MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION

BROOKLINE
WASHINGTON ST. (ROUTE 9) & WALNUT ST.

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	XXXX	1	39
PROJECT FILE NO.	605110		

TITLE & INDEX SHEET

INTERSECTION IMPROVEMENT PROJECT

WASHINGTON STREET (ROUTE 9) AND WALNUT STREET

IN THE TOWN OF

BROOKLINE

NORFOLK COUNTY

FEDERAL AID PROJECT NO.

25% SUBMITTAL

THE MASSACHUSETTS HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES DATED 1988, AS AMENDED, THE SUPPLEMENTAL SPECIFICATIONS DATED JULY 1, 2015, THE 2014 CONSTRUCTION STANDARD DETAILS, THE 2015 OVERHEAD SIGNAL STRUCTURE AND FOUNDATION STANDARD DRAWINGS, MASSDOT TRAFFIC MANAGEMENT PLANS AND DETAIL DRAWINGS, THE LATEST MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS WITH MASSACHUSETTS AMENDMENTS, 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, WILL GOVERN.

INDEX

SHEET NO.	DESCRIPTION
1	TITLE & INDEX SHEET
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5-8	TYPICAL SECTIONS & PAVEMENT NOTES
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14-19	PROFILES
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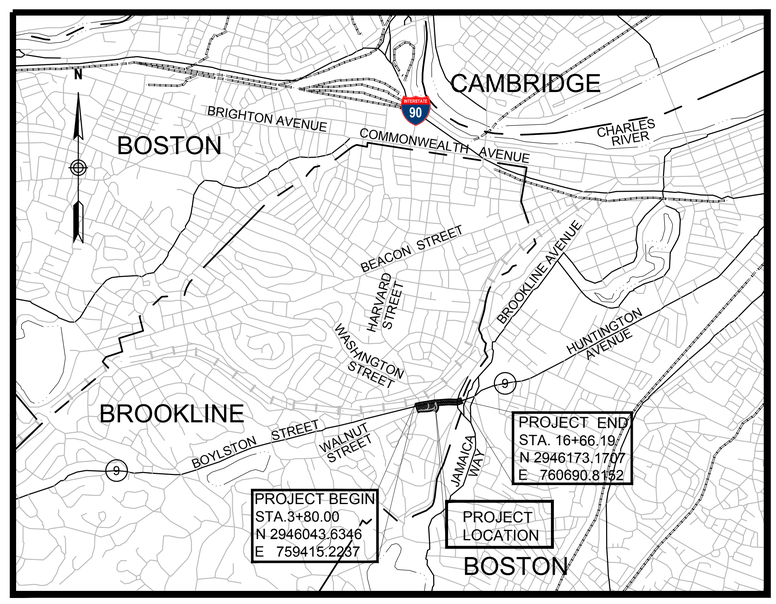
33	STREETSCAPE PLAN
34-39	CRITICAL CROSS SECTIONS



0 2000 4000 6000 8000

SCALE: 1" = 2000'

LENGTH OF PROJECT = 1286.19 FEET = 0.2436 MILES

DESIGN DESIGNATION

ROUTE 9 - EAST OF WASHINGTON STREET

POSTED SPEED	=	30 MPH
DESIGN SPEED	=	35 MPH
ADT (2013)	=	43,989 VPD
ADT (2023)	=	47,408 VPD
K	=	8%
D	=	53.3% (EB)
T (PEAK HOUR)	=	1.2%
T (AVERAGE DAY)	=	2%
DHV	=	3,633 VPH
DDHV	=	1,937 VPH (EB)

FUNCTIONAL CLASSIFICATION = PRINCIPAL ARTERIAL

ROUTE 9 - WEST OF WASHINGTON STREET

POSTED SPEED	=	30 MPH
DESIGN SPEED	=	35 MPH
ADT (2013)	=	31,130 VPD
ADT (2023)	=	33,550 VPD
K	=	7%
D	=	62.2% (WB)
T (PEAK HOUR)	=	1.4%
T (AVERAGE DAY)	=	2%
DHV	=	2,315 VPH
DDHV	=	1,439 VPH (WB)

FUNCTIONAL CLASSIFICATION = PRINCIPAL ARTERIAL

HIGH STREET

POSTED SPEED	=	30 MPH
DESIGN SPEED	=	35 MPH
ADT (2013)	=	8,319 VPD
ADT (2023)	=	8,966 VPD
K	=	8%
D	=	55.6% (NB)
T (PEAK HOUR)	=	2.9%
T (AVERAGE DAY)	=	2.0%
DHV	=	745 VPH
DDHV	=	414 VPH (NB)

FUNCTIONAL CLASSIFICATION = URBAN COLLECTOR

WALNUT STREET

DESIGN SPEED	=	25 MPH

DATE	DESCRIPTION	REV #

(ERASE IF NOT APPLICABLE)
PE Stamp & Signature
Consultant Name

massDOT
Massachusetts Department of Transportation
Highway Division

RECOMMENDED FOR APPROVAL

CHIEF ENGINEER DATE

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED:

DIVISION ADMINISTRATOR DATE

APPROVED

HIGHWAY ADMINISTRATOR DATE

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BROOKLINE
WASHINGTON ST. (ROUTE 9) & WALNUT ST.

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	XXXX	2	39
PROJECT FILE NO.	605110		

LEGEND & GENERAL NOTES

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
		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
	CW	CROSSWALK
	SWL	SOLID WHITE LINE
	SYL	SOLID YELLOW LINE
	BWL	BROKEN WHITE LINE
	BYL	BROKEN YELLOW LINE
	DWL	DOTTED WHITE LINE
	DYL	DOTTED YELLOW LINE
	DWLEx	DOTTED WHITE LINE EXTENSION
	DYLEx	DOTTED YELLOW LINE EXTENSION
	DBWL	DOUBLE WHITE LINE
	DBYL	DOUBLE YELLOW LINE

GENERAL NOTES

1. TOPOGRAPHICAL INFORMATION FROM A SURVEY BY VANASSE HANGEN BRUSTLIN, INC., WATERTOWN, MASSACHUSETTS IN OCTOBER 2009 WITH UPDATES IN 2016 TO RIGHT OF WAY AND UTILITY INFORMATION AND HARRY R. FELDMAN, INC., BOSTON, MASSACHUSETTS IN MAY 2008.

2. HORIZONTAL DATUM IS BASED ON MASS GRID SYSTEM, NAD 1983. ELEVATIONS SHOWN REFER TO NAVD OF 1988.

3. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

4. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED TO THE ENGINEER FOR RESOLUTION OF THE CONFLICT.

5. THE CONTRACTOR SHALL ALTER THE MASONRY OF THE TOP SECTION OF ALL EXISTING DRAINAGE STRUCTURES AS NECESSARY FOR CHANGES IN GRADE, AND RESET ALL WATER AND DRAINAGE FRAMES, GRATES AND BOXES TO THE PROPOSED FINISH SURFACE GRADE. REQUIRED NEW MASONRY SHALL BE CLAY BRICK CONFORMING TO M4.05.2.

6. THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE AND ANY OTHER PRIVATE UTILITIES BY THE UTILITY COMPANIES.

7. TREES AND SHRUBS WITHIN THE LIMITS OF GRADING SHALL BE REMOVED ONLY UPON APPROVAL OF THE ENGINEER.

8. AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT NO EXPENSE TO THE OWNER.

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

10. JOINTS BETWEEN NEW HOT MIX ASPHALT ROADWAY PAVEMENT AND SAWCUT EXISTING PAVEMENT SHALL BE SEALED WITH BITUMEN AND BACKSANDED.

11. EXISTING SIGNS WITHIN THE PROJECT LIMITS SHALL BE REMOVED AND STACKED UNLESS INDICATED OTHERWISE ON THE DRAWINGS.

12. LATERAL DRAIN PIPES SHALL BE INSTALLED WITH A PITCH OF .01 FOOT PER FOOT (MINIMUM) UNLESS NOTED OTHERWISE ON THE DRAWINGS.

13. EXISTING GRANITE CURB & EDGING SHALL BE RE-USED IF SUITABLE IN THE PROPOSED WORK, EXCEPT CURVED STONES OF A DIFFERENT RADIUS THAN PROPOSED CURB.

14. EXISTING STATE, COUNTY, CITY, AND TOWN LOCATION LINES AND PRIVATE PROPERTY LINES HAVE BEEN ESTABLISHED FROM AVAILABLE INFORMATION AND THEIR EXACT LOCATION ARE NOT GUARANTEED.

15. THE MINIMUM MOUNTING HEIGHT FOR POST MOUNTED SIGNS SHALL BE 7 FEET WITHIN ACCESSIBLE PEDESTRIANS ROUTES. THE MINIMUM MOUNTING HEIGHT FOR POST MOUNTED SIGNS SHALL BE A MINIMUM OF 4 FEET AT ALL OTHER LOCATIONS. MOUNTING HEIGHT SHALL BE MEASURED FROM THE BOTTOM OF THE SIGN TO THE TOP OF CURB, SIDEWALK OR NEAR EDGE OF TRAVEL WAY, AS APPLICABLE.

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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
PVT	POINT OF VERTICAL TANGENCY
PVMT	PAVEMENT
PWW	PAVED WATER WAY

ABBREVIATIONS (cont.)

GENERAL

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

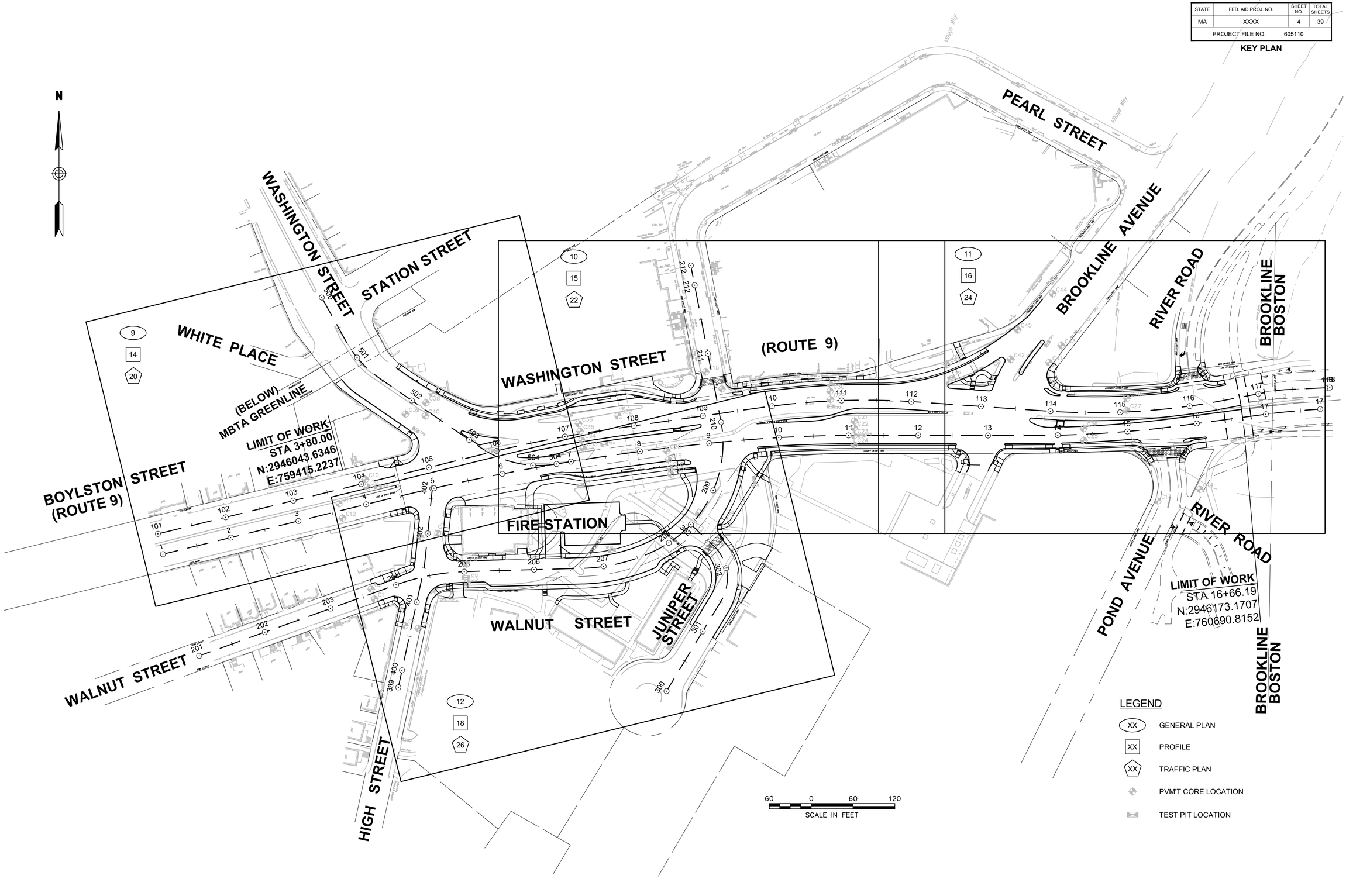
TRAFFIC SIGNAL

CAB.	CABINET
CCVE	CLOSED CIRCUIT VIDEO EQUIPMENT
DW	STEADY DON'T WALK
FDW	FLASHING DON'T WALK
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 WALK
Y	STEADY CIRCULAR AMBER
YL	STEADY YELLOW LEFT ARROW

BROOKLINE
WASHINGTON ST. (ROUTE 9) & WALNUT ST.

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	XXXX	4	39
PROJECT FILE NO.	605110		

KEY PLAN



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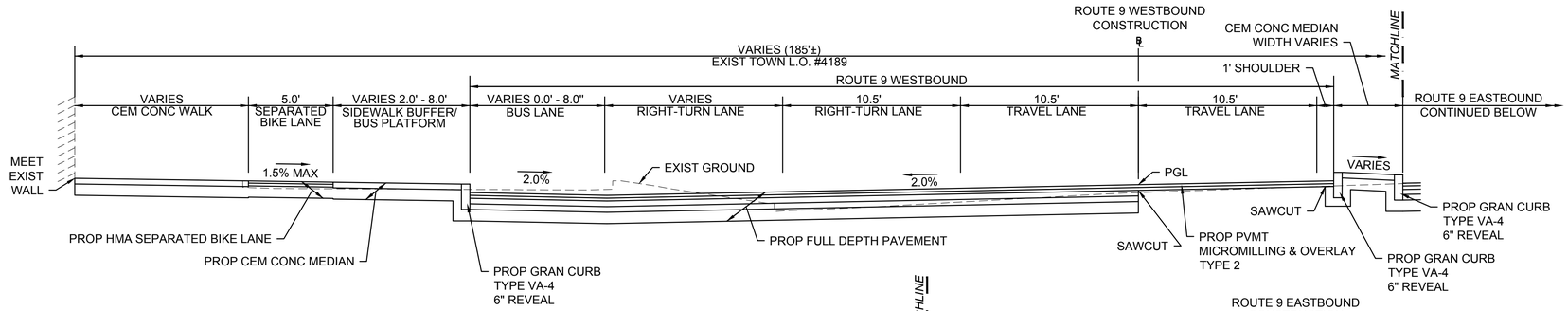
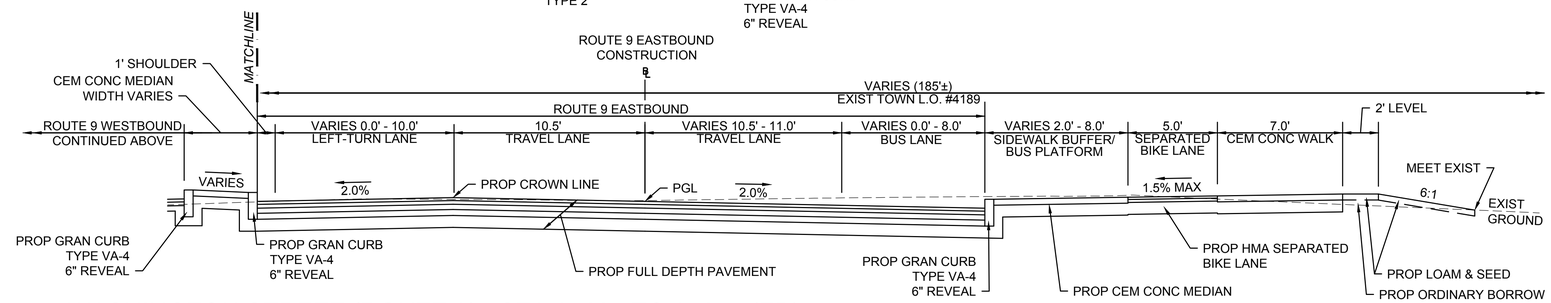
BROOKLINE
WASHINGTON ST. (ROUTE 9) & WALNUT ST.

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	XXXX	5	39
PROJECT FILE NO.	605110		

TYPICAL SECTIONS & PAVEMENT NOTES

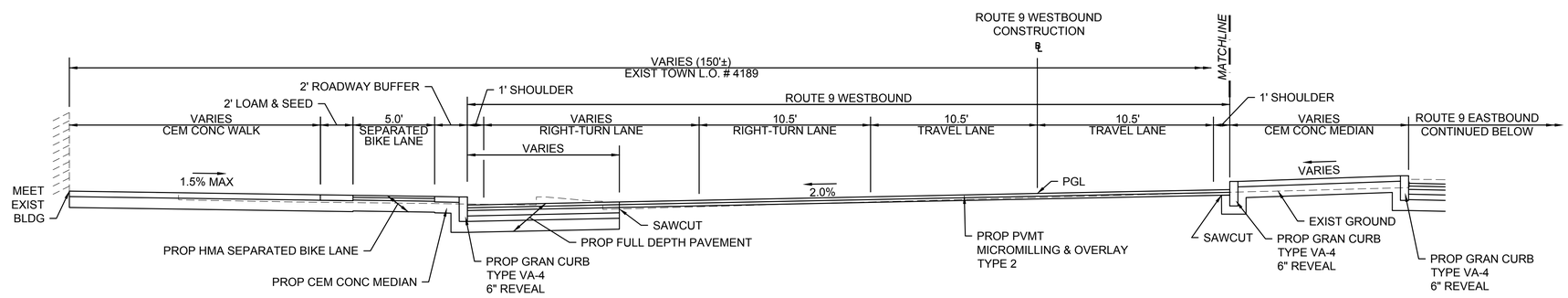
*SEE SHEET 7 FOR PAVEMENT NOTES

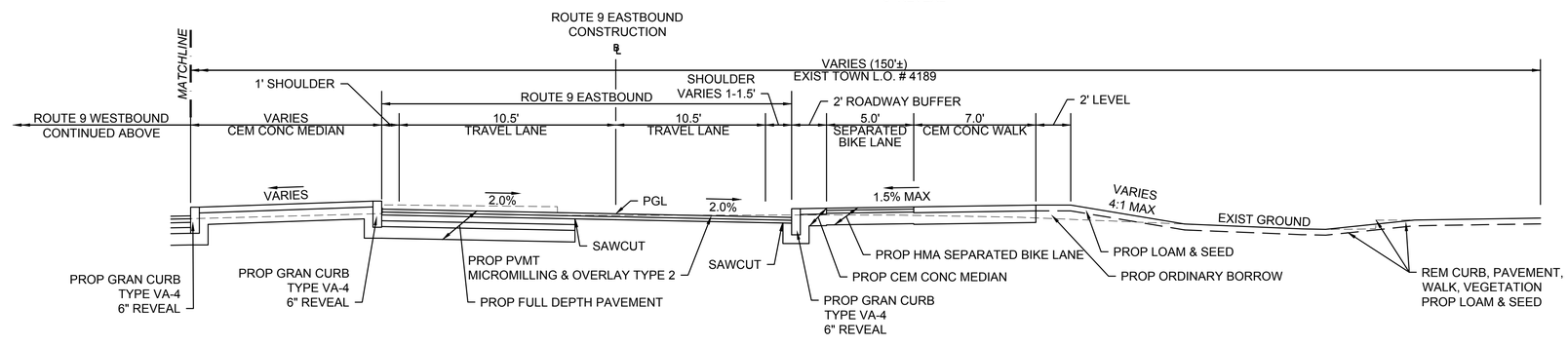




WASHINGTON STREET (ROUTE 9) - STA 6+63± TO 8+25± (EB)

NTS





WASHINGTON STREET (ROUTE 9) - STA 6+27± TO 6+63± (EB)

NTS

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BROOKLINE
WASHINGTON ST. (ROUTE 9) & WALNUT ST.

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	XXXX	6	39
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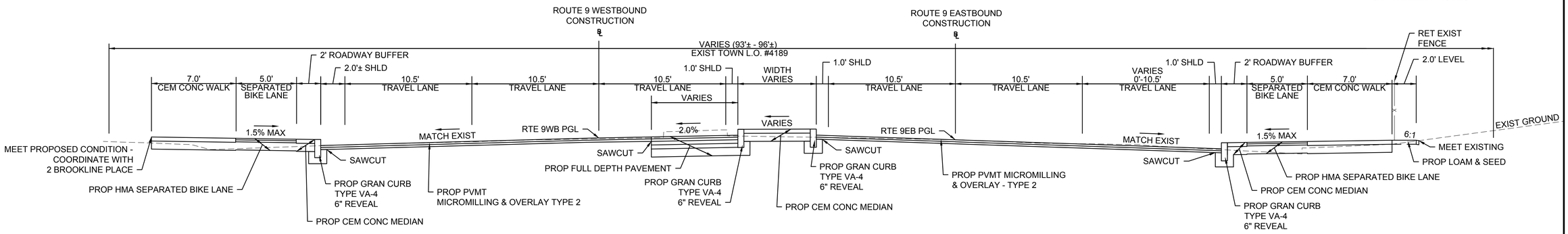
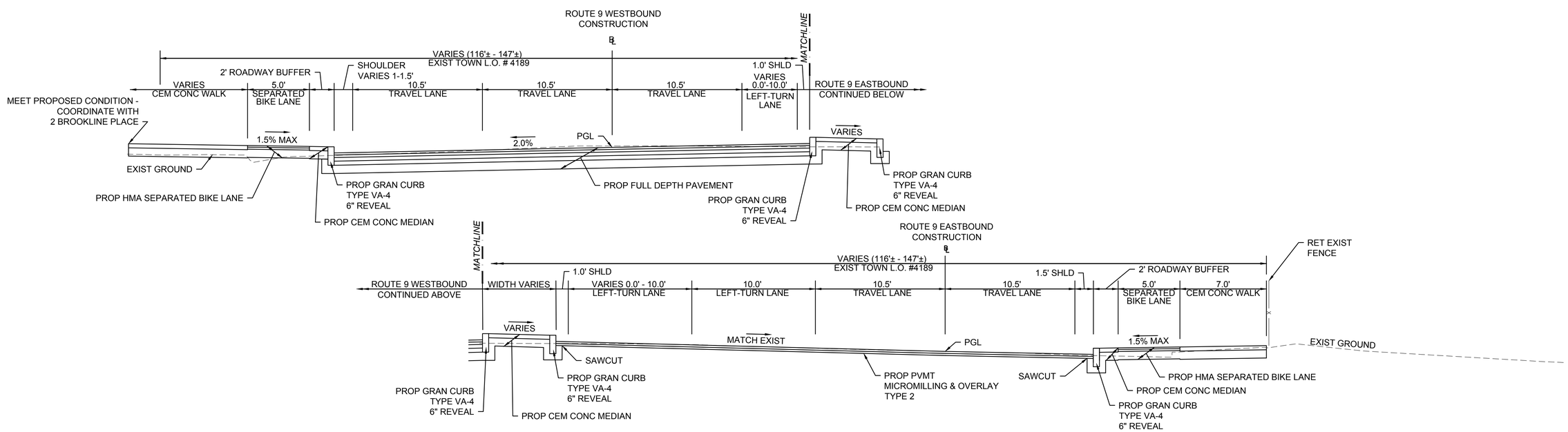
TYPICAL SECTIONS & PAVEMENT NOTES



WASHINGTON STREET (ROUTE 9) - STA 14+06± TO 16+40± (EB)

NTS

*SEE SHEET 7 FOR PAVEMENT NOTES



WASHINGTON STREET (ROUTE 9) - STA 10+14± TO 12+13± (EB)

