom of the 'ROAD NARROWS' sign)
- L/2 (horizontal distance from the center of the 'ROAD NARROWS' sign to the center of the 'POLICE OFFICER AHEAD' sign)
- L/2 (vertical distance from the bottom of the 'POLICE OFFICER AHEAD' sign to the top of the 'ROAD NARROWS' sign)
- A (vertical distance from the bottom of the 'ROAD NARROWS' sign to the bottom of the 'POLICE OFFICER AHEAD' sign)
- B (vertical distance from the bottom of the 'POLICE OFFICER AHEAD' sign to the top of the 'ROAD NARROWS' sign)
- L/2 (horizontal distance from the center of the 'ROAD NARROWS' sign to the center of the 'POLICE OFFICER AHEAD' sign)

The diagram illustrates a one-lane alternating traffic intersection. The top section shows a vertical cross-section of the road. A 'ONE LANE ROAD XXX' sign (W20-4) is positioned above a 'POLICE OFFICER AHEAD' sign (MA-W20-7b). A vertical dimension line labeled 'B' indicates the height of the signs. A horizontal dimension line labeled 'A' indicates the distance between the signs. A note specifies '100 FT (30m) MAX.' for the distance 'A'. A vertical dashed line labeled 'P' indicates the center of the road. The bottom section shows a horizontal cross-section of the intersection. It features a dashed line labeled 'P' and a hatched area representing a crosswalk. A 'ONE LANE ROAD XXX' sign (W20-4) and a 'POLICE OFFICER AHEAD' sign (MA-W20-7b) are placed on the left side of the intersection. A note specifies '100 FT (30m) MAX.' for the distance between the signs. The diagram also includes a note: '* THIS DELINEATION CAN BE REMOVED TO INCREASE CAPACITY OF THE INTERSECTION. POLICE OFFICER CAN BE REMOVED AS WELL'.

SINGLE LANE APPROACH INTERSECTION ONE CORNER CLOSURE

Diagram illustrating a traffic control plan for a two-lane road with a left lane closure. The plan includes the following elements:

- Signage:**
 - W20-5L: LEFT LANE CLOSED XXX
 - W4-2L: Lane closure sign
 - TEMPORARY SOLID WHITE LANE LINE: Arrow pointing to the solid white lane line.
 - REMOVE EXISTING PAVEMENT MARKING: Arrow pointing to the dashed white lane line.
 - W1-4bR: Curved arrow sign indicating traffic flow.
 - W1-4bL: Curved arrow sign indicating traffic flow.
 - ROAD NARROWS: Sign indicating road narrowing.
- Dimensions:**
 - B: Vertical distance from the top of the left lane closure sign to the top of the solid white lane line.
 - A: Vertical distance from the top of the solid white lane line to the top of the dashed white lane line.
 - L: Vertical distance from the top of the dashed white lane line to the top of the center line.
 - L/2: Vertical distance from the top of the center line to the top of the right lane closure sign.
 - 4S(0.8S): Vertical distance from the bottom of the left lane closure sign to the bottom of the right lane closure sign.
 - 100 FT (30m): Horizontal distance between the two lane closure signs.
- Notes:**
 - * TRUCK MOUNTED ATTENUATOR WITH ACTIVE WORK: A note indicating the presence of a truck-mounted attenuator with active work.

MULTIPLE LANE ROAD INTERIOR LANE CLOSURE W/ UNEVEN VOLUMES

The diagram illustrates a traffic control setup for a multiple lane road. It features a central lane closure with two truck-mounted attenuators. The left lane is closed, indicated by a 'LEFT LANE CLOSED XXX' sign. The right lane is open, indicated by a 'W4-2L' sign. A 'W20-5L' speed limit sign is also present. The diagram shows various dimensions: $S(0.8S)$ on the left, $4S(0.8S)$ on the right, and buffer zones labeled 'BUFFER' and 'L' on both sides of the attenuators. Lane widths are labeled 'A' and 'B' at the top and bottom. Arrows indicate traffic flow in the outer lanes.