NTS

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MA	XXXX	7	39
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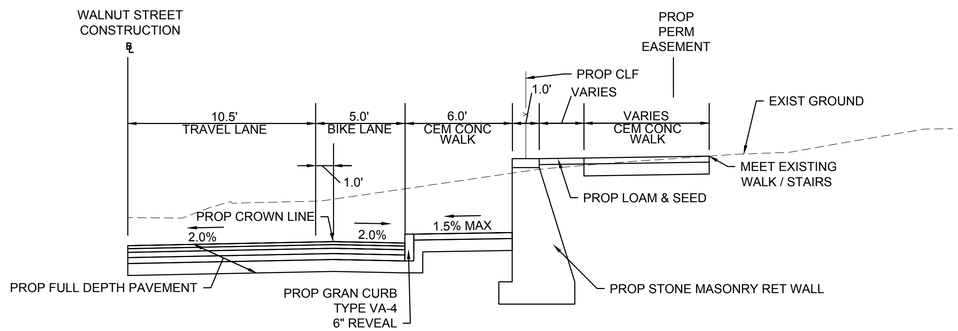
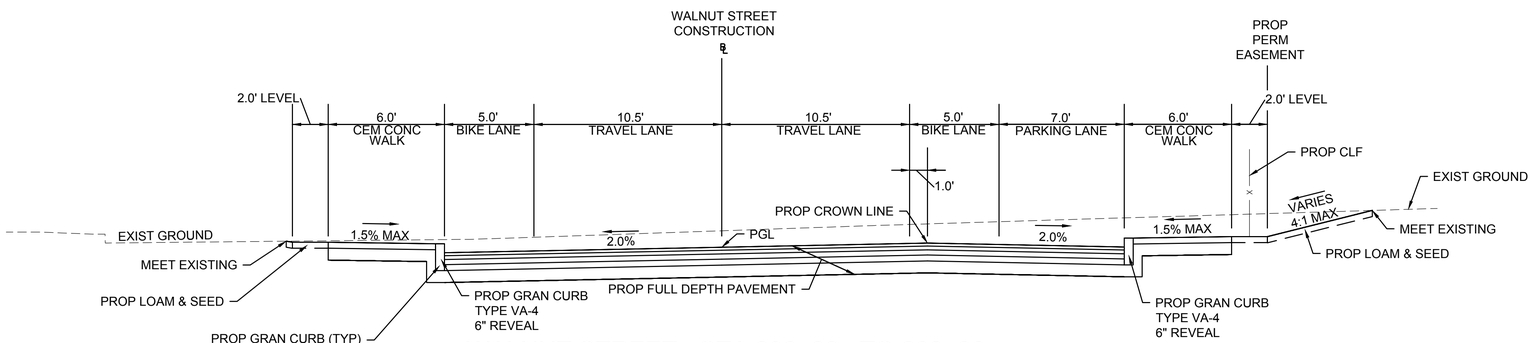
TYPICAL SECTIONS & PAVEMENT NOTES



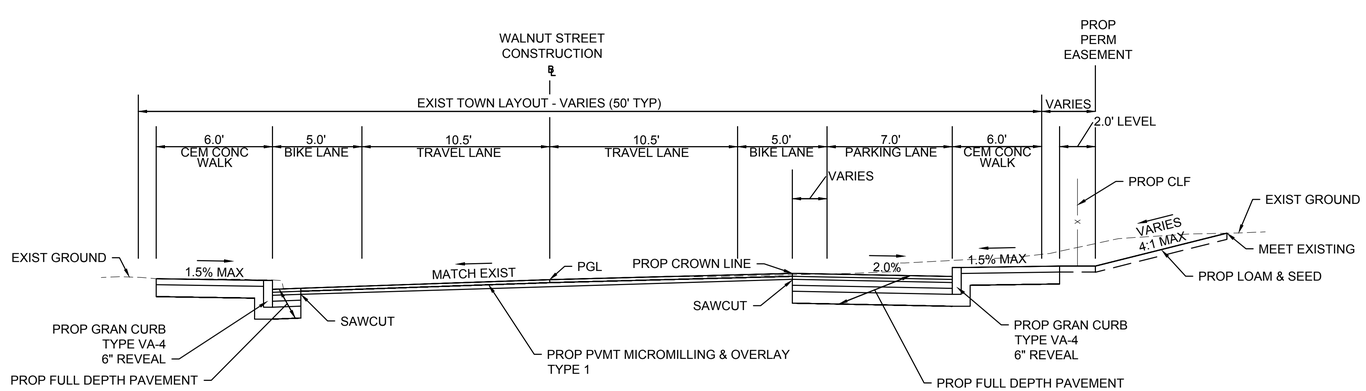
WALNUT STREET - RETAINING WALL - STA 207+78± TO 207+97±

NTS



WALNUT STREET - STA 206+39± TO 208+90±

NTS



WALNUT STREET - STA 204+90± TO 206+39±

NTS

PAVEMENT NOTES

PROPOSED FULL DEPTH PAVEMENT

SURFACE:	1 ¾"	SUPERPAVE SURFACE COURSE - 12.5 (SSC-12.5)
INTERMEDIATE:	2 ¼"	SUPERPAVE INTERMEDIATE COURSE - 19.0 (SIC-19.0)
BASE COURSE:	4 ½"	SUPERPAVE BASE COURSE - 37.5 (SBC-37.5)
SUBBASE:	4"	DENSE GRADED CRUSHED STONE FOR SUB-BASE OVER
	8"	GRAVEL BORROW (TYPE b)

PROPOSED FULL DEPTH PAVEMENT (WALNUT ST. AND JUNIPER ST.)

SURFACE:	1 ¾"	SUPERPAVE SURFACE COURSE - 12.5 (SSC-12.5)
INTERMEDIATE:	1 ¾"	SUPERPAVE INTERMEDIATE COURSE - 12.50 (SIC-12.5)
BASE COURSE:	4"	SUPERPAVE BASE COURSE 37.5 (SBC-37.5)
SUBBASE:	4"	DENSE GRADED CRUSHED STONE FOR SUB-BASE OVER
	8"	GRAVEL BORROW (TYPE b)

PAVEMENT MILLING AND OVERLAY (TYPE 1)

SURFACE:	1 ¾"	SUPERPAVE SURFACE COURSE - 12.5 (SSC-12.5)
MILLING:	1 ¾"	PAVEMENT MICROMILLING

PAVEMENT MILLING AND OVERLAY (TYPE 2)

SURFACE:	1 ¾"	SUPERPAVE SURFACE COURSE - 12.5 (SSC-12.5)
INTERMEDIATE:	2 ¼"	SUPERPAVE INTERMEDIATE COURSE - 19.0 (SIC-19.0)
MILLING:	4"	PAVEMENT MICROMILLING

FULL DEPTH CONSTRUCTION (BUS TURNOUT):

SURFACE:	2 ¼"	SUPERPAVE SURFACE SOURSE - 19.0 (SSC-19.0)
INTERMEDIATE:	2 ¼"	SUPERPAVE INTERMEDIATE COURSE - 19.0 (SIC-19.0)
BASE COURSE:	4 ½"	SUPERPAVE BASE COURSE - 37.5 (SBC-37.5)
SUBBASE:	4"	DENSE GRADED CRUSHED STONE FOR SUB-BASE OVER
	8"	SUITABLE EXISTING GRAVEL OR GRAVEL BORROW, (TYPE b)

HMA DRIVEWAY AND PARKING LOT:

SURFACE:	1 ¾"	SUPERPAVE SURFACE COURSE - 12.5 (SSC-12.5)
INTERMEDIATE:	2 ¼"	SUPERPAVE INTERMEDIATE COURSE - 19.0 (SIC-19.0)
SUBBASE:	8"	GRAVEL BORROW, TYPE b

PROPOSED CEMENT CONCRETE WALK/WHEELCHAIR RAMP/DRIVE/MEDIAN/BUS STOP:

SURFACE:	4" CEMENT CONCRETE **6" CEMENT CONCRETE WITHIN DRIVEWAYS AIR ENTRAINED 4000 PSI, ¾" 610
SUBBASE:	8" GRAVEL BORROW, TYPE b. *

PROPOSED HOT MIX ASPHALT WALK:

SURFACE:	1 ¼" SUPERPAVE SURFACE COURSE - 9.5 (SSC-9.5)
INTERMEDIATE:	1 ¼" SUPERPAVE INTERMEDIATE COURSE - 19.0 (SIC-19.0)
SUBBASE:	8" GRAVEL BORROW, TYPE b.*

PROPOSED HOT MIX ASPHALT SEPARATED BIKE LANE (SBL):

SURFACE:	1 ½" SUPERPAVE SURFACE COURSE - 9.5 (SSC-9.5)
INTERMEDIATE:	2" SUPERPAVE INTERMEDIATE COURSE - 19.0 (SIC-19.0)
SUBBASE:	8" GRAVEL BORROW, TYPE b

PROPOSED FULL DEPTH PAVEMENT LESS THAN 4 FT

SURFACE:	1 ¾"	SUPERPAVE SURFACE COURSE - 12.5 (SSC-12.5)
INTERMEDIATE:	2 ¼"	SUPERPAVE INTERMEDIATE COURSE - 19.0 (SIC-19.0)
BASE COURSE:	6"	HIGH EARLY STRENGTH CEMENT CONCRETE
SUBBASE:	8"	GRAVEL BORROW (TYPE b)

NOTES:

1. ALL SUPERPAVE HOT MIX ASPHALT SHALL BE A WARM MIX ASPHALT TECHNOLOGY
2. ALL PROPOSED SUPERPAVE SURFACE COURSE AND SUPERPAVE INTERMEDIATE COURSE SHALL BE LATEX MODIFIED.
3. ALL HOT MIX ASPHALT PAVEMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SECTION 450 QUALITY ASSURANCE FOR HMA AND SECTION 455 SUPERPAVE HMA SPECIFICATIONS.
4. ALL MILLED SURFACES SHALL RECEIVE A TACK COAT APPLIED AT 0.07 GALLONS PER SQUARE YARD AND ALL UNMILLED SURFACES SHALL RECEIVE A TACK COAT APPLIED AT 0.05 GALLONS PER SQUARE YARD PRIOR TO PAVING.
5. ALL HOT MIX ASPHALT WALK SURFACES AND HOT MIX ASPHALT SEPARATED BIKE LANE SURFACES SHALL BE ESTIMATED AND PAID FOR UNDER ITEM 702 OF STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES.
6. ALL HOT MIX ASPHALT DRIVEWAY/PARKING LOT SURFACES SHALL BE ESTIMATED AND PAID FOR UNDER ITEM 703 OF STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES.
7. TEMPORARY CONSTRUCTION SHALL USE SUPERPAVE HOT MIX ASPHALT MIXTURES AND MAY NOT BE SUBJECT TO THE SAME SAMPLING AND TESTING REQUIRED FOR PERMANENT CONSTRUCTION.
8. FENCE LOCATIONS AND TYPE SHALL BE AS INDICATED ON THE CONSTRUCTION PLANS.

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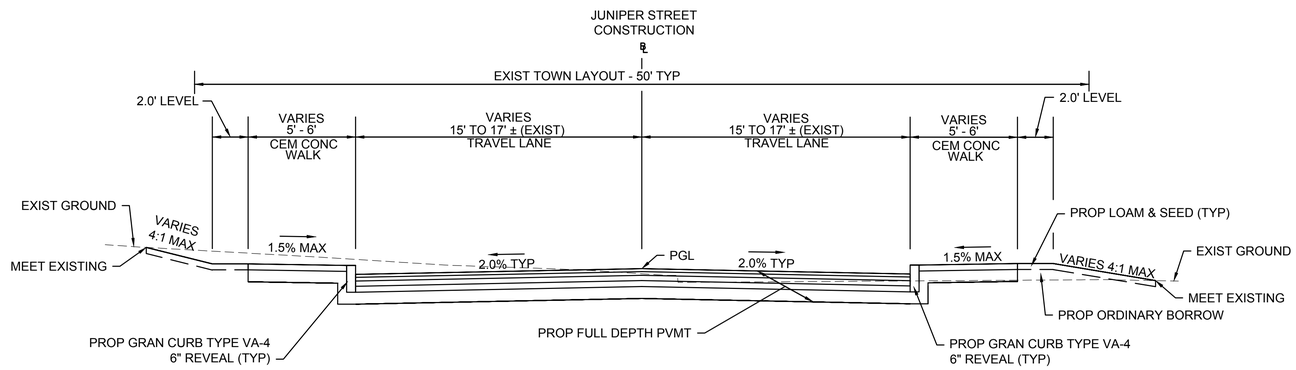
BROOKLINE
WASHINGTON ST. (ROUTE 9) & WALNUT ST.

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	XXXX	8	39
PROJECT FILE NO.	605110		

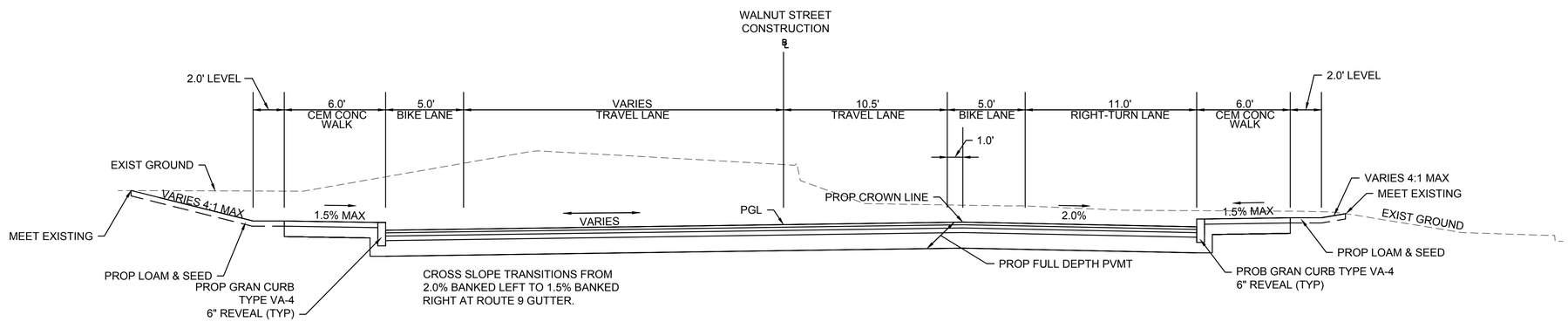
TYPICAL SECTIONS
& PAVEMENT NOTES

*SEE SHEET 7 FOR PAVEMENT NOTES



JUNIPER STREET - STA 301+00 TO 302+50±

NTS



WALNUT STREET - STA 208+90 TO 209+50±

NTS

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BROOKLINE
WASHINGTON ST. (ROUTE 9) & WALNUT ST.

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	XXXX	9	39
PROJECT FILE NO.	605110		

GENERAL PLANS

HIGHWAY GUARD DETAILS

NONE

TRAFFIC SIGNAL CONDUIT

SEE SHEET 20

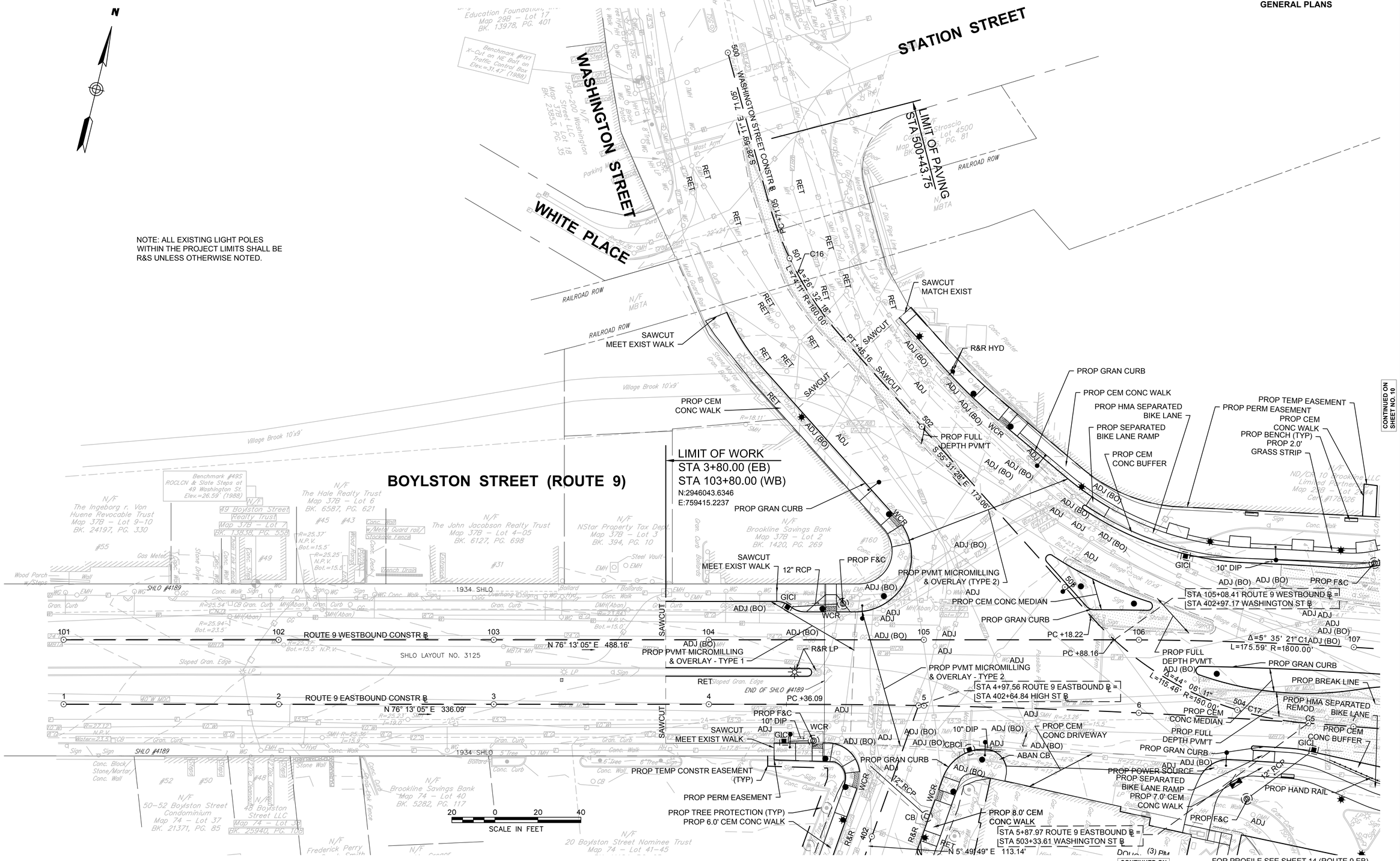
WATER SUPPLY ALTERATIONS

SEE BELOW

DRAINAGE DETAILS

SEE BELOW

NOTE: ALL EXISTING LIGHT POLES WITHIN THE PROJECT LIMITS SHALL BE R&S UNLESS OTHERWISE NOTED.



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BROOKLINE
WASHINGTON ST. (ROUTE 9) & WALNUT ST.

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	XXXX	10	39
PROJECT FILE NO.	605110		

GENERAL PLANS

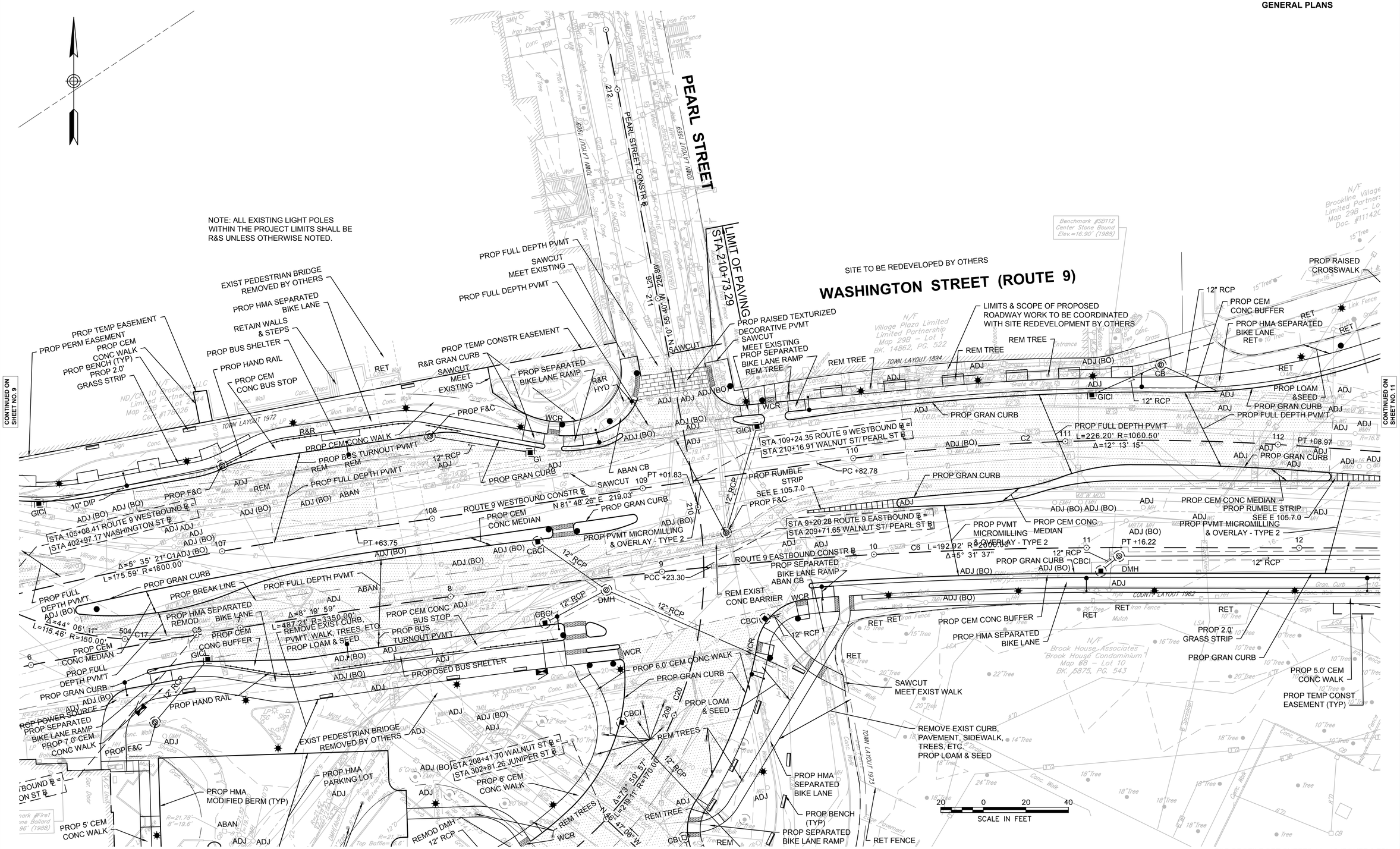
HIGHWAY GUARD DETAILS
NONE

TRAFFIC SIGNAL CONDUIT
SEE SHEET 22

WATER SUPPLY ALTERATIONS
SEE BELOW

DRAINAGE DETAILS
SEE BELOW

NOTE: ALL EXISTING LIGHT POLES WITHIN THE PROJECT LIMITS SHALL BE R&S UNLESS OTHERWISE NOTED.



CONTINUED ON SHEET NO. 9

CONTINUED ON SHEET NO. 11

CONTINUED ON SHEET NO. 12

FOR PROFILE SEE SHEETS 14 - 15 (ROUTE 9 EB)
SHEETS 16 - 17 (ROUTE 9 WB)

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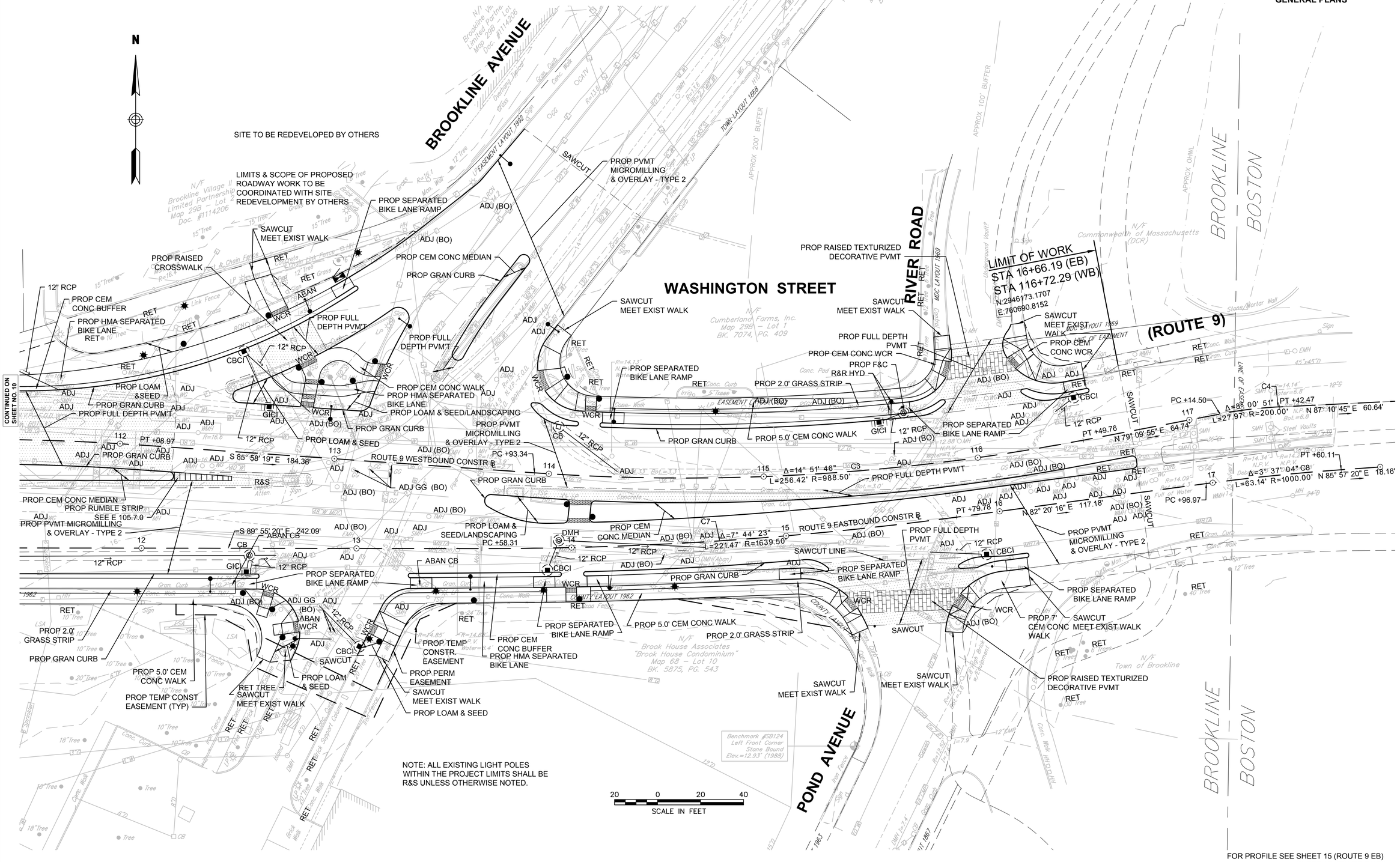
BROOKLINE
WASHINGTON ST. (ROUTE 9) & WALNUT ST.

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	XXXX	11	39
PROJECT FILE NO.	605110		

GENERAL PLANS

HIGHWAY GUARD DETAILS	TRAFFIC SIGNAL CONDUIT	WATER SUPPLY ALTERATIONS	DRAINAGE DETAILS
NONE	SEE SHEET 24	SEE BELOW	SEE BELOW



FOR PROFILE SEE SHEET 15 (ROUTE 9 EB)
SHEET 17 (ROUTE 9 WB)

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BROOKLINE
WASHINGTON ST. (ROUTE 9) & WALNUT ST.

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	XXXX	12	39
PROJECT FILE NO.	605110		

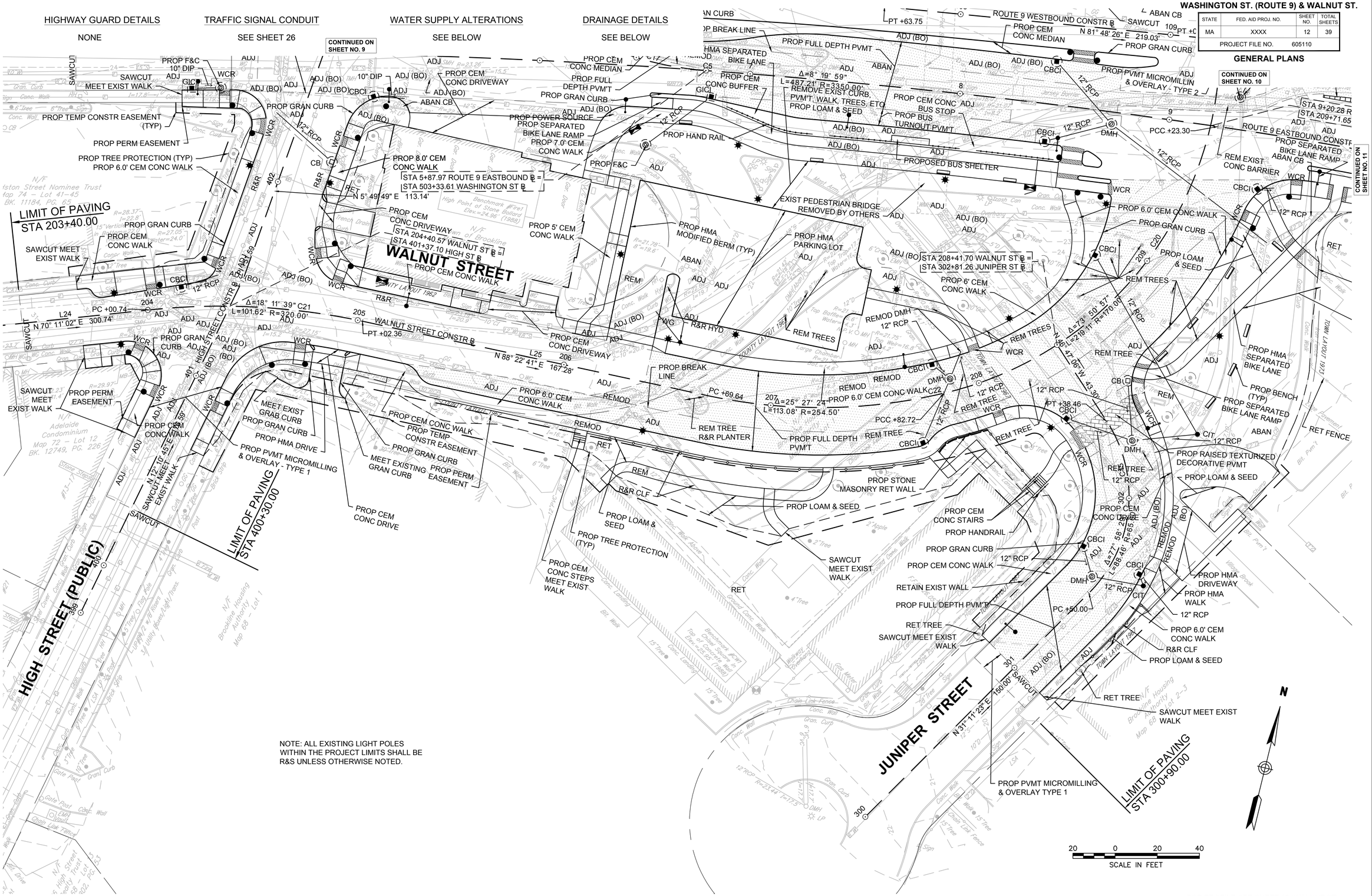
GENERAL PLANS

HIGHWAY GUARD DETAILS
NONE

TRAFFIC SIGNAL CONDUIT
SEE SHEET 26

WATER SUPPLY ALTERATIONS
SEE BELOW

DRAINAGE DETAILS
SEE BELOW



NOTE: ALL EXISTING LIGHT POLES WITHIN THE PROJECT LIMITS SHALL BE R&S UNLESS OTHERWISE NOTED.

FOR PROFILE SEE SHEET 18 (WALNUT ST)
SHEET 19 (JUNIPER ST)

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ROUTE 9 WB CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L1	101+00.00	2946006.0670	759136.1383		N76°13'05"E 488.16'	105+88.16	2946122.3599	759610.2412
C1	105+88.16	2946122.3599	759610.2412	R=1800.00' Δ=5°35'21" L=175.59' T=87.87'		107+63.75	2946155.8131	759782.5455
L2	107+63.75	2946155.8131	759782.5455		N81°48'26"E 219.03'	109+82.78	2946187.0253	759999.3375
C2	109+82.78	2946187.0253	759999.3375	R=1060.50' Δ=12°13'15" L=226.20' T=113.53'		112+08.97	2946195.2289	760224.9556
L3	112+08.97	2946195.2289	760224.9556		S85°58'19"E 184.36'	113+93.34	2946182.2785	760408.8649
C3	113+93.34	2946182.2785	760408.8649	R=988.50' Δ=14°51'46" L=256.42' T=128.93'		116+49.76	2946197.4586	760664.1169
L4	116+49.76	2946197.4586	760664.1169		N79°09'55"E 64.74'	117+14.50	2946209.6284	760727.7028
C4	117+14.50	2946209.6284	760727.7028	R=200.00' Δ=8°00'51" L=27.97' T=14.01'		117+42.47	2946212.9514	760755.4561
L5	117+42.47	2946212.9514	760755.4561		N87°10'45"E 60.64'	118+03.11	2946215.9354	760816.0187

HIGH STREET CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L16	399+75.00	2945785.9185	759480.7465		N12°10'45"E 176.59'	401+51.59	2945958.5339	759518.0016
L17	401+51.59	2945958.5339	759518.0016		N5°49'49"E 113.14'	402+64.73	2946071.0839	759529.4939

JUNIPER STREET CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L18	300+00.00	2945780.5597	759865.2128		N31°11'23"E 150.00'	301+50.00	2945908.8783	759942.8937
C15	301+50.00	2945908.8783	759942.8937	R=65.00' Δ=77°58'29" L=88.46' T=52.61'		302+38.46	2945989.9114	759931.7969
L19	302+38.46	2945989.9114	759931.7969		N46°47'06"W 43.30'	302+81.76	2946019.5615	759900.2393

WASHINGTON ST SB ALIGNMENT CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L20	500+00.00	2946344.9699	759371.0141		S28°59'11"E 71.05'	500+71.05	2946282.8203	759405.4448
C16	500+71.05	2946282.8203	759405.4448	R=160.00' Δ=26°32'18" L=74.11' T=37.73'		501+45.16	2946228.4575	759454.8339
L21	501+45.16	2946228.4575	759454.8339		S55°31'28"E 173.06'	503+18.22	2946130.4948	759597.5014
C17	503+18.22	2946130.4948	759597.5014	R=150.00' Δ=44°06'11" L=115.46' T=60.76'		504+33.68	2946106.2628	759707.4959

ROUTE 9 EB CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L6	1+00.00	2945976.9306	759143.2852		N76°13'05"E 336.09'	4+36.09	2946056.9960	759469.6954
C5	4+36.09	2946056.9960	759469.6954	R=3350.00' Δ=8°19'59" L=487.21' T=244.04'		9+23.30	2946138.3067	759949.6420
C6	9+23.30	2946138.3067	759949.6420	R=2000.00' Δ=5°31'37" L=192.92' T=96.54'		11+16.22	2946147.3428	760142.2780
L7	11+16.22	2946147.3428	760142.2780		S89°55'20"E 242.09'	13+58.31	2946147.0142	760384.3648
C7	13+58.31	2946147.0142	760384.3648	R=1639.50' Δ=7°44'23" L=221.47' T=110.91'		15+79.78	2946161.6508	760605.1853
L8	15+79.78	2946161.6508	760605.1853		N82°20'16"E 117.18'	16+96.97	2946177.2748	760721.3220
C8	16+96.97	2946177.2748	760721.3220	R=1000.00' Δ=3°37'04" L=63.14' T=31.58'		17+60.11	2946183.7129	760784.1229
L9	17+60.11	2946183.7129	760784.1229		N85°57'20"E 18.16'	17+78.27	2946184.9939	760802.2404

WALNUT STREET CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L24	201+00.00	2945831.2295	759195.3118		N70°11'02"E 300.74'	204+00.74	2945933.1822	759478.2473
C21	204+00.74	2945933.1822	759478.2473	R=320.00' Δ=18°11'39" L=101.62' T=51.24'		205+02.36	2945952.0025	759577.6709
L25	205+02.36	2945952.0025	759577.6709		N88°22'41"E 167.28'	206+69.64	2945956.7371	759744.8851
C22	206+69.64	2945956.7371	759744.8851	R=254.50' Δ=25°27'24" L=113.08' T=57.49'		207+82.72	2945984.5327	759853.5336
C20	207+82.72	2945984.5327	759853.5336	R=170.00' Δ=73°50'57" L=219.11' T=127.75'		210+01.83	2946168.1249	759943.0648
L26	210+01.83	2946168.1249	759943.0648		N10°55'40"W 226.89'	212+28.73	2946390.9052	759900.0521

BROOKLINE
WASHINGTON ST. (ROUTE 9) & WALNUT ST.

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	XXXX	14	39
PROJECT FILE NO.	605110		

PROFILES

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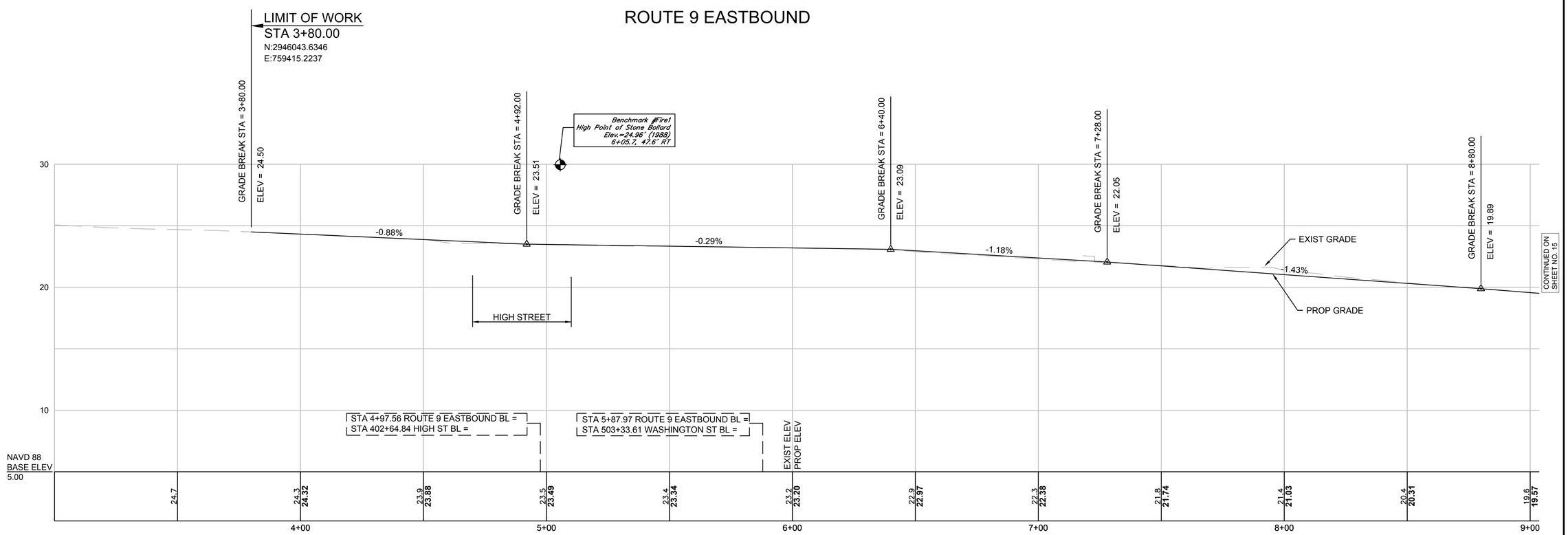

HOR. SCALE IN FEET
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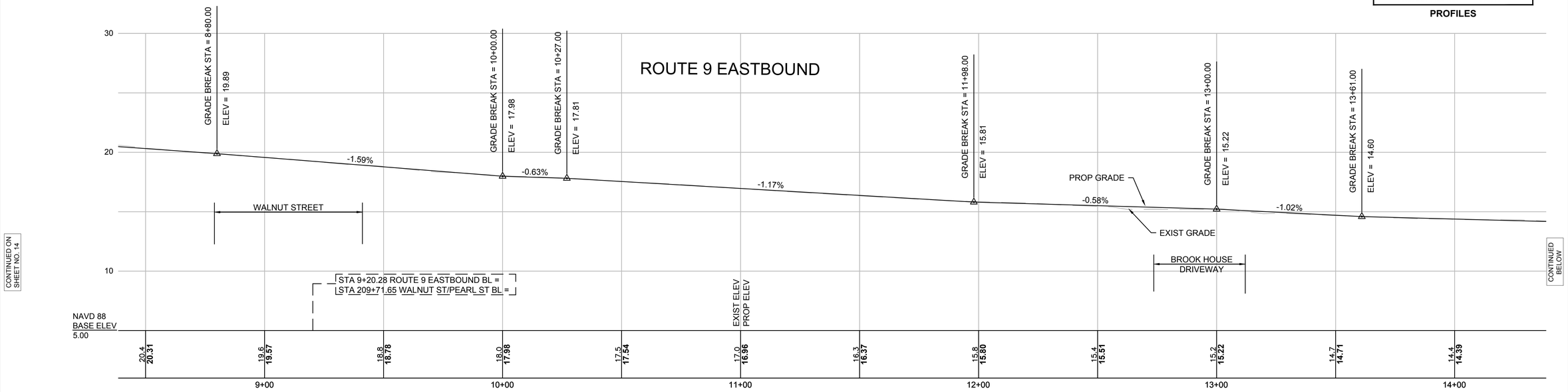
4 0 4 8
VER. SCALE IN FEET

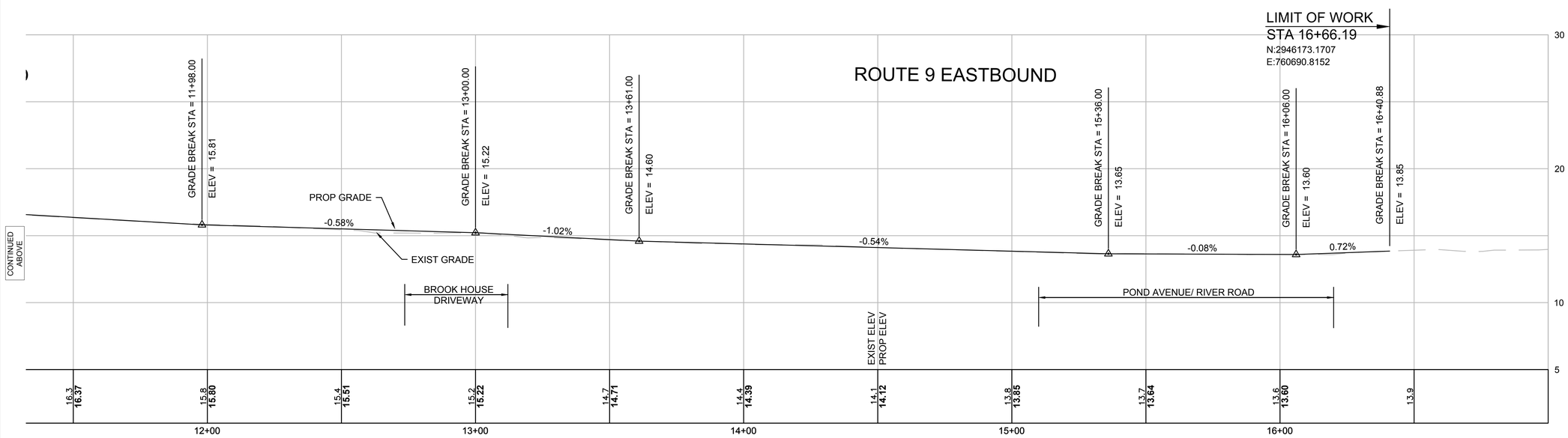
FOR CONSTRUCTION PLANS:
SEE SHEET NOS. 9-10

BROOKLINE
WASHINGTON ST. (ROUTE 9) & WALNUT ST.

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	XXXX	15	39
PROJECT FILE NO.	605110		

PROFILES





FOR CONSTRUCTION PLANS:
SEE SHEET NOS. 9-12

HOR. SCALE IN FEET
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4 0 4 8
VER. SCALE IN FEET

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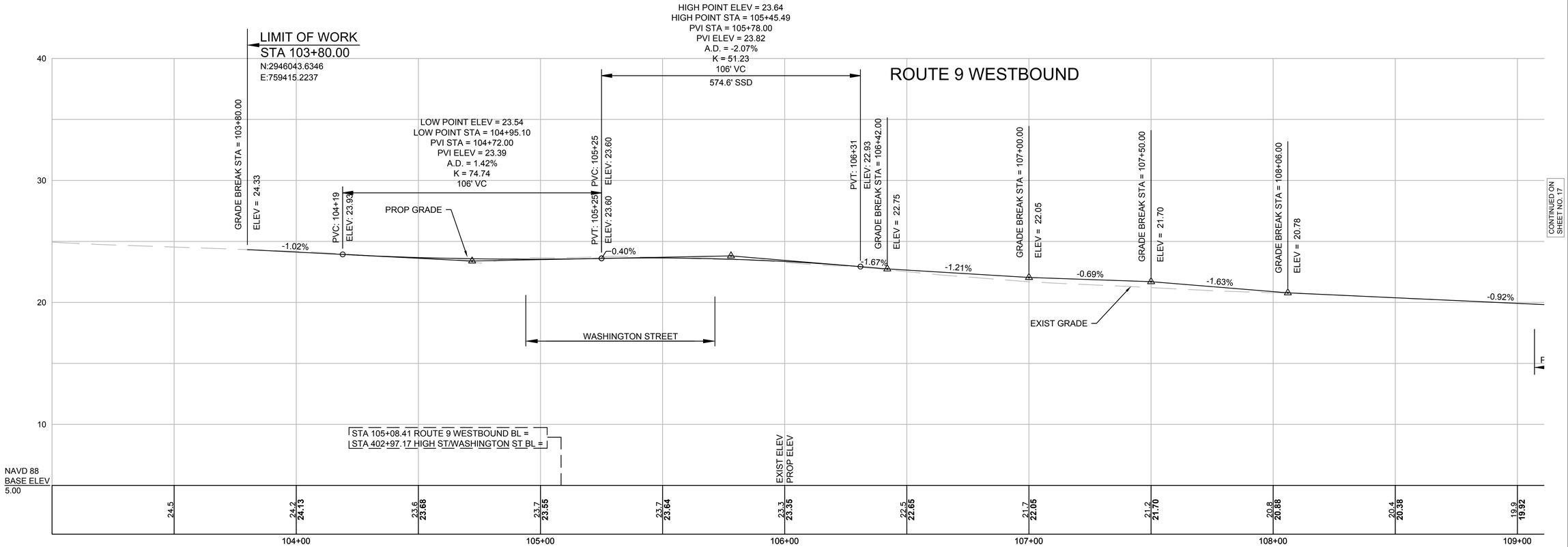
BROOKLINE
WASHINGTON ST. (ROUTE 9) & WALNUT ST.

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	XXXX	16	39
PROJECT FILE NO.	605110		

PROFILES



HOR. SCALE IN FEET
20 0 20 40
4 0 4 8
VER. SCALE IN FEET

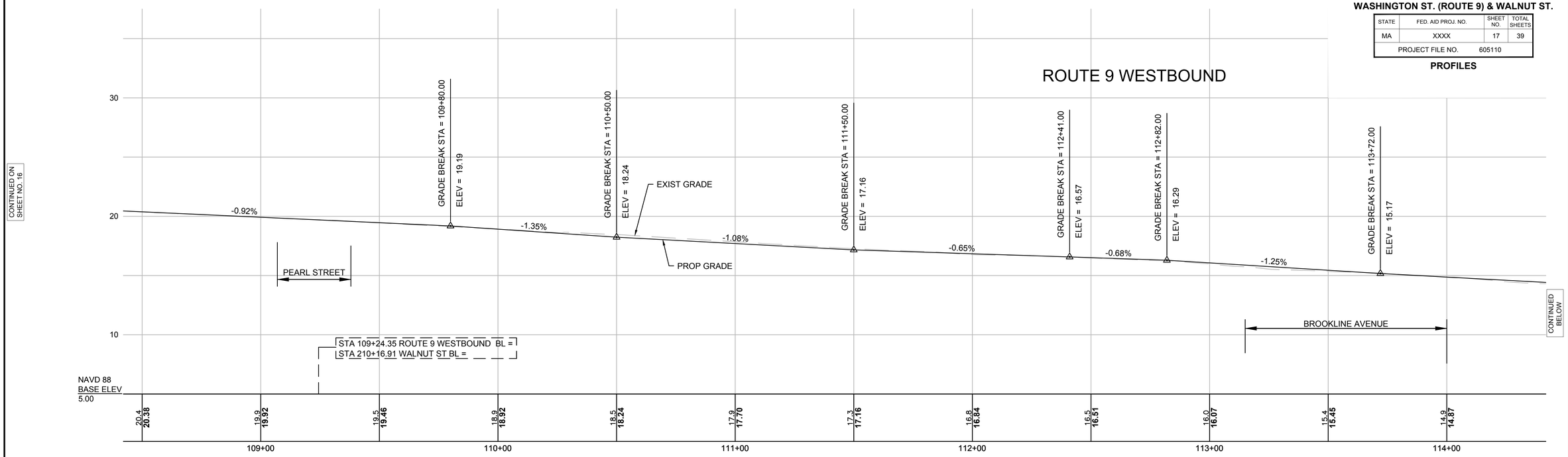
FOR CONSTRUCTION PLANS:
SEE SHEET NOS. 9-10

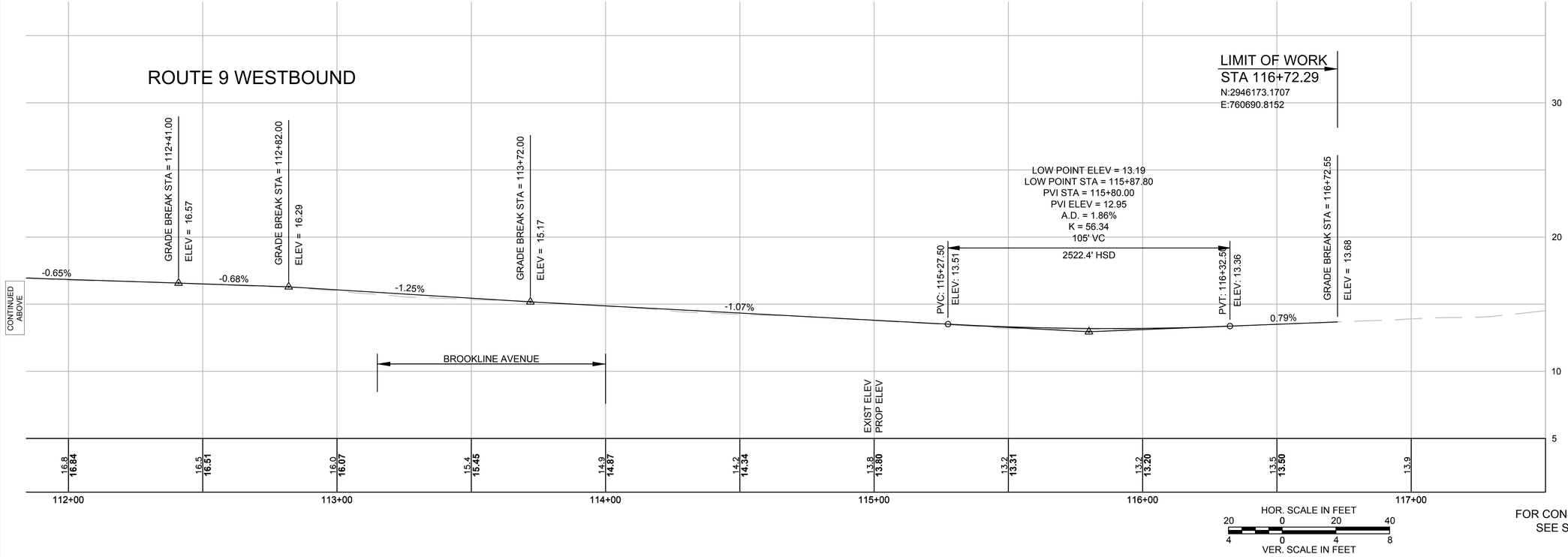
11052_PROF.DWG Plotted on 22-Aug-2016 2:54 PM

BROOKLINE
WASHINGTON ST. (ROUTE 9) & WALNUT ST.