CONSTRUCTION SIGN SUMMARY

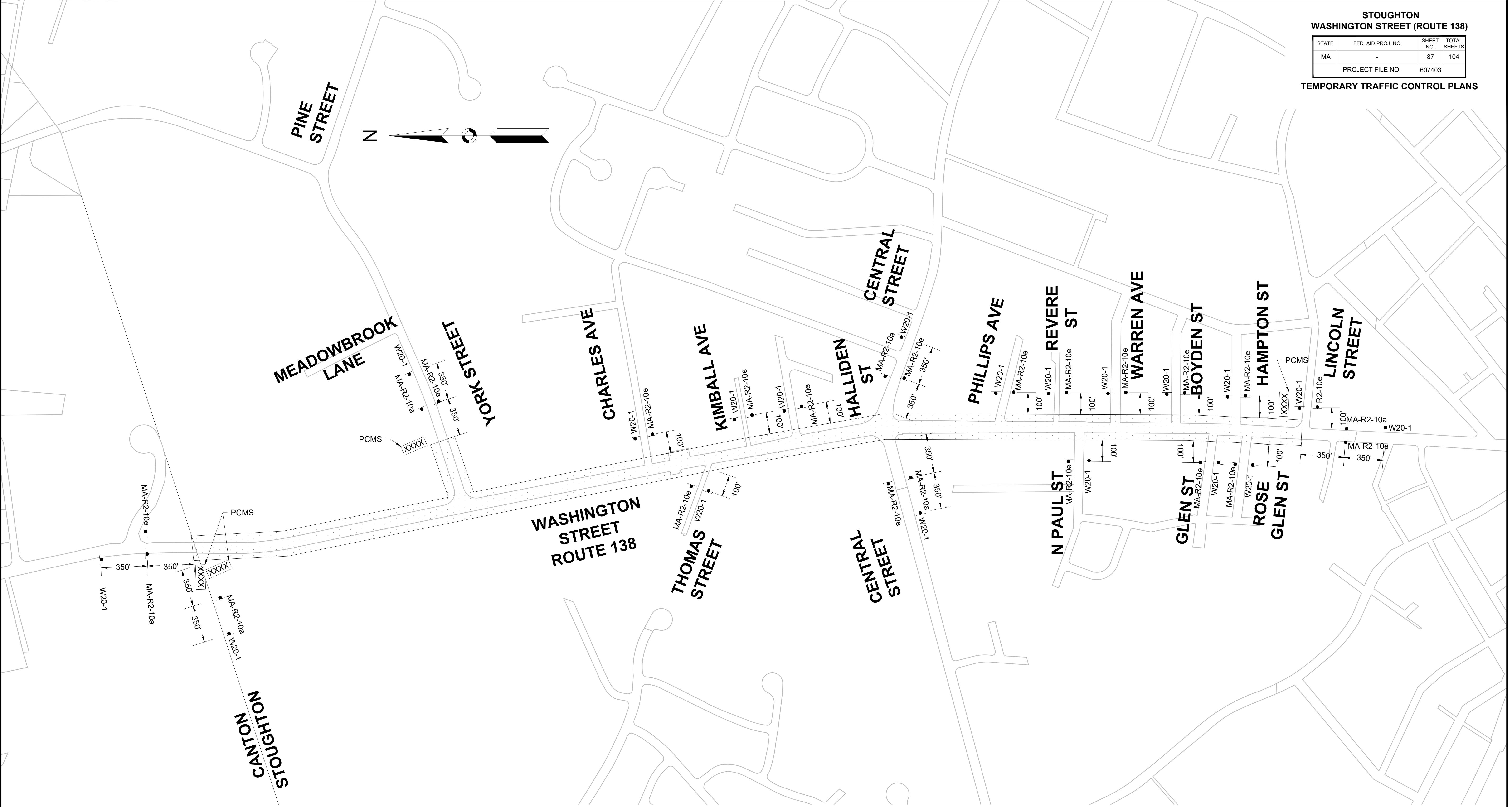
STOUGHTON WASHINGTON STREET (ROUTE 138)				
STATE	FED. AID PROJ. NO.	sheet no.	total sheets	
MA	-	86	104	PROJECT FILE NO. 607403