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	XXXX	17	39
PROJECT FILE NO.	605110		

PROFILES





FOR CONSTRUCTION PLANS:
SEE SHEET NOS. 9-12

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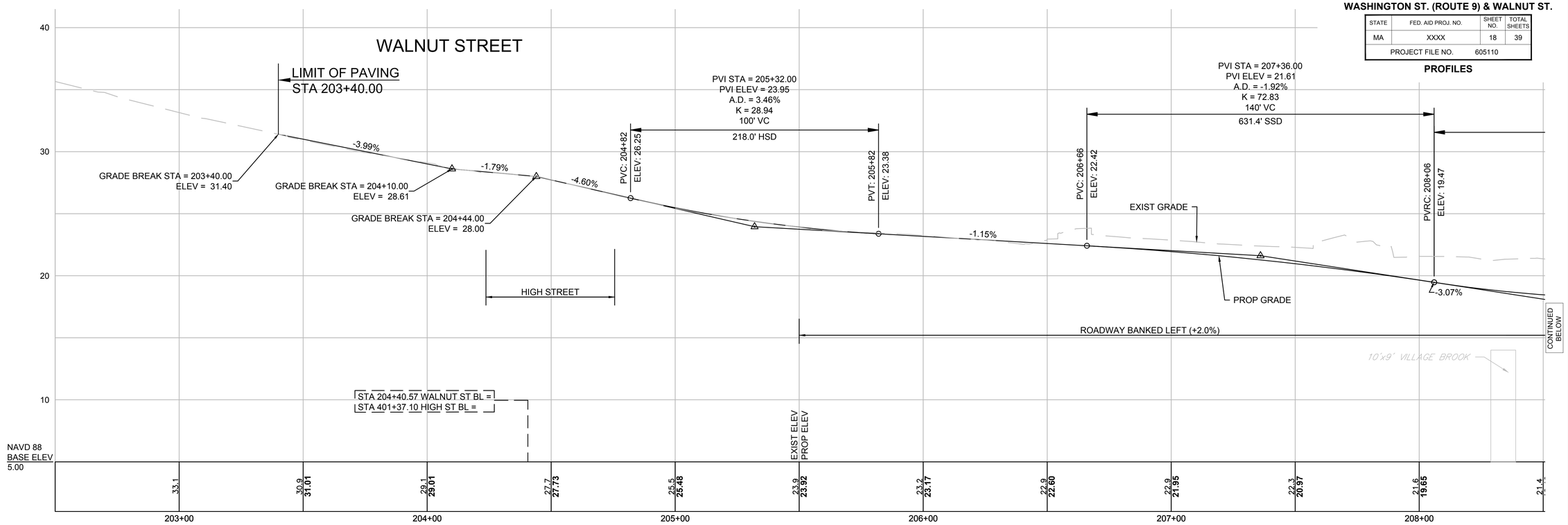
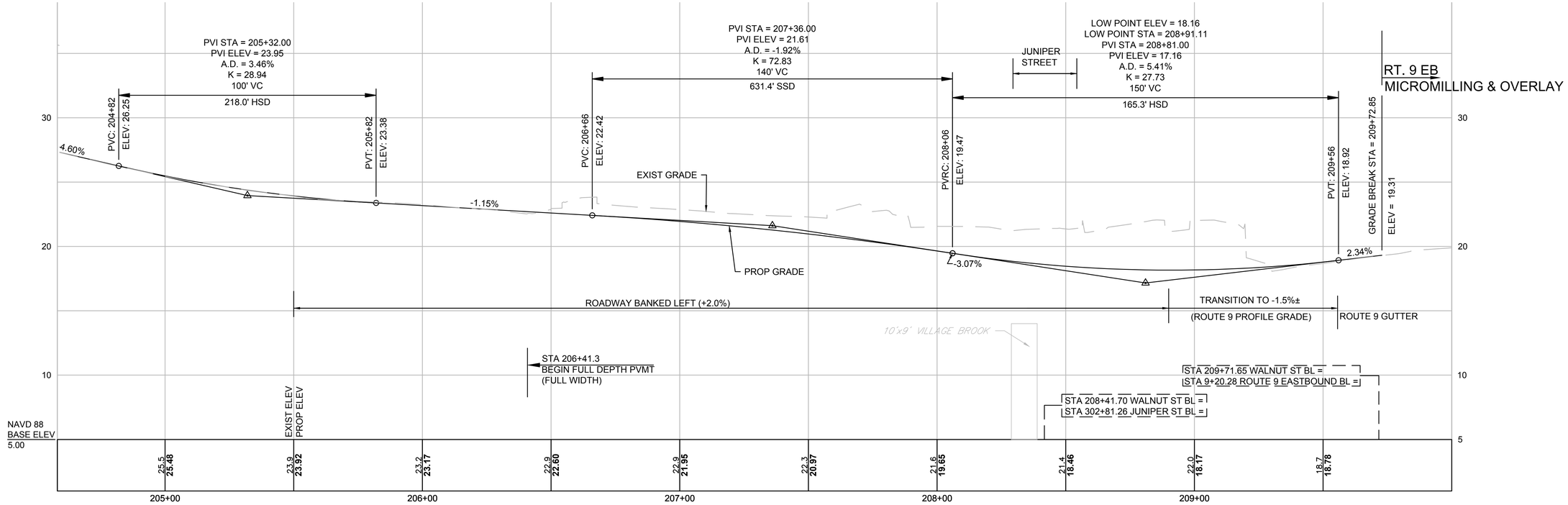
BROOKLINE
WASHINGTON ST. (ROUTE 9) & WALNUT ST.

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	XXXX	18	39
PROJECT FILE NO.	605110		

PROFILES





HOR. SCALE IN FEET
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4 0 4 8
VER. SCALE IN FEET

FOR CONSTRUCTION PLANS:
SEE SHEET NOS. 10&12

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BROOKLINE
WASHINGTON ST. (ROUTE 9) & WALNUT ST.

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	XXXX	19	39
PROJECT FILE NO.	605110		

PROFILES

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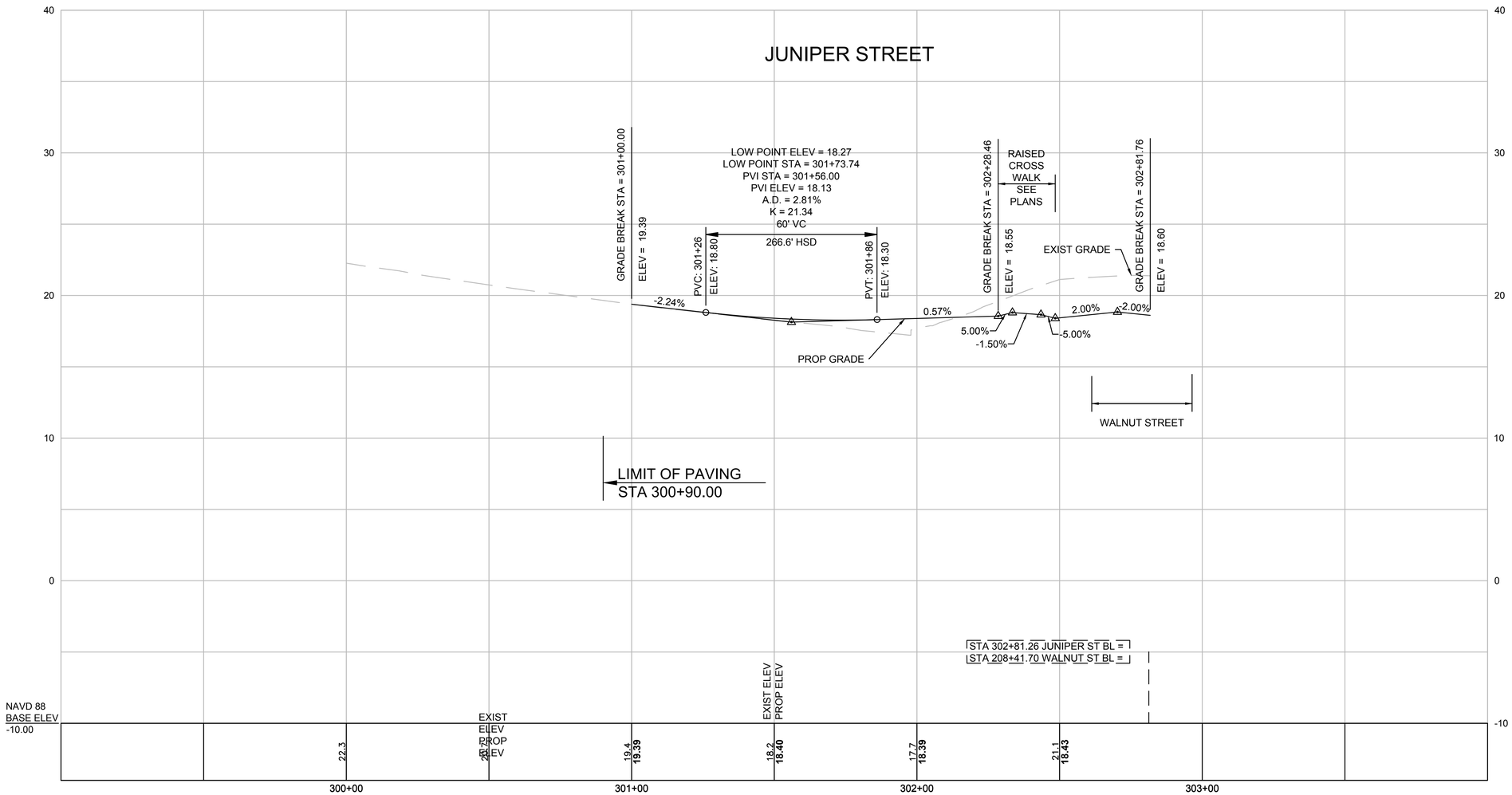

HOR. SCALE IN FEET
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4 0 4 8
VER. SCALE IN FEET

FOR CONSTRUCTION PLANS:
SEE SHEET NO.12

BROOKLINE
WASHINGTON ST. (ROUTE 9) & WALNUT ST.

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	XXXX	20	39
PROJECT FILE NO.	605110		

TRAFFIC SIGNAL PLANS

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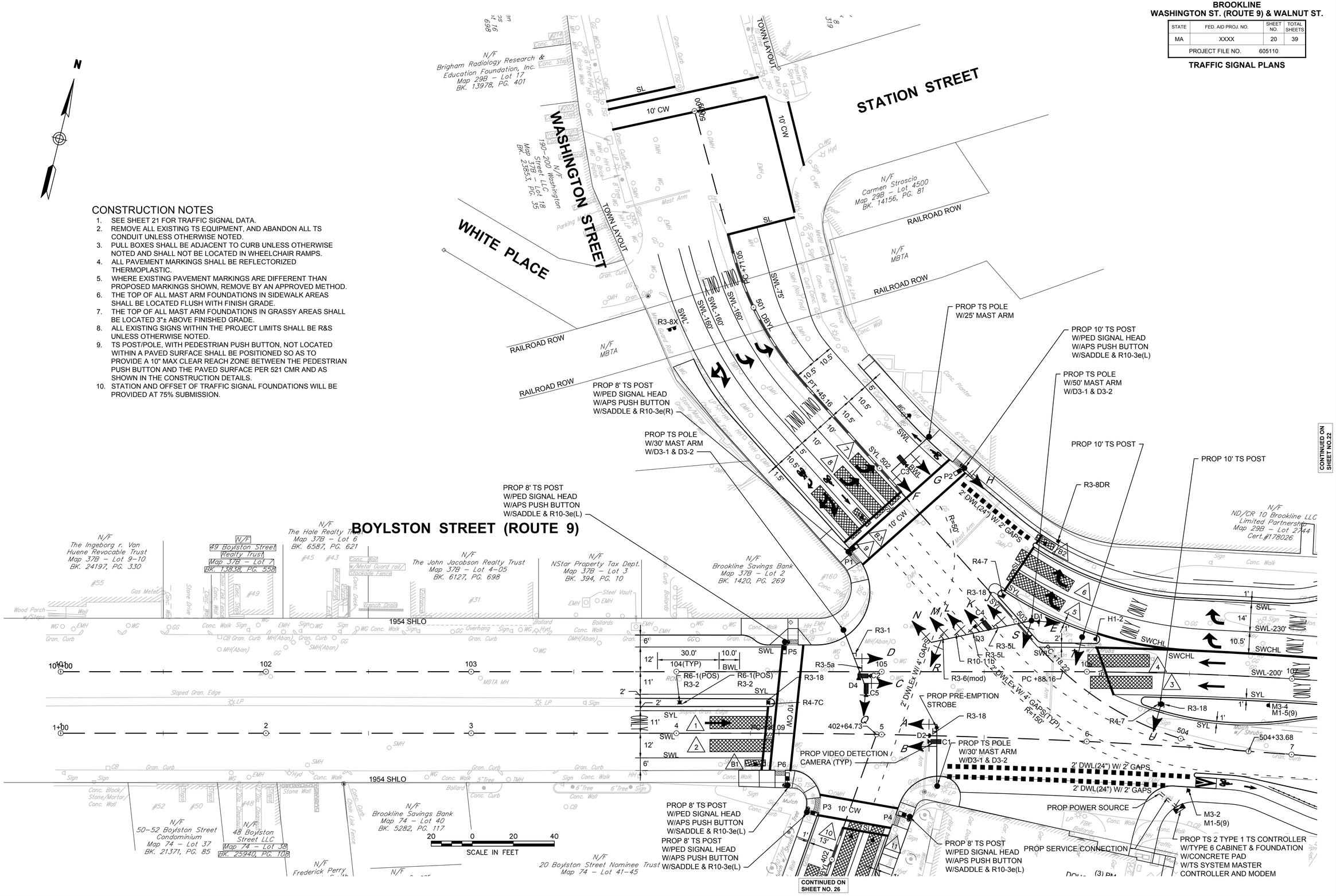
CONSTRUCTION NOTES

1. SEE SHEET 21 FOR TRAFFIC SIGNAL DATA.
2. REMOVE ALL EXISTING TS EQUIPMENT, AND ABANDON ALL TS CONDUIT UNLESS OTHERWISE NOTED.
3. PULL BOXES SHALL BE ADJACENT TO CURB UNLESS OTHERWISE NOTED AND SHALL NOT BE LOCATED IN WHEELCHAIR RAMPS.
4. ALL PAVEMENT MARKINGS SHALL BE REFLECTORIZED THERMOPLASTIC.
5. WHERE EXISTING PAVEMENT MARKINGS ARE DIFFERENT THAN PROPOSED MARKINGS SHOWN, REMOVE BY AN APPROVED METHOD.
6. THE TOP OF ALL MAST ARM FOUNDATIONS IN SIDEWALK AREAS SHALL BE LOCATED FLUSH WITH FINISH GRADE.
7. THE TOP OF ALL MAST ARM FOUNDATIONS IN GRASSY AREAS SHALL BE LOCATED 3"± ABOVE FINISHED GRADE.
8. ALL EXISTING SIGNS WITHIN THE PROJECT LIMITS SHALL BE R&S UNLESS OTHERWISE NOTED.
9. TS POST/POLE, WITH PEDESTRIAN PUSH BUTTON, NOT LOCATED WITHIN A PAVED SURFACE SHALL BE POSITIONED SO AS TO PROVIDE A 10" MAX CLEAR REACH ZONE BETWEEN THE PEDESTRIAN PUSH BUTTON AND THE PAVED SURFACE PER 521 CMR AND AS SHOWN IN THE CONSTRUCTION DETAILS.
10. STATION AND OFFSET OF TRAFFIC SIGNAL FOUNDATIONS WILL BE PROVIDED AT 75% SUBMISSION.



ø1	ø2	ø3	ø4	ø5	ø6	ø7	ø8	ø10		HARDWIRE PRE–EMPTION ø
NOT USED	B FS	B FS	B FS	NOT USED	B FS	NOT USED	NOT USED	B FS		FS

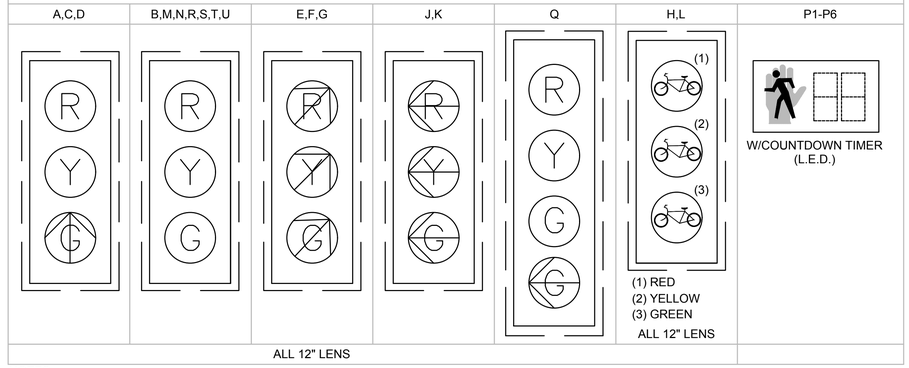
SEQUENCE AND TIMING FOR FULLY ACTUATED CONTROL (COORDINATED)

APPROACH	DIRECTION	HOUSING	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	FIRE PRE–EMPTION		
BOYLSTON STREET	EB	A			R	R	R	R	R	R	R	R	R	R	R			G	Y	R							R	R	R	FY	R	R	R
BOYLSTON STREET	EB	B			R	R	R	R	R	R	R	R	R	R	R			G	Y	R							R	R	R	FY	R	R	R
WASHINGTON STREET	WB	C,D			R	G	Y	R	R	R	R	R	R	R	R			R	R	R							G	Y	R	FY	R	R	R
WASHINGTON STREET	WB	E,F,G			R	R	R	R	R	R	R	R	Y	Y	R			R	R	R							Y	Y	R	FR	R	R	R
WASHINGTON STREET	WB	H			R*	R*	R*	R*	R*	R*	R*	G*	G*	Y*	R*			R*	R*	R*							R*	R*	R*	OUT	R*	R*	R*
WASHINGTON STREET	SB	J,K			R–	R–	R–	R–	R–	R–	R–	R–	G–	Y–	R–			R–	R–	R–							R–	R–	R–	FR–	R–	R–	R–
WASHINGTON STREET	SB	L			R*	R*	R*	R*	R*	R*	R*	G*	G*	Y*	R*			R*	R*	R*							R*	R*	R*	OUT	R*	R*	R*
WASHINGTON STREET	SB	M,N			R	R	R	R	R	R	R	R	G	Y	R			R	R	R							R	R	R	FR	R	R	R
HIGH STREET	NB	Q			R	R	R	R	G–	G Y–	Y R	R	R	R	R			R	R	R							R	R	R	FR	R	R	R
HIGH STREET	NB	R			R	R	R	R	G	Y	R	R	R	R	R			R	R	R							R	R	R	FR	R	R	R
FIRE STATION	NB	S,T,U			R	R	R	R	R	R	R	R	R	R	R			R	R	R							R	R	R	FR	G	Y	R
PEDESTRIAN X–ING	EB–WB	P1–P2			W	W/FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW			DW	DW	DW							DW	DW	DW	OUT	DW	DW	DW
PEDESTRIAN X–ING	EB–WB	P3–P4			DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW			W/FDW	DW	DW							DW	DW	DW	OUT	DW	DW	DW
PEDESTRIAN X–ING	NB–SB	P5–P6			DW	DW	DW	DW	DW	DW	DW	W	W/FDW	DW	DW			DW	DW	DW							DW	DW	DW	OUT	DW	DW	DW
TIMING IN SECONDS																																	
MINIMUM GREEN (INITIAL)						10			8			4	8					10												CONFLICT FLASH OPERATION ONLY	HOLD	CLEAR	ALL RED
PASSAGE TIME (VEHICLE)						2			2				2					2															
MAXIMUM 1						47			24				23					47															
MAXIMUM 2						32			16				30					32															
YELLOW CLEARANCE							4			4				4.5					4									4					
RED CLEARANCE								2.5			3				10					2.5									1				
PEDESTRIAN WALK					4	3						4	3					7															
PEDESTRIAN CLEARANCE						19							16					19															
																															●	4	1
DETECTOR MEMORY						NON–LOCK			NON–LOCK				NON–LOCK					NON–LOCK															
RECALL						MIN			OFF				OFF					MIN															

COORDINATION DATA			COORDINATION PHASE SPLIT TIMES									
TIMING PLAN	CYCLE	OFFSET	ø1	ø2	ø3	ø4	ø5	ø6	ø7	ø8	ø10	
1/1/1 M–F 7AM–9AM	X	X	X									
MODE				COORD ø				COORD ø				

NOTES:
1. AUTOMATIC FLASHING OPERATION PER 2009 M.U.T.C.D., AS AMENDED.
2. B = BICYCLE
3. FS = FIRE STATION
4. *UPON PEDESTRIAN PUSH BUTTON ACTUATION
5. MAXIMUM 1 = 6:00AM TO 10:00AM, MON–FRI
6. MAXIMUM 2 = NORMAL OPERATION
7. STOP AND GO OPERATION FOR 24 HOURS PER DAY. FLASHING OPERATION FOR EMERGENCY ONLY.
8. DURING PEDESTRIAN INTERVAL, FDW THROUGH YELLOW OPERATION SHALL NOT BE IN EFFECT.
9. ● = HOLD PERIOD TO BE DETERMINED BY FIRE CHIEF.
10. INHIBIT MAX TERMINATION SHALL BE IN EFFECT DURING COORDINATION.

SIGNAL HEAD DATA



NOTES:
1. ALL SIGNAL HEADS SHALL BE RIGID MOUNTED.
2. ALL SIGNAL HEADS SHALL BE EQUIPPED WITH 5"± LOUVERED BACKPLATES. ALL BACKPLATES SHALL CONTAIN A 2" WIDE YELLOW REFLECTIVE BORDER.
3. ALL SIGNAL HEADS SHALL BE EQUIPPED WITH TUNNEL VISORS.
4. ALL SIGNAL DISPLAYS SHALL BE EQUIPPED WITH L.E.D. MODULES.

VIDEO DETECTION DATA

DETECTION ZONE	APPROACH/LANE	CAMERA	DELAY /EXT	CALL PHASE
1	ROUTE 9 EB THRU LANE(LT)	C1	0	Ø6
2	ROUTE 9 EB THRU-RIGHT LANE	C1	0	Ø6
3	ROUTE 9 WB THRU LANE(LT)	C2	0	Ø2
4	ROUTE 9 WB THRU LANE(RT)	C2	0	Ø2
5	ROUTE 9 WB RIGHT LANE(LT)	C3	0	Ø4
6	ROUTE 9 WB RIGHT LANE(RT)	C3	0	Ø4
7	WASHINGTON SB LEFT LANE	C4	0	Ø4
8	WASHINGTON SB CENTER LANE	C4	0	Ø4
9	WASHINGTON SB RIGHT LANE	C4	0	Ø4
10	HIGH NB LEFT LANE	C5	0	Ø3
11	HIGH NB RIGHT LANE	C5	0	Ø3
B1	ROUTE 9 EB BIKE	C1	0	Ø6
B2	ROUTE 9 WB BIKE	C3	0	Ø4
B3	WASHINGTON SB BIKE	C4	0	Ø4

NOTE: DELAY AND EXTENSION TIMINGS SHALL BE PROGRAMMED IN THE CONTROLLER ONLY

SEQUENCE & TIMING NOTES:

1. IF THE ASSIGNED RIGHT OF WAY FOR ANY TRAFFIC MOVEMENT IS TO REMAIN IN EFFECT DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATIONS FOR THAT TRAFFIC MOVEMENT WILL NOT CHANGE DURING THE CLEARANCE INTERVAL.
2. THE RIGHT OF WAY MAY BE ASSIGNED TO ANY PHASE OR ANY COMBINATION OF NON-CONFLICTING PHASES.
3. IF CALLS EXIST ON ALL PHASES, THE ASSIGNMENT OF RIGHT OF WAY SHALL BE IN ACCORDANCE WITH THE PREFERENTIAL PHASE SEQUENCE.
4. IF THE ASSIGNED RIGHT-OF-WAY FOR ANY TRAFFIC MOVEMENT IS TO CHANGE DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATION FOR THAT MOVEMENT WILL DISPLAY THE APPROPRIATE CLEARANCE INTERVALS.

BROOKLINE
WASHINGTON ST. (ROUTE 9) & WALNUT ST.

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	XXXX	21	39
PROJECT FILE NO.	605110		

TRAFFIC SIGNAL PLANS

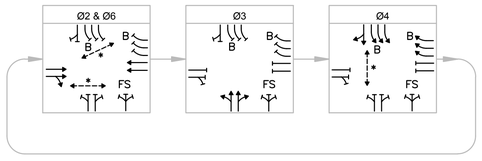
LIST OF MAJOR ITEMS REQUIRED

ROUTE 9 AT WASHINGTON STREET/HIGH STREET

PAY ITEM	QUANTITY	DESCRIPTION
816.01	1	8Ø TS 2 TYPE 1 CONTROLLER IN A TYPE 6 BASE MOUNTED CABINET INCLUDING FOUNDATION AND CONCRETE PAD
	1	TS 25' MAST ARM TYPE 2, STEEL, INCL. FOUNDATION
	2	TS 30' MAST ARM TYPE 2, STEEL, INCL. FOUNDATION
	1	TS 50' MAST ARM TYPE 2, STEEL, INCL. FOUNDATION
	5	TS POST 8' STANDARD INCL. FOUNDATION
	3	TS POST 10' STANDARD INCL. FOUNDATION
	17	SIGNAL HEAD, 3-SECTION, 12" LENSES
	1	SIGNAL HEAD, 4-SECTION, 12" LENSES
	6	PEDESTRIAN SIGNAL HEAD W/COUNTDOWN TIMER
	5	PEDESTRIAN PUSH BUTTON W/R10-3e(L) AND SIGN SADDLE
	1	PEDESTRIAN PUSH BUTTON W/R10-3e(R) AND SIGN SADDLE
	1	VIDEO DETECTION SYSTEM (5 CAMERAS. VDP & CABLES)
	5	EMERGENCY PRE-EMPTION OPTICAL DETECTORS & DETECTOR CABLE
	1	EMERGENCY PRE-EMPTION 2 CHANNEL PHASE SELECTOR
	1	EMERGENCY PRE-EMPTION 4 CHANNEL PHASE SELECTOR
	2	EMERGENCY PRE-EMPTION SYSTEM CHASSIS
	1	EMERGENCY PRE-EMPTION STROBE (WHITE LENS)
	1	SERVICE CONNECTION (UNDERGROUND)
	X	PULL BOX-12"x12"
815.923	1	TS SYSTEM MASTER CONTROLLER AND MODEM

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

PREFERENTIAL PHASE SEQUENCE



* UPON PEDESTRIAN PUSH BUTTON ACTUATION
B=BICYCLE
FS = FIRE STATION

EMERGENCY VEHICLE PRE-EMPTION OPERATION

1. EMERGENCY VEHICLE PRE-EMPTION SIGNALS SHALL BE OPTICALLY TRANSMITTED BY OPTICAL EMITTERS MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT EACH INTERSECTION.
2. PRE-EMPTION SIGNALS SHALL BE SERVICED ON A PRIORITY BASIS WITH DETECTORS D1, D2, D3 OR D4 ASSIGNED DESCENDING PRIORITIES AS FOLLOWS: (D1 HIGHEST AND D4 LOWEST)
3. IN RESPONSE TO A PRE-EMPTION SIGNAL RECEIVED AT AN INTERSECTION BY OPTICAL DETECTOR D1 (OR D2, D3, D4) THE CONTROLLER SHALL HOLD OR ADVANCE TO AND HOLD IN EMERGENCY VEHICLE PRE-EMPTION PHASE #1 (OR #2, #3, #4, #5) GREEN FOR A MINIMUM OF TEN (10) SECONDS OR UNTIL PRE-EMPTION SIGNAL CEASES. THE CONTROLLER SHALL THEN TIME PRE-EMPTION PHASE CLEARANCES FOR THE ASSOCIATED PHASE(S) AS SHOWN IN THE SEQUENCE AND TIMING CHART AND SERVICE SUBSEQUENT EMERGENCY VEHICLE PRE-EMPTION PHASES AS NECESSARY.
4. MINIMUM GREEN AND NORMAL VEHICLE/PEDESTRAIN CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PRE-EMPTION DEMAND.
5. PRE-EMPTION STROBE SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PRE-EMPTION GREEN IS ON.
6. EMERGENCY VEHICLE PRE-EMPTION SHALL OVERRIDE COORDINATION.
7. HARDWIRE EMERGENCY VEHICLE PRE-EMPTION SHALL OVERRIDE OPTICAL BASED PRE-EMPTION AND COORDINATION.
8. THE "CANCEL" FUNCTION SHALL ONLY OVERRIDE/CANCEL AN ACTIVE HARDWIRE FIRE PRE-EMPTION OPERATION. THE CANCEL FUNCTION SHALL NOT OVERRIDE AN ACTIVE OPTICAL BASE PRE-EMPTION OPERATION.

PRE-EMPTION PHASING & PRIORITY

DETECTOR & PRIORITY	PRE-EMPT PHASE ASSIGNMENT	MOVEMENT	VEHICLE PHASE ASSIGNMENT
HARDWIRE	1	FIRE	ØPRE-EMPTION
D1	2		Ø10
D2	3		Ø6
D3	4	B	Ø4
D4	5		Ø3

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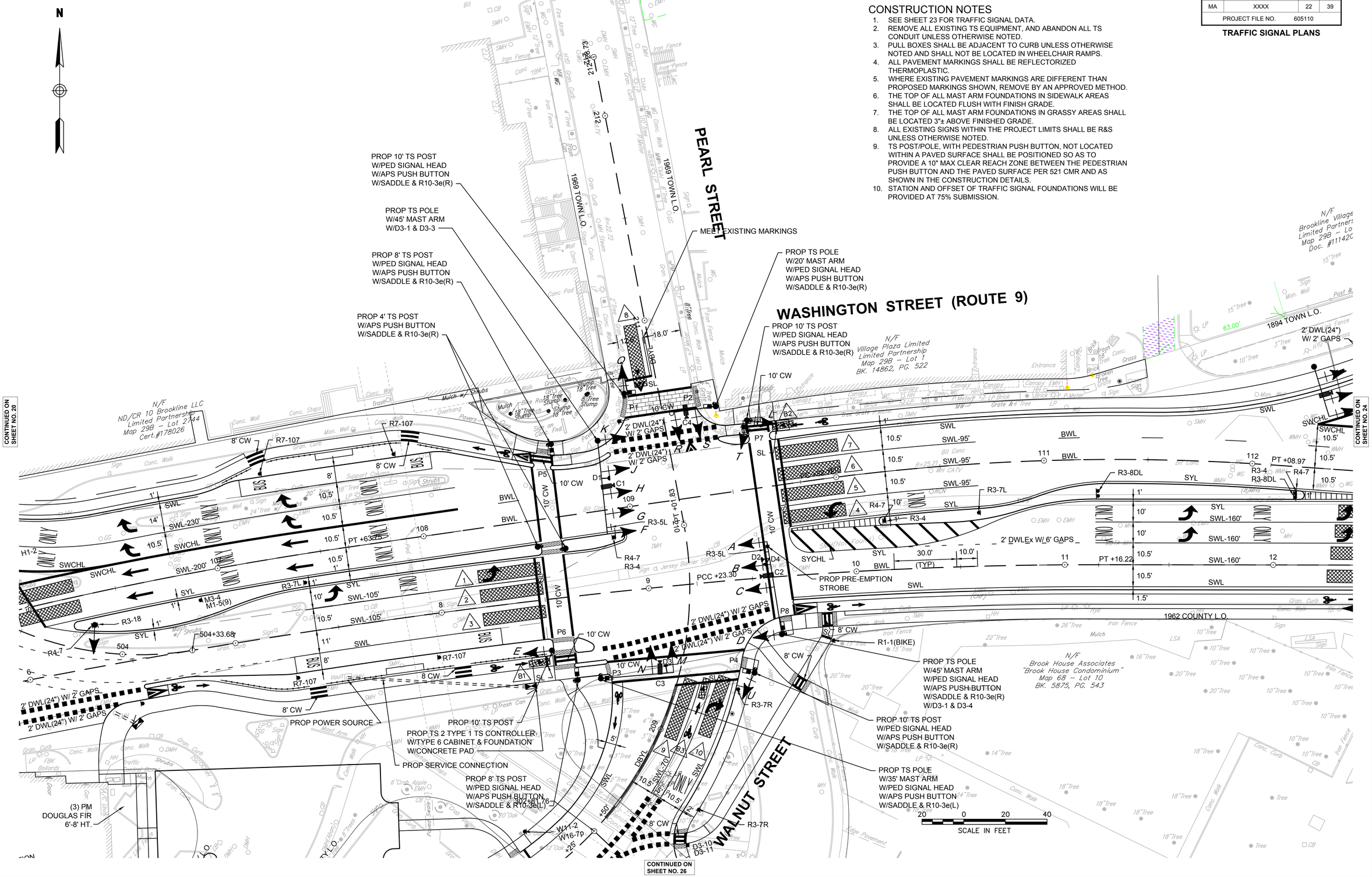
BROOKLINE
WASHINGTON ST. (ROUTE 9) & WALNUT ST.

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	XXXX	22	39
PROJECT FILE NO.	605110		

TRAFFIC SIGNAL PLANS

CONSTRUCTION NOTES

1. SEE SHEET 23 FOR TRAFFIC SIGNAL DATA.
2. REMOVE ALL EXISTING TS EQUIPMENT, AND ABANDON ALL TS CONDUIT UNLESS OTHERWISE NOTED.
3. PULL BOXES SHALL BE ADJACENT TO CURB UNLESS OTHERWISE NOTED AND SHALL NOT BE LOCATED IN WHEELCHAIR RAMPS.
4. ALL PAVEMENT MARKINGS SHALL BE REFLECTORIZED THERMOPLASTIC.
5. WHERE EXISTING PAVEMENT MARKINGS ARE DIFFERENT THAN PROPOSED MARKINGS SHOWN, REMOVE BY AN APPROVED METHOD.
6. THE TOP OF ALL MAST ARM FOUNDATIONS IN SIDEWALK AREAS SHALL BE LOCATED FLUSH WITH FINISH GRADE.
7. THE TOP OF ALL MAST ARM FOUNDATIONS IN GRASSY AREAS SHALL BE LOCATED 3"± ABOVE FINISHED GRADE.
8. ALL EXISTING SIGNS WITHIN THE PROJECT LIMITS SHALL BE R&S UNLESS OTHERWISE NOTED.
9. TS POST/POLE, WITH PEDESTRIAN PUSH BUTTON, NOT LOCATED WITHIN A PAVED SURFACE SHALL BE POSITIONED SO AS TO PROVIDE A 10" MAX CLEAR REACH ZONE BETWEEN THE PEDESTRIAN PUSH BUTTON AND THE PAVED SURFACE PER 521 CMR AND AS SHOWN IN THE CONSTRUCTION DETAILS.
10. STATION AND OFFSET OF TRAFFIC SIGNAL FOUNDATIONS WILL BE PROVIDED AT 75% SUBMISSION.



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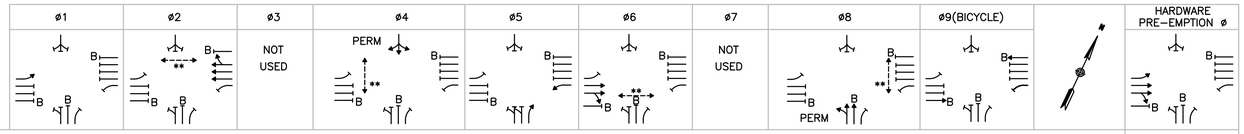
BROOKLINE
WASHINGTON ST. (ROUTE 9) & WALNUT ST.

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	XXXX	23	39
PROJECT FILE NO.	605110		

TRAFFIC SIGNAL PLANS



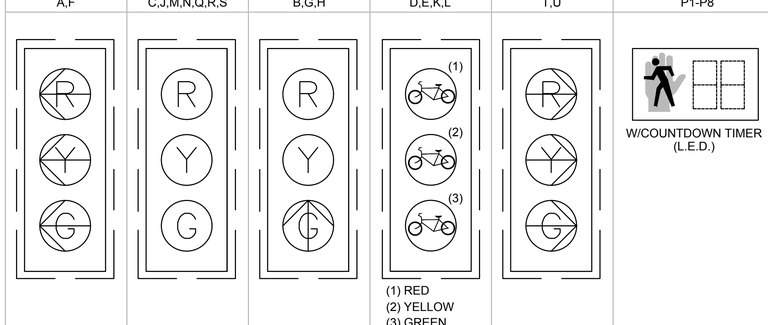
SEQUENCE AND TIMING FOR FULLY ACTUATED CONTROL (COORDINATED)

APPROACH	DIRECTION	HOUSING	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	FIRE PRE–EMPTION		
WASHINGTON STREET	EB	A	G	Y	R	R	R	R			R	R	R	R	R	R	R	R	R	R			R	R	R	R	R	R	R	FR	G	Y	R
WASHINGTON STREET	EB	B	R	R	R	R	R	R			R	R	R	R	R	R	R	G	Y	R			R	R	R	R	R	R	R	FY	G	Y	R
WASHINGTON STREET	EB	C	R	R	R	R	R	R			R	R	R	R	R	R	R	G	Y	R			R	R	R	R	R	R	R	FY	G	Y	R
WASHINGTON STREET	EB	D,E	R	R	R	R	R	R			R	R	R	R	R	R	R	R	R	R			R	R	R	R	G	Y	R	OUT	R	R	R
WASHINGTON STREET	WB	F	R	R	R	R	R	R			R	R	R	R	G	Y	R	R	R	R			R	R	R	R	R	R	R	FR	R	R	R
WASHINGTON STREET	WB	G,H	R	R	R	G	Y	R			R	R	R	R	R	R	R	R	R	R			R	R	R	R	R	R	R	FY	R	R	R
WASHINGTON STREET	WB	J	R	R	R	G	Y	R			R	R	R	R	R	R	R	R	R	R			R	R	R	R	R	R	R	FY	R	R	R
WASHINGTON STREET	WB	K,L	R	R	R	R	R	R			R	R	R	R	R	R	R	R	R	R			R	R	R	R	G	Y	R	OUT	R	R	R
PEARL STREET	SB	M,N,Q	R	R	R	R	R	R			R	G	Y	R	R	R	R	R	R	R			R	R	R	R	R	R	R	FR	R	R	R
WALNUT STREET	NB	R,S	R	R	R	R	R	R			R	R	R	R	G	Y	R	R	R	R			R	G	Y	R	R	R	R	FR	R	R	R
WALNUT STREET	NB	T,U	R	R	R	R	R	R			R	R	R	R	G	Y	R	R	R	R			R	R	R	R	R	R	R	FR	R	R	R
PEDESTRIAN X–ING	EB–WB	P1–P2	DW	DW	DW	W/FDW	DW	DW			DW	DW	DW	DW	DW	DW	DW	DW	DW	DW			DW	DW	DW	DW	DW	DW	DW	OUT	DW	DW	DW
PEDESTRIAN X–ING	EB–WB	P3–P4	DW	DW	DW	DW	DW	DW			DW	DW	DW	DW	DW	DW	DW	W/FDW	DW	DW			DW	DW	DW	DW	DW	DW	DW	OUT	DW	DW	DW
PEDESTRIAN X–ING	NB–SB	P5–P6	DW	DW	DW	DW	DW	DW			DW	DW	DW	DW	DW	DW	DW	DW	DW	DW			W	W/FDW	DW	DW	DW	DW	DW	OUT	DW	DW	DW
PEDESTRIAN X–ING	NB–SB	P7–P8	DW	DW	DW	DW	DW	DW			W	W/FDW	DW	DW	DW	DW	DW	DW	DW	DW			DW	DW	DW	DW	DW	DW	DW	OUT	DW	DW	DW
TIMING IN SECONDS																																	
MINIMUM GREEN (INITIAL)			6			10						6			6			10						6			2			CONFLICT FLASH OPERATION ONLY	HOLD	CLEAR	ALL RED
PASSAGE TIME (VEHICLE)			2			2						2			2			2						2			2						
MAXIMUM 1			9			47						29			6			50						29			17						
MAXIMUM 2			7			49						29			7			49						29			17						
YELLOW CLEARANCE				3			4						4			3			4						4			4						
RED CLEARANCE					4			1						4			3			1.5						3			3				
PEDESTRIAN WALK						7					4	3						7					4	3									
PEDESTRIAN CLEARANCE						19						16						19						16									
																															●	4	1
DETECTOR MEMORY			NON–LOCK			NON–LOCK						NON–LOCK			NON–LOCK			NON–LOCK						NON–LOCK									
RECALL			OFF			MIN						OFF			OFF			MIN						OFF									

COORDINATION DATA			COORDINATION PHASE SPLIT TIMES										
TIMING PLAN	CYCLE	OFFSET	ø1	ø2	ø3	ø4	ø5	ø6	ø7	ø8	ø9		
1/1/1 M–F 7AM–9AM	X	X	X										
MODE				COORD ø				COORD ø					

NOTES:
1. AUTOMATIC FLASHING OPERATION PER 2009 M.U.T.C.D., AS AMENDED.
2. OL = OVERLAP
3. PERM = PERMISSIVE
4. ** = UPON PEDESTRIAN PUSH BUTTON ACTUATION
5. B = BICYCLE
6. ø4 & ø8 DUAL ENTRY
7. MAXIMUM 1 = 6:00AM TO 10:00AM, MON–FRI
8. MAXIMUM 2 = NORMAL OPERATION
9. STOP AND GO OPERATION FOR 24 HOURS PER DAY. FLASHING OPERATION FOR EMERGENCY ONLY.
10. ● = HOLD PERIOD TO BE DETERMINED BY FIRE CHIEF.
11. DURING PEDESTRIAN INTERVAL, FDW THROUGH YELLOW OPERATION SHALL NOT BE IN EFFECT.
12. INHIBIT MAX TERMINATION SHALL BE IN EFFECT DURING COORDINATION.

SIGNAL HEAD DATA



NOTES:
1. ALL SIGNAL HEADS SHALL BE RIGID MOUNTED.
2. ALL SIGNAL HEADS SHALL BE EQUIPPED WITH 5"± LOUVERED BACKPLATES. ALL BACKPLATES SHALL CONTAIN A 2" WIDE YELLOW REFLECTIVE BORDER.
3. ALL SIGNAL HEADS SHALL BE EQUIPPED WITH TUNNEL VISORS.
4. ALL SIGNAL DISPLAYS SHALL BE EQUIPPED WITH L.E.D. MODULES.

VIDEO DETECTION DATA

DETECTION ZONE	APPROACH/LANE	CAMERA	DELAY /EXT	CALL PHASE
1	ROUTE 9 EB LEFT-TURN LANE	C2	0	ø1
2	ROUTE 9 EB THRU LANE	C2	0	ø6
3	ROUTE 9 EB THRU/RIGHT LANE	C2	0	ø6
4	ROUTE 9 WB LEFT-TURN LANE	C1	0	ø5
5	ROUTE 9 WB THRU LANE	C1	0	ø2
6	ROUTE 9 WB THRU LANE	C1	0	ø2
7	ROUTE 9 WB THRU/RIGHT LANE	C1	0	ø2
8	PEARL STREET SB	C3	0	ø4
9	WALNUT NB LEFT-THRU LANE	C4	0	ø8
10	WALNUT NB RIGHT-TURN LANE	C4	0	ø8
B1	ROUTE 9 EB BIKE	C1	0	ø9
B2	ROUTE 9 WB BIKE	C2	0	ø9
B3	WALNUT NB BIKE	C4	0	ø8

NOTE: DELAY AND EXTENSION TIMINGS SHALL BE PROGRAMMED IN THE CONTROLLER ONLY

SEQUENCE & TIMING NOTES:

1. IF THE ASSIGNED RIGHT OF WAY FOR ANY TRAFFIC MOVEMENT IS TO REMAIN IN EFFECT DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATIONS FOR THAT TRAFFIC MOVEMENT WILL NOT CHANGE DURING THE CLEARANCE INTERVAL.
2. THE RIGHT OF WAY MAY BE ASSIGNED TO ANY PHASE OR ANY COMBINATION OF NON-CONFLICTING PHASES.
3. IF CALLS EXIST ON ALL PHASES, THE ASSIGNMENT OF RIGHT OF WAY SHALL BE IN ACCORDANCE WITH THE PREFERENTIAL PHASE SEQUENCE.
4. IF THE ASSIGNED RIGHT-OF-WAY FOR ANY TRAFFIC MOVEMENT IS TO CHANGE DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATION FOR THAT MOVEMENT WILL DISPLAY THE APPROPRIATE CLEARANCE INTERVALS.

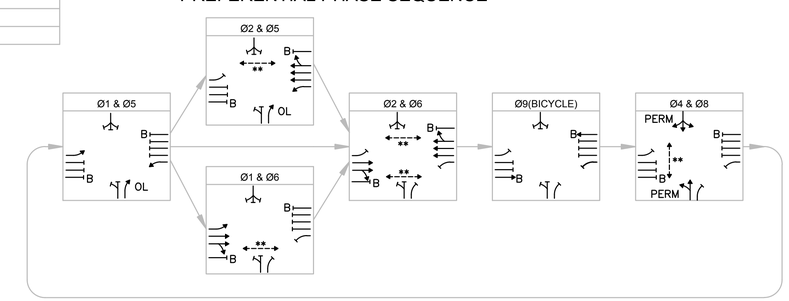
LIST OF MAJOR ITEMS REQUIRED

ROUTE 9 AT PEARL STREET/WALNUT STREET

PAY ITEM	QUANTITY	DESCRIPTION
815.1	1	8Ø TS 2 TYPE 1 CONTROLLER IN A TYPE 6 BASE MOUNTED CABINET INCLUDING FOUNDATION AND CONCRETE PAD
	1	TS 20' MAST ARM TYPE 2, STEEL, INCL. FOUNDATION
	1	TS 35' MAST ARM TYPE 2, STEEL, INCL. FOUNDATION
	2	TS 45' MAST ARM TYPE 2, STEEL, INCL. FOUNDATION
	2	TS POST 4' STANDARD INCL. FOUNDATION
	2	TS POST 8' STANDARD INCL. FOUNDATION
	4	TS POST 10' STANDARD INCL. FOUNDATION
	18	SIGNAL HEAD, 3-SECTION, 12" LENSES
	8	PEDESTRIAN SIGNAL HEAD W/COUNTDOWN TIMER
	1	PEDESTRIAN PUSH BUTTON W/R10-3e(L) AND SIGN SADDLE
	9	PEDESTRIAN PUSH BUTTON W/R10-3e(R) AND SIGN SADDLE
	1	VIDEO DETECTION SYSTEM (4 CAMERAS. VDP & CABLES)
	1	EMERGENCY PRE-EMPTION OPTICAL DETECTORS & DETECTOR CABLE
	1	EMERGENCY PRE-EMPTION 4 CHANNEL PHASE SELECTOR
	1	EMERGENCY PRE-EMPTION SYSTEM CHASSIS
	1	EMERGENCY PRE-EMPTION STROBE (WHITE LENS)
	1	SERVICE CONNECTION (UNDERGROUND)
	X	PULL BOX-12"x12"

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

PREFERENTIAL PHASE SEQUENCE



** UPON PEDESTRIAN PUSH BUTTON ACTUATION
B=BICYCLE

EMERGENCY VEHICLE PRE-EMPTION OPERATION

1. EMERGENCY VEHICLE PRE-EMPTION SIGNALS SHALL BE OPTICALLY TRANSMITTED BY OPTICAL EMITTERS MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT EACH INTERSECTION.
2. PRE-EMPTION SIGNALS SHALL BE SERVICED ON A PRIORITY BASIS WITH DETECTORS D1, D2, D3 OR D4 ASSIGNED DESCENDING PRIORITIES AS FOLLOWS: (D1 HIGHEST AND D4 LOWEST)
3. IN RESPONSE TO A PRE-EMPTION SIGNAL RECEIVED AT AN INTERSECTION BY OPTICAL DETECTOR D1 (OR D2, D3, D4) THE CONTROLLER SHALL HOLD OR ADVANCE TO AND HOLD IN EMERGENCY VEHICLE PRE-EMPTION PHASE #1 (OR #2, #3, #4) GREEN FOR A MINIMUM OF TEN (10) SECONDS OR UNTIL PRE-EMPTION SIGNAL CEASES. THE CONTROLLER SHALL THEN TIME PRE-EMPTION PHASE CLEARANCES FOR THE ASSOCIATED PHASE(S) AS SHOWN IN THE SEQUENCE AND TIMING CHART AND SERVICE SUBSEQUENT EMERGENCY VEHICLE PRE-EMPTION PHASES AS NECESSARY.
4. MINIMUM GREEN AND NORMAL VEHICLE/PEDESTRAIN CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PRE-EMPTION DEMAND.
5. PRE-EMPTION STROBE SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PRE-EMPTION GREEN IS ON.
6. EMERGENCY VEHICLE PRE-EMPTION SHALL OVERRIDE COORDINATION.
7. HARDWIRE EMERGENCY VEHICLE PRE-EMPTION SHALL OVERRIDE OPTICAL BASED PRE-EMPTION AND COORDINATION.
8. THE "CANCEL" FUNCTION SHALL ONLY OVERRIDE/CANCEL AN ACTIVE HARDWIRE FIRE PRE-EMPTION OPERATION. THE CANCEL FUNCTION SHALL NOT OVERRIDE AN ACTIVE OPTICAL BASE PRE-EMPTION OPERATION.