TEMPORARY TRAFFIC CONTROL PLANS

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"		FLUORESCENT ORANGE	BLACK	BLACK	2	9.00	18.00
W1-4R	36"	36"		FLUORESCENT ORANGE	BLACK	BLACK	2	9.00	18.00
W4-2L	36"	36"		FLUORESCENT ORANGE	BLACK	BLACK	2	9.00	18.00
MA-W4-7L	36"	36"		FLUORESCENT ORANGE	BLACK	BLACK	1	9.00	9.00
W5-1	36"	36"		FLUORESCENT ORANGE	BLACK	BLACK	4	9.00	36.00
W8-1	36"	36"		FLUORESCENT ORANGE	BLACK	BLACK	2	9.00	18.00
W8-3	36"	36"		FLUORESCENT ORANGE	BLACK	BLACK	2	9.00	18.00
W8-15	36"	36"		FLUORESCENT ORANGE	BLACK	BLACK	2	9.00	18.00
W8-24	36"	36"		FLUORESCENT ORANGE	BLACK	BLACK	2	9.00	18.00
W13-1p	24"	24"		FLUORESCENT ORANGE	BLACK	BLACK	2	4.00	8.00
W20-1	36"	36"		FLUORESCENT ORANGE	BLACK	BLACK	19	9.00	63.00
W20-4	36"	36"		FLUORESCENT ORANGE	BLACK	BLACK	4	9.00	36.00
W20-5L	36"	36"		FLUORESCENT ORANGE	BLACK	BLACK	2	9.00	18.00

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-W20-7b	36"	36"		FLUORESCENT ORANGE	BLACK	BLACK	4	9.00	36.00
W21-5a	36"	36"		FLUORESCENT ORANGE	BLACK	BLACK	2	9.00	18.00
MA-R2-10a	48"	36"		FLUORESCENT ORANGE WHITE	BLACK BLACK	BLACK BLACK	6	12.00	60.00
MA-R2-10e	36"	48"		FLUORESCENT ORANGE WHITE	BLACK BLACK	BLACK BLACK	18	12.00	216.00
R3-7L	30"	30"		WHITE	BLACK	BLACK	2	6.25	12.50
R3-7R	30"	30"		WHITE	BLACK	BLACK	2	6.25	12.50
R4-7	24"	30"		WHITE	BLACK	BLACK	2	5.00	10.00
R9-9	24"	12"		FLUORESCENT ORANGE	BLACK	BLACK	4	2.00	8.00
R9-11aR	24"	12"		FLUORESCENT ORANGE	BLACK	BLACK	2	2.00	4.00
R9-11aL	24"	12"		FLUORESCENT ORANGE	BLACK	BLACK	2	2.00	4.00
W11-2	36"	36"		FLUORESCENT ORANGE	BLACK	BLACK	4	9.00	36.00
W16-7p	24"	12"		FLUORESCENT ORANGE	BLACK	BLACK	4	2.00	8.00
W1-4bL	36"	36"		FLUORESCENT ORANGE	BLACK	BLACK	2	9.00	18.00
W1-4R	36"	36"		FLUORESCENT ORANGE	BLACK	BLACK	2	9.00	18.00

* NO. OF SIGNS ARE ESTIMATED FOR BIDDING PURPOSES ONLY



ADVANCE SIGN PLAN

NTS

NOTES:

1. PCMS SHALL BE INSTALLED AT LEAST 2 WEEKS PRIOR TO THE START OF WORK, WITH THE WORD MESSAGE "CONSTRUCTION TO BEGIN MM-DD THROUGH MM-DD SEEK ALT ROUTE"
2. THE CONTRACTOR SHALL CONFIRM THE EXACT LOCATION OF THE PCMS WITH THE RESIDENT ENGINEER AND THE TOWN OF STOUGHTON.
3. THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER TO CONTINUALLY UPDATE THE PCMS BASED UPON ON-GOING WORK. ABBREVIATIONS SHALL BE IN ACCORDANCE WITH THE MUTCD.