PRE-EMPTION PHASING & PRIORITY

DETECTOR & PRIORITY	PRE-EMPT PHASE ASSIGNMENT	MOVEMENT	VEHICLE PHASE ASSIGNMENT
HARDWIRE	1		Ø1&Ø6
D1	2		Ø2&Ø5
D2	3		Ø1&Ø6
D3	4		Ø4
D4	5		Ø8

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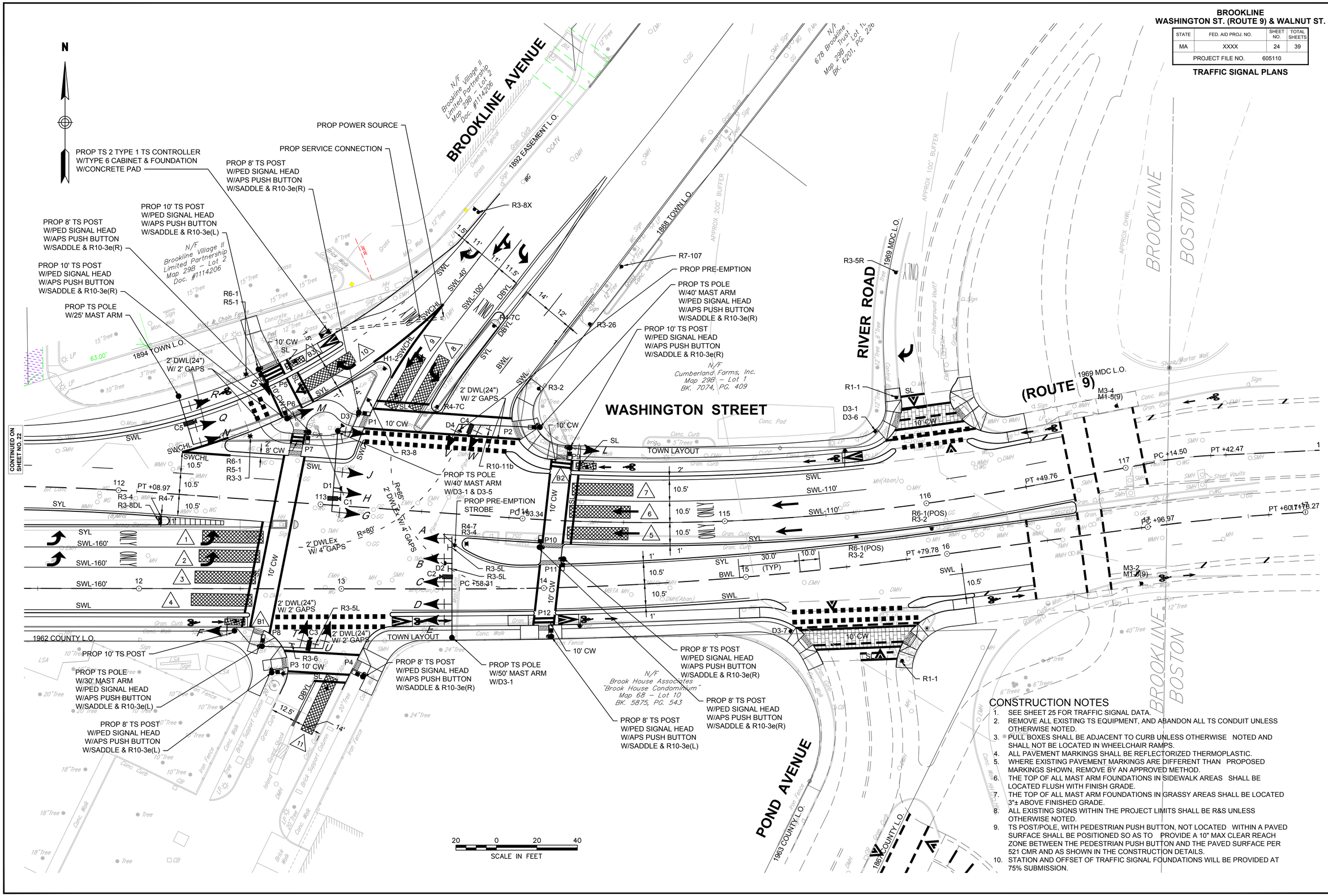
BROOKLINE
WASHINGTON ST. (ROUTE 9) & WALNUT ST.

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	XXXX	24	39
PROJECT FILE NO.	605110		

TRAFFIC SIGNAL PLANS

11052_TR.DWG Plotted on 22-Aug-2016 2:55 PM



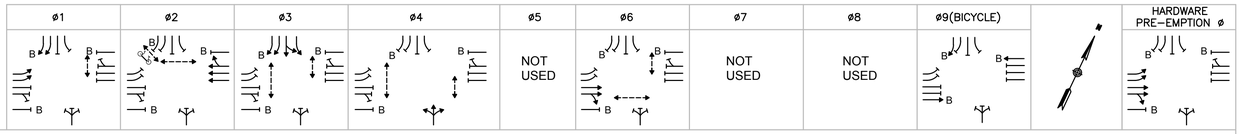
CONSTRUCTION NOTES

1. SEE SHEET 25 FOR TRAFFIC SIGNAL DATA.
2. REMOVE ALL EXISTING TS EQUIPMENT, AND ABANDON ALL TS CONDUIT UNLESS OTHERWISE NOTED.
3. PULL BOXES SHALL BE ADJACENT TO CURB UNLESS OTHERWISE NOTED AND SHALL NOT BE LOCATED IN WHEELCHAIR RAMPS.
4. ALL PAVEMENT MARKINGS SHALL BE REFLECTORIZED THERMOPLASTIC.
5. WHERE EXISTING PAVEMENT MARKINGS ARE DIFFERENT THAN PROPOSED MARKINGS SHOWN, REMOVE BY AN APPROVED METHOD.
6. THE TOP OF ALL MAST ARM FOUNDATIONS IN SIDEWALK AREAS SHALL BE LOCATED FLUSH WITH FINISH GRADE.
7. THE TOP OF ALL MAST ARM FOUNDATIONS IN GRASSY AREAS SHALL BE LOCATED 3"± ABOVE FINISHED GRADE.
8. ALL EXISTING SIGNS WITHIN THE PROJECT LIMITS SHALL BE R&S UNLESS OTHERWISE NOTED.
9. TS POST/POLE, WITH PEDESTRIAN PUSH BUTTON, NOT LOCATED WITHIN A PAVED SURFACE SHALL BE POSITIONED SO AS TO PROVIDE A 10" MAX CLEAR REACH ZONE BETWEEN THE PEDESTRIAN PUSH BUTTON AND THE PAVED SURFACE PER 521 CMR AND AS SHOWN IN THE CONSTRUCTION DETAILS.
10. STATION AND OFFSET OF TRAFFIC SIGNAL FOUNDATIONS WILL BE PROVIDED AT 75% SUBMISSION.

BROOKLINE
WASHINGTON ST. (ROUTE 9) & WALNUT ST.

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	XXXX	25	39
PROJECT FILE NO.	605110		

TRAFFIC SIGNAL PLANS



SEQUENCE AND TIMING FOR FULLY ACTUATED CONTROL (COORDINATED)

APPROACH	DIRECTION	HOUSING	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	FIRE PRE-EMPTION		
WASHINGTON STREET	EB	A,B	G	Y	R	R	R	R	R	R	R	R	R	R	R			R	R	R							R	R	R	FR	G	Y	R
WASHINGTON STREET	EB	C,D	R	R	R	R	R	R	R	R	R	R	R	R	R			G	Y	R							R	R	R	FY	G	Y	R
WASHINGTON STREET	EB	E,F	R	R	R	R	R	R	R	R	R	R	R	R	R			R	R	R							G	Y	R	OUT	R	R	R
WASHINGTON STREET	WB	G	R	R	R	G	Y	R	R	R	R	R	R	R	R			R	R	R							R	R	R	FY	R	R	R
WASHINGTON STREET	WB	H,J	R	R	R	G	Y	R	R	R	R	R	R	R	R			R	R	R							R	R	R	FY	R	R	R
WASHINGTON STREET	WB	K,L	R	R	R	R	R	R	R	R	R	R	R	R	R			R	R	R							G	Y	R	OUT	R	R	R
BROOKLINE AVENUE	SB	M,N,Q	G	Y	R	R	R	R	G	Y	R	R	R	R	R			R	R	R							R	R	R	FR	R	R	R
BROOKLINE AVENUE	SB	R	G	Y	R	R	R	R	G	Y	R	R	R	R	R			R	R	R							G	Y	R	OUT	R	R	R
BROOKLINE AVENUE	SB	S	R	R	R	G	Y	R	R	R	R	R	R	R	R			R	R	R							R	R	R	OUT	R	R	R
BROOKLINE AVENUE	SB	U	R	R	R	R	R	R	G	Y	R	R	R	R	R			R	R	R							R	R	R	FR	R	R	R
BROOKLINE AVENUE	SB	T	R	R	R	R	R	R	G	Y	R	R	R	R	R			R	R	R							R	R	R	FR	R	R	R
DRIVEWAY	NB	V	R	R	R	R	R	R	R	R	R	R	G	Y	R			R	R	R							R	R	R	FR	R	R	R
DRIVEWAY	NB	W	R	R	R	R	R	R	R	R	R	R	G	Y	R			R	R	R							R	R	R	FR	R	R	R
PEDESTRIAN X-ING		P1-P2	DW	DW	DW	W/FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW			DW	DW	DW							DW	DW	DW	OUT	DW	DW	DW
PEDESTRIAN X-ING		P3-P4	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW			W/FDW	DW	DW							DW	DW	DW	OUT	DW	DW	DW
PEDESTRIAN X-ING		P5-P6	DW	DW	DW	W/FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW			DW	DW	DW							DW	DW	DW	OUT	DW	DW	DW
PEDESTRIAN X-ING		P7-P8	DW	DW	DW	DW	DW	DW	W/FDW	DW	DW	W	W/FDW	DW	DW			DW	DW	DW							DW	DW	DW	OUT	DW	DW	DW
PEDESTRIAN X-ING		P9-P10	W/FDW	DW	DW	DW	DW	DW	W/FDW	DW	DW	DW	DW	DW	DW			DW	DW	DW							DW	DW	DW	OUT	DW	DW	DW
PEDESTRIAN X-ING		P11-P12	DW	DW	DW	DW	DW	DW	DW	DW	DW	W	W/FDW	DW	DW			DW	DW	DW							DW	DW	DW	OUT	DW	DW	DW

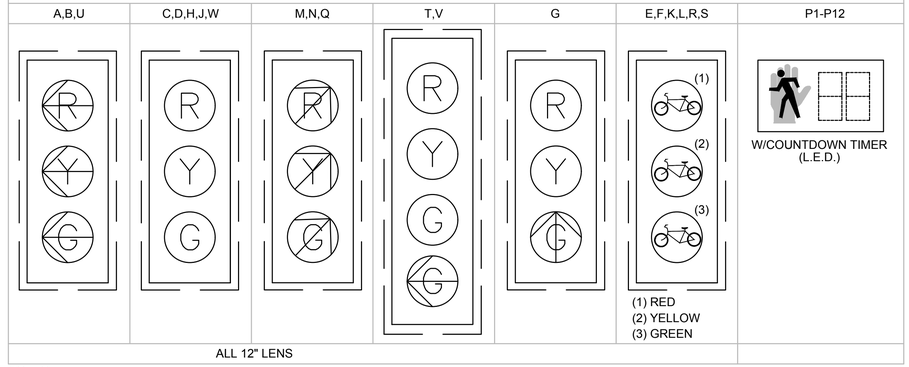
TIMING IN SECONDS

	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	CONFLICT FLASH OPERATION ONLY	HOLD	CLEAR	ALL RED
MINIMUM GREEN (INITIAL)	6			10			6				6					10															
PASSAGE TIME (VEHICLE)	2			2			2				2					2															
MAXIMUM 1	27			26			15				11					26															
MAXIMUM 2	21			25			21				11					25															
YELLOW CLEARANCE		3			4			4				4					4														
RED CLEARANCE			3.5			5			7.5				4					2													
PEDESTRIAN WALK	7			7			7			4	3					7															
PEDESTRIAN CLEARANCE	14			19			10				10					19													●	4	1
DETECTOR MEMORY	NON-LOCK			NON-LOCK			NON-LOCK			NON-LOCK						NON-LOCK															
RECALL	OFF			MIN			OFF			OFF						MIN															

COORDINATION DATA			COORDINATION PHASE SPLIT TIMES								
TIMING PLAN	CYCLE	OFFSET	ø1	ø2	ø3	ø4	ø5	ø6	ø7	ø8	ø9
1/1/1 M-F 7AM-9AM	X	X	X								
MODE				COORD ø				COORD ø			

1. NOTES:
2. AUTOMATIC FLASHING OPERATION PER 2009 M.U.T.C.D., AS AMENDED.
3. ** NORMALLY DW, W/FDW UPON PEDESTRIAN PUSH BUTTON ACTUATION
4. MAXIMUM 1 = 6:00AM TO 10:00AM, MON-FRI
5. MAXIMUM 2 = NORMAL OPERATION
6. STOP AND GO OPERATION FOR 24 HOURS PER DAY. FLASHING OPERATION FOR EMERGENCY ONLY.
7. ● = HOLD PERIOD TO BE DETERMINED BY FIRE CHIEF.
8. DURING PEDESTRIAN INTERVAL, FDW THROUGH YELLOW OPERATION SHALL NOT IN EFFECT.
9. INHIBIT MAX TERMINATION SHALL BE IN EFFECT DURING COORDINATION.

SIGNAL HEAD DATA



NOTES:
1. ALL SIGNAL HEADS SHALL BE RIGID MOUNTED.
2. ALL SIGNAL HEADS SHALL BE EQUIPPED WITH 5"± LOUVERED BACKPLATES. ALL BACKPLATES SHALL CONTAIN A 2" WIDE YELLOW REFLECTIVE BORDER.
3. ALL SIGNAL HEADS SHALL BE EQUIPPED WITH TUNNEL VISORS.
4. ALL SIGNAL DISPLAYS SHALL BE EQUIPPED WITH L.E.D. MODULES.

VIDEO DETECTION DATA

DETECTION ZONE	APPROACH/LANE	CAMERA	DELAY /EXT	CALL PHASE
1	ROUTE 9 EB LEFT-TURN LANE	C2	0	Ø1
2	ROUTE 9 EB LEFT-TURN LANE	C2	0	Ø1
3	ROUTE 9 EB THRU LANE	C2	0	Ø6
4	ROUTE 9 EB THRU/RIGHT LANE	C2	0	Ø6
5	ROUTE 9 WB THRU LANE(LT)	C1	0	Ø2
6	ROUTE 9 WB CENTER THRU LANE	C1	0	Ø2
7	ROUTE 9 WB THRU/RIGHT LANE	C1	0	Ø2
8	BROOKLINE AVE SB LEFT-TURN LANE	C3	0	Ø3
9	BROOKLINE AVE SB LEFT-THRU LANE	C3	0	Ø3
10	BROOKLINE AVE SB RIGHT-TURN LANE	C5	0	Ø3
11	DRIVEWAY NB	C4	0	Ø4
B1	ROUTE 9 EB BIKE	C2	0	Ø9
B2	ROUTE 9 WB BIKE	C1	0	Ø9
B3	BROOKLINE AVE SB BIKE	C5	0	Ø3

NOTE: DELAY AND EXTENSION TIMINGS SHALL BE PROGRAMMED IN THE CONTROLLER ONLY

SEQUENCE & TIMING NOTES:

1. IF THE ASSIGNED RIGHT OF WAY FOR ANY TRAFFIC MOVEMENT IS TO REMAIN IN EFFECT DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATIONS FOR THAT TRAFFIC MOVEMENT WILL NOT CHANGE DURING THE CLEARANCE INTERVAL.
2. THE RIGHT OF WAY MAY BE ASSIGNED TO ANY PHASE OR ANY COMBINATION OF NON-CONFLICTING PHASES.
3. IF CALLS EXIST ON ALL PHASES, THE ASSIGNMENT OF RIGHT OF WAY SHALL BE IN ACCORDANCE WITH THE PREFERENTIAL PHASE SEQUENCE.
4. IF THE ASSIGNED RIGHT-OF-WAY FOR ANY TRAFFIC MOVEMENT IS TO CHANGE DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATION FOR THAT MOVEMENT WILL DISPLAY THE APPROPRIATE CLEARANCE INTERVALS.

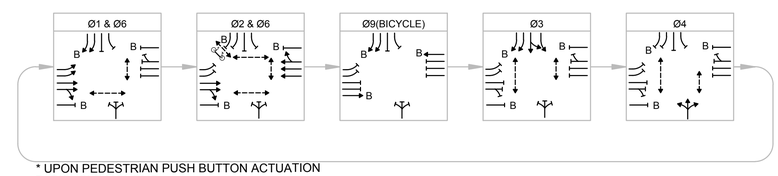
LIST OF MAJOR ITEMS REQUIRED

ROUTE 9 AT BROOKLINE AVENUE/DRIVEWAY

PAY ITEM	QUANTITY	DESCRIPTION
816.02	1	8Ø TS 2 TYPE 1 CONTROLLER IN A TYPE 6 BASE MOUNTED CABINET INCLUDING FOUNDATION AND CONCRETE PAD
	1	TS 25' MAST ARM TYPE 2, STEEL, INCL. FOUNDATION
	1	TS 30' MAST ARM TYPE 2, STEEL, INCL. FOUNDATION
	2	TS 40' MAST ARM TYPE 2, STEEL, INCL. FOUNDATION
	1	TS 50' MAST ARM TYPE 2, STEEL, INCL. FOUNDATION
	6	TS POST 8' STANDARD INCL. FOUNDATION
	4	TS POST 10' STANDARD INCL. FOUNDATION
	14	SIGNAL HEAD, 3-SECTION, 12" LENSES
	1	SIGNAL HEAD, 4-SECTION, 12" LENSES
	12	PEDESTRIAN SIGNAL HEAD W/COUNTDOWN TIMER
	4	PEDESTRIAN PUSH BUTTON W/R10-3e(L) AND SIGN SADDLE
	8	PEDESTRIAN PUSH BUTTON W/R10-3e(R) AND SIGN SADDLE
	1	VIDEO DETECTION SYSTEM (5 CAMERAS. VDP & CABLES)
	4	EMERGENCY PRE-EMPTION OPTICAL DETECTORS & DETECTOR CABLE
	1	EMERGENCY PRE-EMPTION 4 CHANNEL PHASE SELECTOR
	1	EMERGENCY PRE-EMPTION SYSTEM CHASSIS
	1	EMERGENCY PRE-EMPTION STROBE (WHITE LENS)
	1	SERVICE CONNECTION (UNDERGROUND)
	X	PULL BOX-12"x12"

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

PREFERENTIAL PHASE SEQUENCE



* UPON PEDESTRIAN PUSH BUTTON ACTUATION
B=BICYCLE MOVEMENT

EMERGENCY VEHICLE PRE-EMPTION OPERATION

1. EMERGENCY VEHICLE PRE-EMPTION SIGNALS SHALL BE OPTICALLY TRANSMITTED BY OPTICAL EMITTERS MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT EACH INTERSECTION.
2. PRE-EMPTION SIGNALS SHALL BE SERVICED ON A PRIORITY BASIS WITH DETECTORS D1, D2, D3 OR D4 ASSIGNED DESCENDING PRIORITIES AS FOLLOWS: (D1 HIGHEST AND D4 LOWEST)
3. IN RESPONSE TO A PRE-EMPTION SIGNAL RECEIVED AT AN INTERSECTION BY OPTICAL DETECTOR D1 (OR D2, D3, D4) THE CONTROLLER SHALL HOLD OR ADVANCE TO AND HOLD IN EMERGENCY VEHICLE PRE-EMPTION PHASE #1 (OR #2, #3, #4) GREEN FOR A MINIMUM OF TEN (10) SECONDS OR UNTIL PRE-EMPTION SIGNAL CEASES. THE CONTROLLER SHALL THEN TIME PRE-EMPTION PHASE CLEARANCES FOR THE ASSOCIATED PHASE(S) AS SHOWN IN THE SEQUENCE AND TIMING CHART AND SERVICE SUBSEQUENT EMERGENCY VEHICLE PRE-EMPTION PHASES AS NECESSARY.
4. MINIMUM GREEN AND NORMAL VEHICLE/PEDESTRAIN CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PRE-EMPTION DEMAND.
5. PRE-EMPTION STROBE SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PRE-EMPTION GREEN IS ON.
7. HARDWIRE EMERGENCY VEHICLE PRE-EMPTION SHALL OVERRIDE OPTICAL BASED PRE-EMPTION AND COORDINATION.
8. THE "CANCEL" FUNCTION SHALL ONLY OVERRIDE/CANCEL AN ACTIVE HARDWIRE FIRE PRE-EMPTION OPERATION. THE CANCEL FUNCTION SHALL NOT OVERRIDE AN ACTIVE OPTICAL BASE PRE-EMPTION OPERATION.

PRE-EMPTION PHASING & PRIORITY

DETECTOR & PRIORITY	PRE-EMPT PHASE ASSIGNMENT	MOVEMENT	VEHICLE PHASE ASSIGNMENT
HARDWIRE	1		Ø1&Ø6
D1	2		Ø2
D2	3		Ø1&Ø6
D3	4		Ø3
D4	5		Ø4

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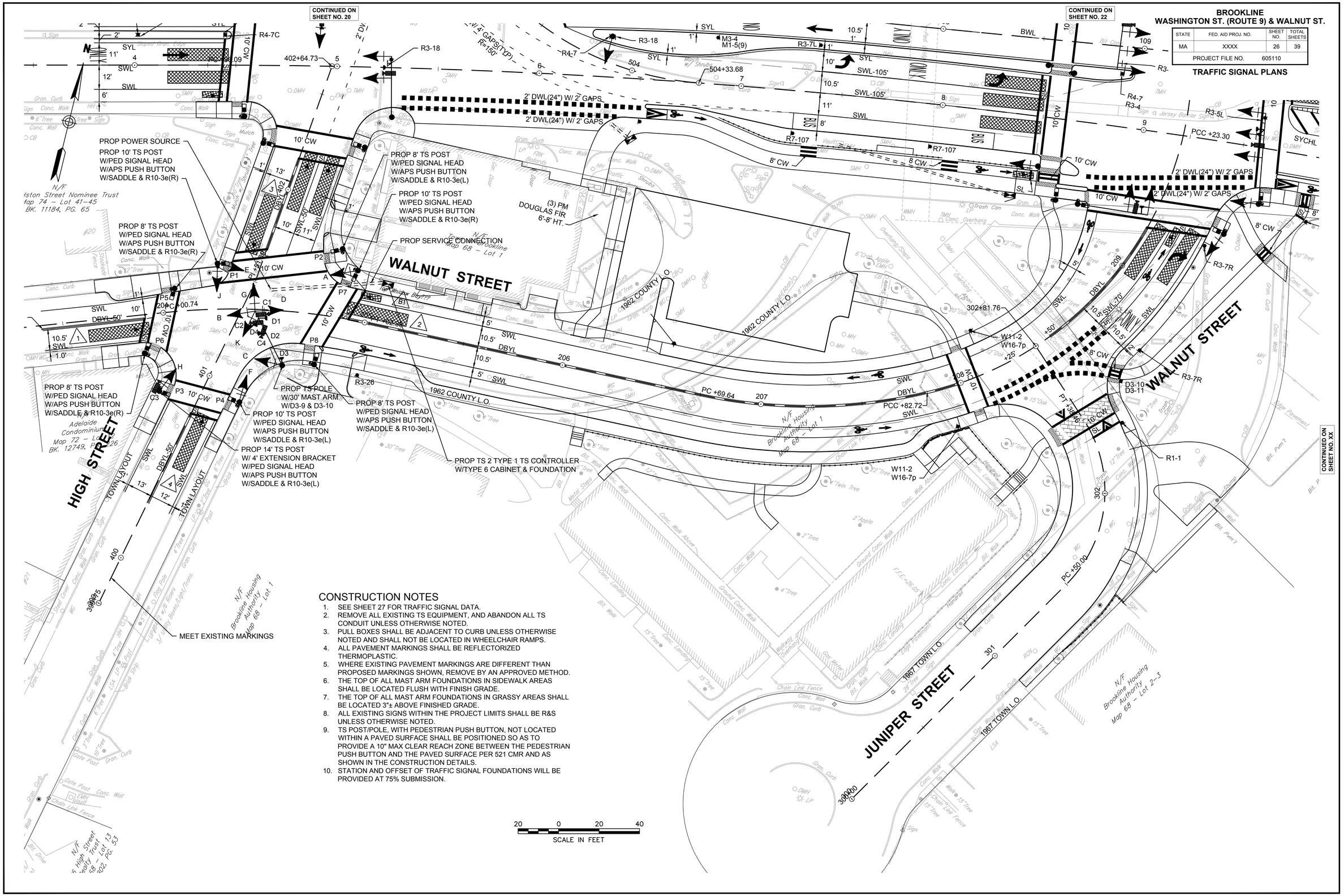
BROOKLINE
WASHINGTON ST. (ROUTE 9) & WALNUT ST.

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	XXXX	26	39
PROJECT FILE NO.	605110		

TRAFFIC SIGNAL PLANS



CONSTRUCTION NOTES

1. SEE SHEET 27 FOR TRAFFIC SIGNAL DATA.
2. REMOVE ALL EXISTING TS EQUIPMENT, AND ABANDON ALL TS CONDUIT UNLESS OTHERWISE NOTED.
3. PULL BOXES SHALL BE ADJACENT TO CURB UNLESS OTHERWISE NOTED AND SHALL NOT BE LOCATED IN WHEELCHAIR RAMPS.
4. ALL PAVEMENT MARKINGS SHALL BE REFLECTORIZED THERMOPLASTIC.
5. WHERE EXISTING PAVEMENT MARKINGS ARE DIFFERENT THAN PROPOSED MARKINGS SHOWN, REMOVE BY AN APPROVED METHOD.
6. THE TOP OF ALL MAST ARM FOUNDATIONS IN SIDEWALK AREAS SHALL BE LOCATED FLUSH WITH FINISH GRADE.
7. THE TOP OF ALL MAST ARM FOUNDATIONS IN GRASSY AREAS SHALL BE LOCATED 3"± ABOVE FINISHED GRADE.
8. ALL EXISTING SIGNS WITHIN THE PROJECT LIMITS SHALL BE R&S UNLESS OTHERWISE NOTED.
9. TS POST/POLE, WITH PEDESTRIAN PUSH BUTTON, NOT LOCATED WITHIN A PAVED SURFACE SHALL BE POSITIONED SO AS TO PROVIDE A 10" MAX CLEAR REACH ZONE BETWEEN THE PEDESTRIAN PUSH BUTTON AND THE PAVED SURFACE PER 521 CMR AND AS SHOWN IN THE CONSTRUCTION DETAILS.
10. STATION AND OFFSET OF TRAFFIC SIGNAL FOUNDATIONS WILL BE PROVIDED AT 75% SUBMISSION.

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BROOKLINE
WASHINGTON ST. (ROUTE 9) & WALNUT ST.

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	XXXX	27	39
PROJECT FILE NO.	605110		

TRAFFIC SIGNAL PLANS

ø1	ø2	ø3	ø4	ø5	ø6	ø7	ø8	ø9		HARDWARE PRE–EMPTION ø
NOT USED		NOT USED		NOT USED		NOT USED		NOT USED		

SEQUENCE AND TIMING FOR FULLY ACTUATED CONTROL (COORDINATED)

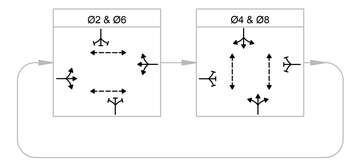
APPROACH	DIRECTION	HOUSING	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	FLASH	FIRE PRE–EMPTION		
WALNUT STREET	EB	A,B,C				R	R	R				R	R	R				G	Y	R				R	R	R				FR	R	R	R
WALNUT STREET	WB	D,E				G	Y	R				R	R	R				R	R	R				R	R	R				FR	R	R	R
HIGH STREET	SB	F,G,H				R	R	R				G	Y	R				R	R	R				R	R	R				FR	G	Y	R
HIGH STREET	NB	J,K				R	R	R				R	R	R				R	R	R				G	Y	R				FR	R	R	R
PEDESTRIAN X–ING	EB–WB	P1–P2				W/FDW	DW	DW				DW	DW	DW				DW	DW	DW				DW	DW	DW				OUT	DW	DW	DW
PEDESTRIAN X–ING	EB–WB	P3–P4				DW	DW	DW				DW	DW	DW				W/FDW	DW	DW				DW	DW	DW				OUT	DW	DW	DW
PEDESTRIAN X–ING	NB–SB	P5–P6				DW	DW	DW				W/FDW	DW	DW				DW	DW	DW				DW	DW	DW				OUT	DW	DW	DW
PEDESTRIAN X–ING	NB–SB	P7–P8				DW	DW	DW				DW	DW	DW				DW	DW	DW				W/FDW	DW	DW				OUT	DW	DW	DW
TIMING IN SECONDS																																	
MINIMUM GREEN (INITIAL)						6						10						6						10						CONFLICT FLASH OPERATION ONLY	HOLD	CLEAR	ALL RED
PASSAGE TIME (VEHICLE)						2						2						2						2									
MAXIMUM 1						55						38						55						38									
MAXIMUM 2						46						46						46						46									
YELLOW CLEARANCE							4						4						4						4								
RED CLEARANCE								3						2						3						2							
PEDESTRIAN WALK						7						7						7						7									
PEDESTRIAN CLEARANCE						9						7						9						7									
																															●	4	1
DETECTOR MEMORY						NON–LOCK						NON–LOCK						NON–LOCK						NON–LOCK									
RECALL						OFF						MIN						OFF						MIN									
COORDINATION DATA			COORDINATION PHASE SPLIT TIMES																														
TIMING PLAN	CYCLE	OFFSET	ø1			ø2			ø3			ø4			ø5			ø6			ø7			ø8			ø9						
1/1/1 M–F 7AM–9AM	X	X	X																														
MODE						COORD ø												COORD ø															

NOTES:
1. AUTOMATIC FLASHING OPERATION PER 2009 M.U.T.C.D., AS AMENDED.
2. PERM = PERMISSIVE
3. ø4 & ø8 DUAL ENTRY
4. MAXIMUM 1 = 6:00AM TO 10:00AM, MON–FRI
5. MAXIMUM 2 = NORMAL OPERATION
6. STOP AND GO OPERATION FOR 24 HOURS PER DAY. FLASHING OPERATION FOR EMERGENCY ONLY.
7. ● = HOLD PERIOD TO BE DETERMINED BY FIRE CHIEF.
8. DURING PEDESTRIAN INTERVAL, FDW THROUGH YELLOW OPERATION SHALL NOT BE IN EFFECT.
9. INHIBIT MAX TERMINATION SHALL BE IN EFFECT DURING COORDINATION.

SEQUENCE & TIMING NOTES:

1. IF THE ASSIGNED RIGHT OF WAY FOR ANY TRAFFIC MOVEMENT IS TO REMAIN IN EFFECT DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATIONS FOR THAT TRAFFIC MOVEMENT WILL NOT CHANGE DURING THE CLEARANCE INTERVAL.
2. THE RIGHT OF WAY MAY BE ASSIGNED TO ANY PHASE OR ANY COMBINATION OF NON-CONFLICTING PHASES.
3. IF CALLS EXIST ON ALL PHASES, THE ASSIGNMENT OF RIGHT OF WAY SHALL BE IN ACCORDANCE WITH THE PREFERENTIAL PHASE SEQUENCE.
4. IF THE ASSIGNED RIGHT-OF-WAY FOR ANY TRAFFIC MOVEMENT IS TO CHANGE DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATION FOR THAT MOVEMENT WILL DISPLAY THE APPROPRIATE CLEARANCE INTERVALS.

PREFERENTIAL PHASE SEQUENCE

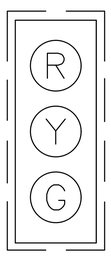
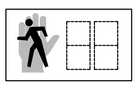


* UPON PEDESTRIAN PUSH BUTTON ACTUATION

PRE-EMPTION PHASING & PRIORITY

DETECTOR & PRIORITY	PRE-EMPT PHASE ASSIGNMENT	MOVEMENT	VEHICLE PHASE ASSIGNMENT
HARDWIRE	1		Ø4
D1	2		Ø2
D2	3		Ø6
D3	4		Ø4
D4	5		Ø8

SIGNAL HEAD DATA

A,B,C,D,E,F,G,H,J,K	P1-P8
	 W/COUNTDOWN TIMER (L.E.D.)
ALL 12" LENS	

NOTES:
1. ALL SIGNAL HEADS SHALL BE RIGID MOUNTED.
2. ALL SIGNAL HEADS SHALL BE EQUIPPED WITH 5"± LOUVERED BACKPLATES. ALL BACKPLATES SHALL CONTAIN A 2" WIDE YELLOW REFLECTIVE BORDER.
3. ALL SIGNAL HEADS SHALL BE EQUIPPED WITH TUNNEL VISORS.
4. ALL SIGNAL DISPLAYS SHALL BE EQUIPPED WITH L.E.D. MODULES.

VIDEO DETECTION DATA

DETECTION ZONE	APPROACH/LANE	CAMERA	DELAY /EXT	CALL PHASE
1	WALNUT ST EB	C2	0	Ø6
2	WALNUT ST WB	C1	0	Ø2
3	HIGH ST SB	C3	0	Ø4
4	HIGH ST NB	C4	0	Ø8
B1	WALNUT ST WB BIKE	C1	0	Ø2

NOTE: DELAY AND EXTENSION TIMINGS SHALL BE PROGRAMMED IN THE CONTROLLER ONLY

LIST OF MAJOR ITEMS REQUIRED

WALNUT STREET AT HIGH STREET

PAY ITEM	QUANTITY	DESCRIPTION
815.1	1	8Ø TS 2 TYPE 1 CONTROLLER IN A TYPE 6 BASE MOUNTED CABINET INCLUDING FOUNDATION AND CONCRETE PAD
	1	TS 30' MAST ARM TYPE 2, STEEL, INCL. FOUNDATION
	4	TS POST 8' STANDARD INCL. FOUNDATION
	3	TS POST 10' STANDARD INCL. FOUNDATION
	1	TS POST 14' STANDARD INCL. FOUNDATION
	10	SIGNAL HEAD, 3-SECTION, 12" LENSES
	8	PEDESTRIAN SIGNAL HEAD W/COUNTDOWN TIMER
	4	PEDESTRIAN PUSH BUTTON W/R10-3e(L) AND SIGN SADDLE
	4	PEDESTRIAN PUSH BUTTON W/R10-3e(R) AND SIGN SADDLE
	1	VIDEO DETECTION SYSTEM (4 CAMERAS. VDP & CABLES)
	1	EMERGENCY PRE-EMPTION OPTICAL DETECTORS & DETECTOR CABLE
	1	EMERGENCY PRE-EMPTION 4 CHANNEL PHASE SELECTOR
	1	EMERGENCY PRE-EMPTION SYSTEM CHASSIS
	1	EMERGENCY PRE-EMPTION STROBE (WHITE LENS)
	1	SERVICE CONNECTION (UNDERGROUND)
	X	PULL BOX-12"x12"

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

EMERGENCY VEHICLE PRE-EMPTION OPERATION

1. EMERGENCY VEHICLE PRE-EMPTION SIGNALS SHALL BE OPTICALLY TRANSMITTED BY OPTICAL EMITTERS MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT EACH INTERSECTION.
2. PRE-EMPTION SIGNALS SHALL BE SERVICED ON A PRIORITY BASIS WITH DETECTORS D1, D2, D3 OR D4 ASSIGNED DESCENDING PRIORITIES AS FOLLOWS: (D1 HIGHEST AND D4 LOWEST)
3. IN RESPONSE TO A PRE-EMPTION SIGNAL RECEIVED AT AN INTERSECTION BY OPTICAL DETECTOR D1 (OR D2, D3, D4) THE CONTROLLER SHALL HOLD OR ADVANCE TO AND HOLD IN EMERGENCY VEHICLE PRE-EMPTION PHASE #1 (OR #2, #3, #4) GREEN FOR A MINIMUM OF TEN (10) SECONDS OR UNTIL PRE-EMPTION SIGNAL CEASES. THE CONTROLLER SHALL THEN TIME PRE-EMPTION PHASE CLEARANCES FOR THE ASSOCIATED PHASE(S) AS SHOWN IN THE SEQUENCE AND TIMING CHART AND SERVICE SUBSEQUENT EMERGENCY VEHICLE PRE-EMPTION PHASES AS NECESSARY.
4. MINIMUM GREEN AND NORMAL VEHICLE/PEDESTRAIN CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PRE-EMPTION DEMAND.
5. PRE-EMPTION STROBE SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PRE-EMPTION GREEN IS ON.
6. EMERGENCY VEHICLE PRE-EMPTION SHALL OVERRIDE COORDINATION.
7. HARDWIRE EMERGENCY VEHICLE PRE-EMPTION SHALL OVERRIDE OPTICAL BASED PRE-EMPTION AND COORDINATION.
8. THE "CANCEL" FUNCTION SHALL ONLY OVERRIDE/CANCEL AN ACTIVE HARDWIRE FIRE PRE-EMPTION OPERATION. THE CANCEL FUNCTION SHALL NOT OVERRIDE AN ACTIVE OPTICAL BASE PRE-EMPTION OPERATION.

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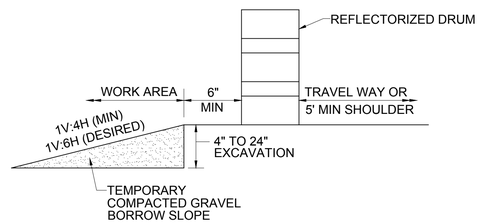
BROOKLINE
WASHINGTON ST. (ROUTE 9) & WALNUT ST.

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	XXXX	28	39
PROJECT FILE NO.	605110		

TEMPORARY TRAFFIC CONTROL PLANS
GENERAL NOTES & LEGEND

TEMPORARY TRAFFIC CONTROL GENERAL NOTES

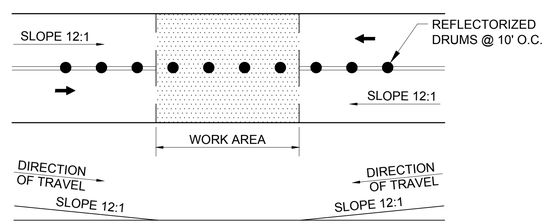
1. ALL CONSTRUCTION SIGNING, TEMPORARY TRAFFIC CONTROL DEVICES, AND ROADSIDE ELEMENTS SHALL CONFORM WITH THE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AS AMENDED, THE MASSDOT STANDARD DETAILS AND DRAWINGS FOR THE DEVELOPMENT OF TEMPORARY TRAFFIC CONTROL PLANS, THE LATEST REVISIONS OF THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, (AASHTO) ROADSIDE DESIGN GUIDE, AASHTO POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS, AND NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM (NCHRP) REPORT 350 OR THE AASHTO MANUAL FOR ASSESSING SAFETY HARDWIRE (MASH).
2. ALL TEMPORARY PEDESTRIAN PATHWAYS SHALL COMPLY FULLY WITH ALL REQUIREMENTS OF THE MUTCD AND ALL APPLICABLE MASSACHUSETTS ARCHITECTURAL ACCESS BOARD (MAAB) AND AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES (ADAAG) REQUIREMENTS.
3. ALL DRUMS OUTSIDE TAPERS SHALL BE SET AT 20' ON CENTER MAX. UNLESS OTHERWISE NOTED OR ADJUSTED BY THE ENGINEER.
4. ALL DRUMS SHALL BE APPROXIMATELY PLACED AND MOVED AS NECESSARY TO MAINTAIN ADEQUATE ABUTTER ACCESS AT ALL TIMES. WORK MAY REQUIRE ADDITIONAL SIGNS, DRUMS AND OTHER TRAFFIC CONTROL DEVICES, GRADING AND TEMPORARY PAVEMENT FOR PASSAGE OF PEDESTRIAN, VEHICULAR AND EMERGENCY TRAFFIC THROUGH THE WORK AREAS, BOTH DURING AND AFTER WORKING HOURS, TO MAINTAIN SUCH ACCESS.
5. THE CONTRACTOR SHALL NOTIFY EACH ABUTTER AT LEAST 24 HOURS IN ADVANCE OF THE START OF ANY WORK THAT WILL REQUIRE THE TEMPORARY CLOSURE OR RESTRICTION OF ACCESS.
6. GRADE SEPARATIONS IN EXCESS OF 4" DURING NON-WORKING HOURS WILL REQUIRE DELINEATION BY USE OF DRUMS.
7. FOR DROP-OFFS 4" OR LESS, CONDITION MAY BE MITIGATED WITH W8-9 (LOW SHOULDER) SIGN OR TEMPORARY CHANNELIZATION DEVICES. FOR DROP-OFFS GREATER THAN 4" BUT NO MORE THAN 12", DETERMINE WHETHER IT IS MORE COST EFFECTIVE TO INSTALL BOTH TEMPORARY CHANNELIZATION DEVICES AND A 1V:4H (MIN) TO 1V:6H (DESIRED) WEDGE OR TO SHIELD IT. FOR DROP-OFFS GREATER THAN 12" BUT NO MORE THAN 24", DETERMINE WHETHER IT IS MORE COST EFFECTIVE TO MAINTAIN AN ADDITIONAL 5' OF SHOULDER WIDTH AND INSTALL BOTH TEMPORARY CHANNELIZATION DEVICES AND A 1V:6H (DESIRE) WEDGE OR TO SHIELD IT. FOR DROP-OFFS 24" OR GREATER USE BARRIER IN ACCORDANCE WITH MASSDOT WORK ZONE POSITIVE PROTECTION GUIDELINES.
8. 11' MINIMUM LANE WIDTHS SHALL BE MAINTAINED UNLESS OTHERWISE NOTED.
9. NON-ESSENTIAL TRAFFIC CONTROL DEVICES AND SIGNS SHALL BE COVERED OR REMOVED DURING NON-WORKING HOURS WHEN NOT IN USE.
10. SIGNS INSTALLED ON PORTABLE STANDS REQUIRE 12 INCH MINIMUM MOUNTING HEIGHT FROM THE ROADWAY SURFACE TO THE BOTTOM OF THE SIGN.
11. SIGNS INSTALLED ON PORTABLE STANDS PLACED AMONG CHANNELIZATION DEVICES REQUIRE A 36 INCH MINIMUM MOUNTING HEIGHT FROM THE ROADWAY SURFACE TO THE BOTTOM OF THE SIGN.
12. SIGNS MOUNTED ON P5 POSTS REQUIRE A MINIMUM 84 INCH MOUNTING HEIGHT FROM THE ROADWAY OR SIDEWALK SURFACE TO THE BOTTOM OF THE SIGN.
13. TEMPORARY MARKINGS SHALL BE WATER-BORNE PAINT.
14. THE FIRST 5 DRUMS ON TAPERS SHALL BE REFLECTORIZED DRUMS WITH TYPE A LIGHTS.
15. REFLECTORIZED CONES SHALL BE A MINIMUM OF 36 INCHES IN HEIGHT.
16. CONES MAY BE USED IN LIEU OF DRUMS OUTSIDE OF TAPER AREAS.
17. ARROW BOARD FLASHING CAUTION SHALL FLASH IN FOUR-POINT CAUTION MODE ONLY.
18. CONTRACTOR SHALL SECURE WORK AREAS TO PREVENT UNAUTHORIZED ACCESS AT ALL TIMES.
19. THERE IS NO DESIGNATED BICYCLE LANE ON THE ROADWAY WITHIN THE PROJECT LIMITS. BICYCLES ARE EXPECTED TO SHARE THE ROAD WITH GENERAL VEHICULAR TRAFFIC DURING CONSTRUCTION.
20. W20-1c AND R2-10a SIGNS SHOWN ON ADVANCED SIGN SCHEMATIC MAY BE USED IN LIEU OF W20-1c AND R2-10a SIGNS SHOWN ON TYPICAL DETAILS ON THE TEMPORARY TRAFFIC CONTROL PLAN IF MINIMUM SIGN SPACING IS MET.
21. WHERE EXISTING PAVEMENT MARKINGS CONFLICT WITH PROPOSED TEMPORARY MARKINGS, REMOVE BY AN APPROVED METHOD.
22. BLUNT ENDS OF BARRIER SHALL BE PROTECTED AT ALL TIMES IN ACCORDANCE WITH THE AASHTO ROADSIDE DESIGN GUIDE AND MASSDOT STANDARDS.
23. TEMPORARY IMPACT ATTENUATORS SHALL BE DESIGNED FOR TEST LEVEL 2 (TL-2) ON ROADWAYS HAVING A POSTED SPEED LESS THAN OR EQUAL TO 45 MPH.
24. W21-7 SIGNS SHALL BE INSTALLED IN ADVANCE (100' MIN) OF AREAS WHERE UTILITY CASTINGS HAVE BEEN RAISED IN ADVANCE OF PAVING OPERATIONS OR AS DIRECTED BY THE ENGINEER.
25. W8-15 SIGNS SHALL BE INSTALLED IN ADVANCE (100' MIN) OF PAVEMENT MILLING AREAS OR AS DIRECTED BY THE ENGINEER.
26. TRUCK MOUNTED ATTENUATORS ON ROADWAYS WITH A POSTED SPEED OF 30 MPH OR LESS MAY BE USED AT CONTRACTOR'S OPTION OR AS DIRECTED BY THE ENGINEER.
27. W20-7b SIGNS SHALL BE REPLACED BY W20-7 SIGN IF FLAGGERS ARE USED IN LIEU OF POLICE DETAILS.
28. ALL TEMPORARY TRAFFIC SIGNAL MODIFICATIONS SHALL BE COORDINATED WITH MASSDOT AND CITY OF BROOKLINE PRIOR TO IMPLEMENTATION.



NOTE:
CONTRACTOR SHALL INSTALL W8-9 SIGN ON ALL ROADWAYS 350 FT IN ADVANCE OF THE START OF DROP-OFF CONDITION.

TYPICAL ROADWAY DROP-OFF PROTECTION

SCALE: N.T.S.



SQUARE OFF THE FULL WIDTH OF THE ROADWAY AT THE END OF WORK DAY

TEMPORARY PAVEMENT TRANSITION DETAIL

SCALE: N.T.S.

LEGEND

●	REFLECTORIZED DRUM
◉	REFLECTORIZED DRUM WITH TYPE A FLASHER
P	POLICE OFFICER
F	FLAGGER
▲	TRAFFIC CONE
←	PROPOSED TRAFFIC FLOW
↘ ↖	PROPOSED PEDESTRIAN ROUTE
NTS	NOT TO SCALE
	TYPE III BARRICADE
	WORK AREA (PUBLIC ACCESS RESTRICTED)
	ARROW BOARD (AB) (RIGHT OR LEFT)
	ARROW BOARD (AB) (CAUTION)
	PEDESTRIAN CHANNELIZATION DEVICE (TYP)

BUFFER SPACING

SPEED (MPH)	DISTANCE (FEET)
15	80
20	115
25	155
30	200
35	250
40	305
45	360
50	425

LANE TAPER LENGTH FORMULAS

L=	TAPER LENGTH IN FEET
W=	WIDTH OF ROADWAY TO BE SHIFTED OR REDIRECTED IN FEET
S=	POSTED SPEED LIMIT IN MPH
POSTED SPEED	
40 MPH OR LESS	
$L=\frac{WS^2}{60}$	

ADVANCE SIGN SPACING

ROAD TYPE	DISTANCE BETWEEN SIGNS (FEET)			
	A	B	C	D
ROUTE 9	500'	250'	500'	500'
BROOKLINE AVE	500'	250'	500'	500'
WALNUT ST	350'	150'	350'	350'
HIGH ST	350'	150'	350'	350'
LOCAL	100'	50'	100'	100'

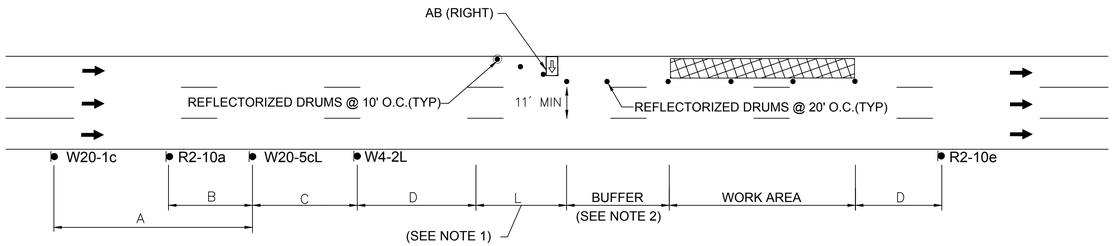
OPERATIONAL SIGNING

LANE CLOSURES SHOWN ARE FOR TEMPORARY CONSTRUCTION.
ALL DRUMS AND SIGNS ARE SHOWN AS THEY SHOULD APPEAR
DURING THE WORKING DAY, OR WHILE OPERATING IN THE WORK ZONE.

BROOKLINE
WASHINGTON ST. (ROUTE 9) & WALNUT ST.

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	XXXX	29	39
PROJECT FILE NO.	605110		

TEMPORARY TRAFFIC CONTROL PLANS
TYPICAL DETAILS

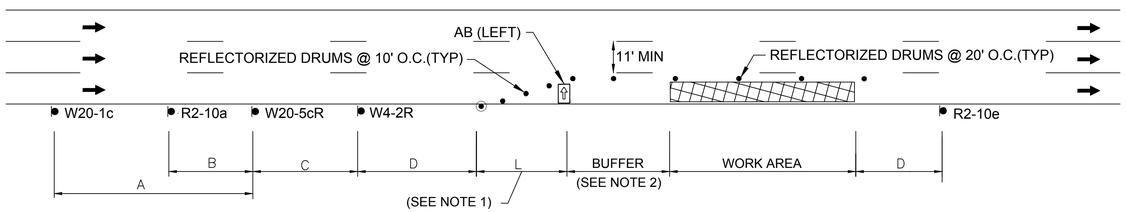


NOTES:

1. SEE TAPER LENGTH FORMULA ON SHEET 28.
2. SEE BUFFER SPACING CHART ON SHEET 28.
3. SEE ADVANCE SIGN SPACING TABLE ON SHEET 28.

TYPICAL LEFT LANE CLOSURE

SCALE: N.T.S.

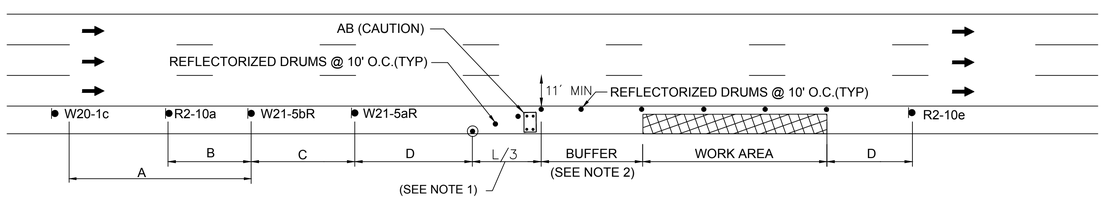


NOTES:

1. SEE TAPER LENGTH FORMULA ON SHEET 28.
2. SEE BUFFER SPACING CHART ON SHEET 28.
3. SEE ADVANCE SIGN SPACING TABLE ON SHEET 28.

TYPICAL RIGHT LANE CLOSURE

SCALE: N.T.S.



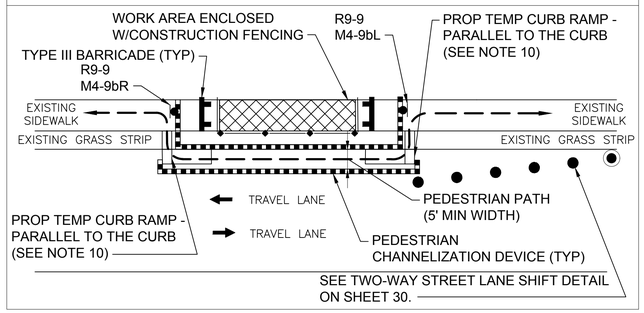
NOTES:

1. SEE TAPER LENGTH FORMULA ON SHEET 28.
2. SEE BUFFER SPACING CHART ON SHEET 28.
3. SEE ADVANCE SIGN SPACING TABLE ON SHEET 28.

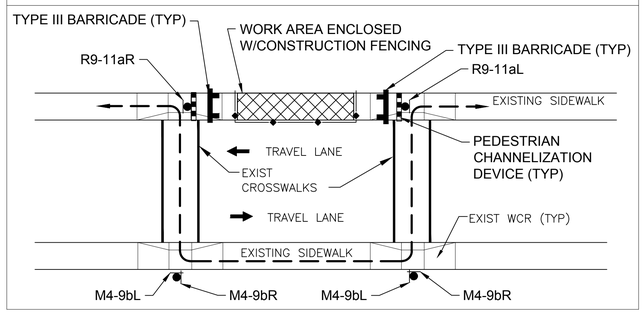
TYPICAL SHOULDER LANE CLOSURE - RIGHT

SCALE: N.T.S.

PEDESTRIAN BYPASS TYPE I



PEDESTRIAN BYPASS TYPE II



NOTES:

1. ADDITIONAL ADVANCE WARNING SIGNS MAY BE NECESSARY AS DETERMINED BY THE ENGINEER
2. CONTROLS FOR PEDESTRIAN TRAFFIC ONLY, ARE SHOWN. VEHICULAR TRAFFIC SHALL BE MAINTAINED AS SHOWN ELSEWHERE.
3. STREET LIGHTING SHOULD BE CONSIDERED WHEN LOCATING CONTROL DEVICES.
4. ← — ← INDICATES DIRECTION OF PEDESTRIAN TRAVEL.
5. IF THE WORK ZONE DOES NOT PERMIT PEDESTRIANS TO TRAVEL ADJACENT TO IT AS SHOWN IN PEDESTRIAN BYPASS TYPE I, TEMPORARY OR EXIST CROSSWALKS WITH APPROPRIATE SIGNS SHALL BE PROVIDED TO CROSS PEDESTRIANS TO THE OPPOSITE SIDE OF THE STREET AS SHOWN IN PEDESTRIAN BYPASS TYPE II, AND AS DIRECTED BY THE ENGINEER.TEMPORARY CURB RAMPS WILL BE REQUIRED AT ALL TEMPORARY CROSSWALK LOCATIONS.
6. PROPOSED TEMPORARY CROSSWALKS SHALL BE 12" WIDE SURFACE APPLIED TAPE OR REFLECTORIZED PAINT AS DIRECTED BY THE ENGINEER.
7. ALL TEMPORARY PEDESTRIAN PATHWAYS SHALL COMPLY FULLY WITH ALL REQUIREMENTS OF THE MUTCD AND ALL APPLICABLE MAAB AND ADAAG REQUIREMENTS. CONTRACTOR SHALL MAINTAIN ADA COMPLIANT PEDESTRIAN ACCESS AT ALL TIMES, SPECIFICALLY INCLUDING PEDESTRIAN GUIDANCE SYSTEMS (PEDESTRIAN CHANNELIZING DEVICES) AT WORKZONES. ACCESS SHALL BE MAINTAINED ALONG ALL SIDEWALKS AND CROSSWALKS TO ALL ABUTTERS AND TO ALL MBTA BUS STOPS. ANY PEDESTRIAN DETOURS SHALL INCLUDE AN ADA COMPLIANT PEDESTRIAN DETOUR ROUTE WITH PROPER BARRICADES, RAILINGS, RAMPS AND SIGNS.
8. CONTRACTOR SHALL MAINTAIN AS WIDE OF A PEDESTRIAN ACCESS AS POSSIBLE AT ALL TIMES. EXCEPT WHERE NECESSARY, THE CONTRACTOR MAY TEMPORARILY REDUCE PEDESTRIAN PATHWAYS TO 4 FEET IN WIDTH (EXCLUDING CURB) FOR NO MORE THAN 200 LINEAR FEET AT A TIME IN ACCORDANCE WITH ALL STANDARDS.
9. TEMPORARY WHEELCHAIR RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH MASSDOT, MAAB, AND ADAAG REQUIREMENTS. CONTRACTOR MAY UTILIZE EXISTING WCR'S AS POSSIBLE OR AS APPROVED BY THE ENGINEER.
10. REFER TO MASSDOT STANDARD DETAILS & DRAWINGS FOR THE DEVELOPMENT OF TEMPORARY TRAFFIC CONTROL PLANS, FIGURE PED-1 PEDESTRIAN DETAILS FOR TEMPORARY CURB RAMPS - PARALLEL TO CURB.

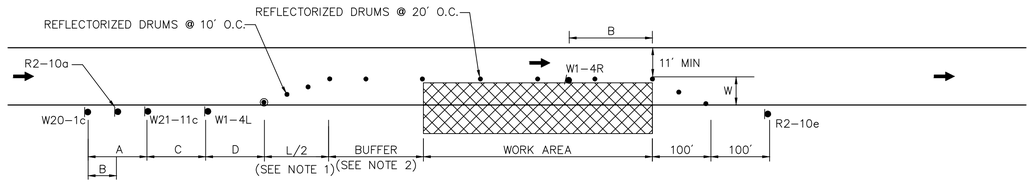
PEDESTRIAN BYPASS DETAIL

SCALE: N.T.S.

BROOKLINE
WASHINGTON ST. (ROUTE 9) & WALNUT ST.

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	XXXX	30	39
PROJECT FILE NO.	605110		

TEMPORARY TRAFFIC CONTROL PLANS
TYPICAL DETAILS

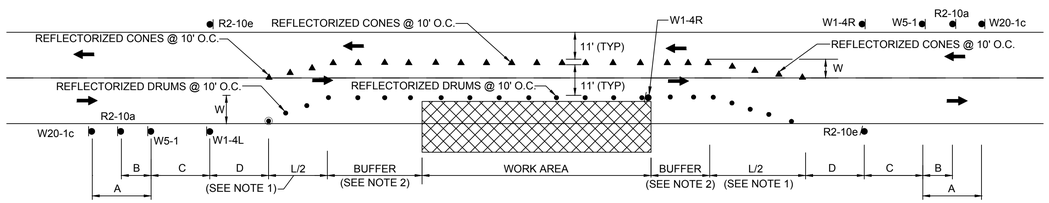


NOTES:

1. SEE TAPER LENGTH FORMULA ON SHEET 28.
2. SEE BUFFER SPACING CHART ON SHEET 28.
3. SEE ADVANCE SIGN SPACING TABLE ON SHEET 28.

TYPICAL ONE WAY STREET LANE SHIFT

SCALE: N.T.S.

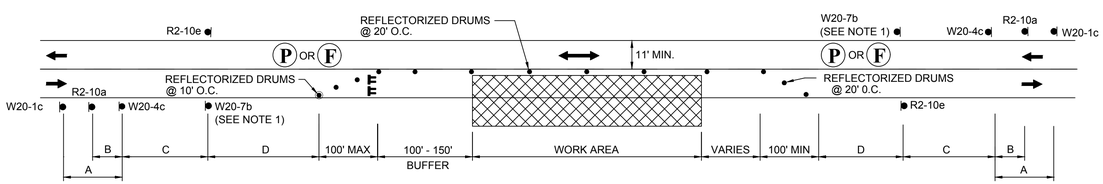


NOTES:

1. SEE TAPER LENGTH FORMULA ON SHEET 28.
2. SEE BUFFER SPACING CHART ON SHEET 28.
3. SEE ADVANCE SIGN SPACING TABLE ON SHEET 28.

TYPICAL TWO WAY STREET LANE SHIFT

SCALE: N.T.S.

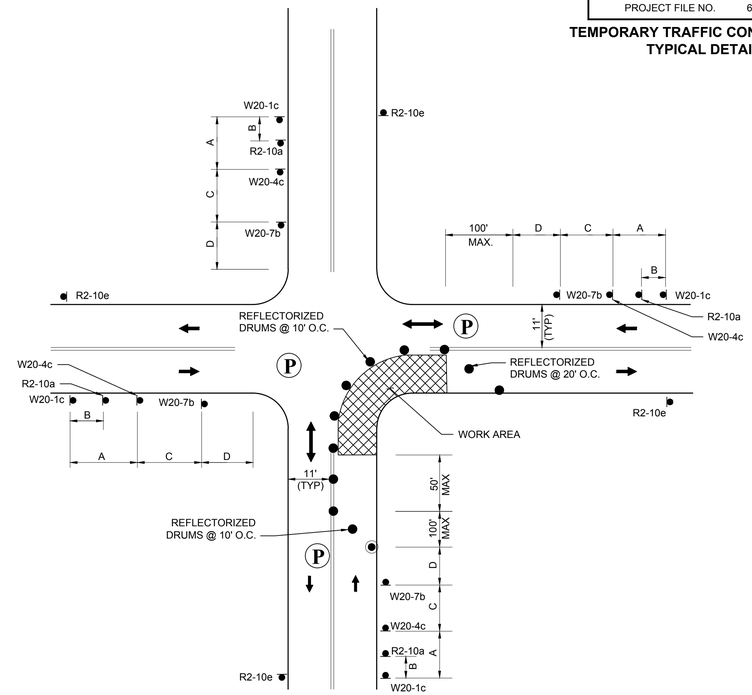


NOTES:

1. SEE TTCP GENERAL NOTE 27 ON SHEET 28.
2. SEE ADVANCE SIGN SPACING TABLE ON SHEET 28.

TYPICAL TWO WAY STREET LANE CLOSURE ALTERNATING TRAFFIC

SCALE: N.T.S.

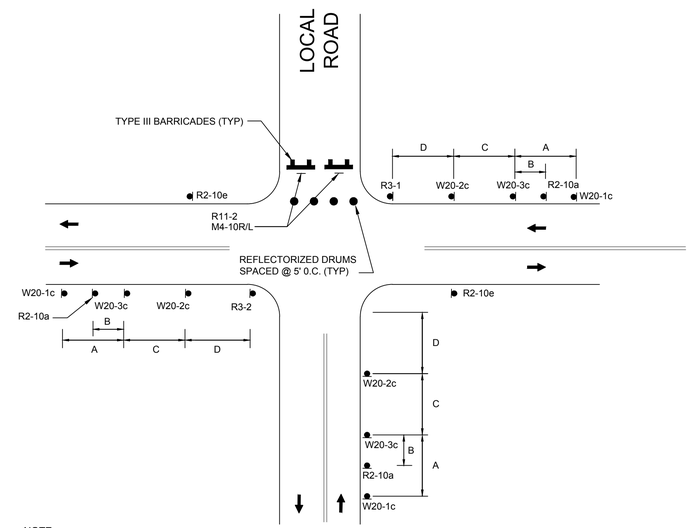


NOTE:

1. SEE ADVANCED SIGN SPACING TABLE ON SHEET 28.

ONE LANE BI-DIRECTIONAL TRAFFIC AT INTERSECTIONS - LOCAL

SCALE: N.T.S.



NOTE:

1. SEE ADVANCED SIGN SPACING TABLE ON SHEET 28.

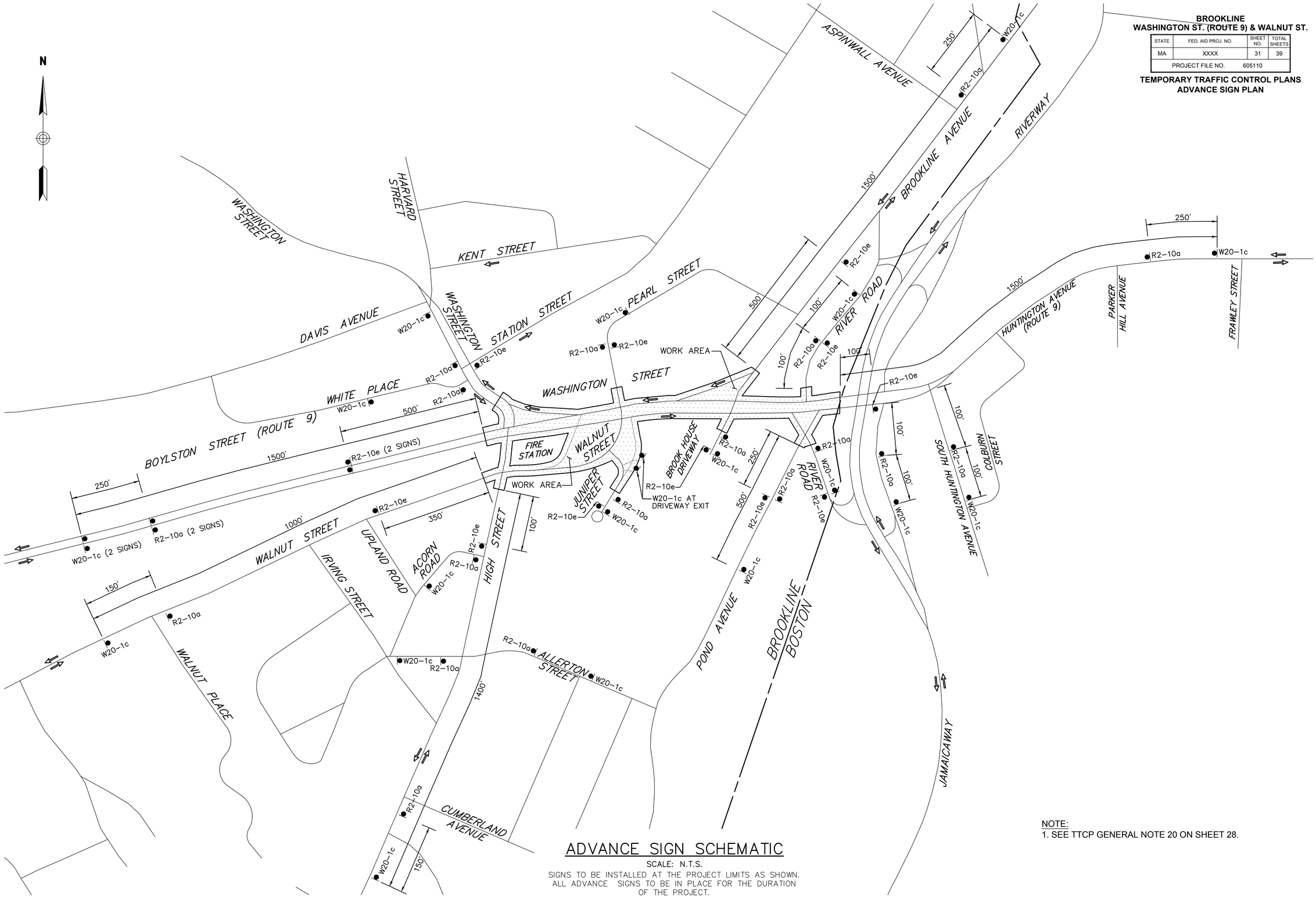
TYPICAL LOCAL ROAD CLOSURE

SCALE: N.T.S.

BROOKLINE
WASHINGTON ST. (ROUTE 9) & WALNUT ST.

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	XXXX	31	39
PROJECT FILE NO. 605110			

TEMPORARY TRAFFIC CONTROL PLANS
ADVANCE SIGN PLAN



ADVANCE SIGN SCHEMATIC

SCALE: N.T.S.

SIGNS TO BE INSTALLED AT THE PROJECT LIMITS AS SHOWN. ALL ADVANCE SIGNS TO BE IN PLACE FOR THE DURATION OF THE PROJECT.

NOTE:
1. SEE TTCP GENERAL NOTE 20 ON SHEET 28.

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BROOKLINE
WASHINGTON ST. (ROUTE 9) & WALNUT ST.

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	XXXX	32	39
PROJECT FILE NO.	605110		

TEMPORARY TRAFFIC CONTROL PLANS
SIGN SUMMARY

TEMPORARY TRAFFIC CONTROL SIGN SUMMARY

IDENTIFI-CATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (INCHES)			COLOR		
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.	BACK-GROUND	LEGEND	BORDER
R2-10a	48"	36"	WORK ZONE / SPEEDING FINES DOUBLED	AS PER MASSDOT STANDARD			ORANGE / WHITE	BLACK	BLACK
R2-10e	36"	48"	END ROAD WORK / DOUBLE FINES END				ORANGE / WHITE	BLACK	BLACK
R3-1	30"	30"		SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED			WHITE	BLACK	BLACK
R3-2	30"	30"					WHITE	RED/ BLACK	WHITE
R9-9	30"	18"	SIDEWALK CLOSED				WHITE	BLACK	BLACK
R9-11aL	48	24	SIDEWALK CLOSED / ← / CROSS HERE				WHITE	BLACK	BLACK
R9-11aR	48	24	SIDEWALK CLOSED / → / CROSS HERE				WHITE	BLACK	BLACK
R11-2	48"	30"	ROAD CLOSED				WHITE	BLACK	BLACK
W1-4L	36"	36"					ORANGE	BLACK	BLACK
W1-4R	36"	36"					ORANGE	BLACK	BLACK
W4-2L	36"	36"					ORANGE	BLACK	BLACK
W4-2R	36"	36"					ORANGE	BLACK	BLACK
W5-1	36"	36"	ROAD NARROWS				ORANGE	BLACK	BLACK
W8-9	36"	36"	LOW SHOULDER				ORANGE	BLACK	BLACK
W8-15	36"	36"	GROOVED PAVEMENT				ORANGE	BLACK	BLACK
W20-1c	36"	36"	ROAD WORK AHEAD				ORANGE	BLACK	BLACK

TEMPORARY TRAFFIC CONTROL SIGN SUMMARY

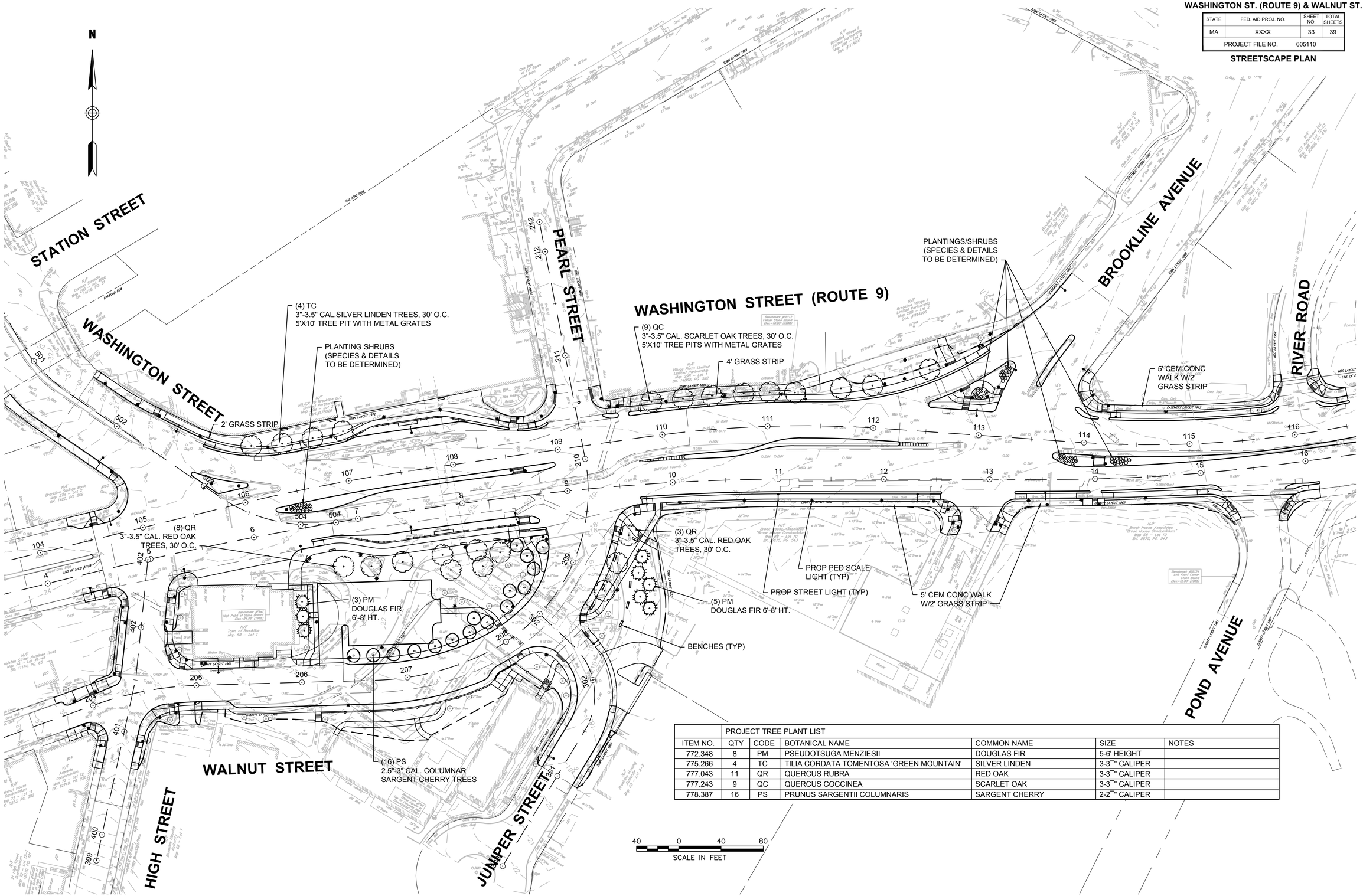
IDENTIFI-CATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (INCHES)			COLOR		
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.	BACK-GROUND	LEGEND	BORDER
W20-2c	36"	36"	DETOUR AHEAD	SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED			ORANGE	BLACK	BLACK
W20-3c	36"	36"	ROAD CLOSED AHEAD				ORANGE	BLACK	BLACK
W20-4c	36"	36"	ONE LANE ROAD AHEAD				ORANGE	BLACK	BLACK
W20-5cL	36"	36"	LEFT LANE CLOSED AHEAD				ORANGE	BLACK	BLACK
W20-5cR	36"	36"	RIGHT LANE CLOSED AHEAD				ORANGE	BLACK	BLACK
W20-7	36"	36"					ORANGE	BLACK	BLACK
W20-7b	36"	36"	POLICE OFFICER AHEAD				ORANGE	BLACK	BLACK
W21-7	36"	36"	UTILITY WORK AHEAD				ORANGE	BLACK	BLACK
W21-5aR	36"	36"	RIGHT SHOULDER WORK				ORANGE	BLACK	BLACK
W21-5bR	36"	36"	RIGHT SHOULDER CLOSED AHEAD				ORANGE	BLACK	BLACK
W21-11c	36"	36"	LANE SHIFT AHEAD				ORANGE	BLACK	BLACK
M4-9bL	30"	24"	DETOUR ←				ORANGE	BLACK	BLACK
M4-9bR	30"	24"	DETOUR →				ORANGE	BLACK	BLACK
M4-10L	48"	18"	◄ DETOUR				ORANGE	BLACK	BLACK
M4-10R	48"	18"	DETOUR ►				ORANGE	BLACK	BLACK

NOTES:
1. HIGH INTENSITY REFLECTIVE SHEETING SHALL BE USED FOR ALL SIGNS. SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION" FOR TEXT DIMENSIONS, AS AMENDED; THE 1977 MASSHIGHWAY DEPARTMENT CONSTRUCTION AND TRAFFIC STANDARD DETAILS, AS AMENDED, FOR SIGNS AND SUPPORTS; AND THE MASSHIGHWAY DEPARTMENT SIGN LISTINGS 1993 EDITION, AS AMENDED.
2. ALL ORANGE BACKGROUND SIGNS LISTED HEREIN SHALL BE FLOURESCENT ORANGE.

BROOKLINE
WASHINGTON ST. (ROUTE 9) & WALNUT ST.

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	XXXX	33	39
PROJECT FILE NO.	605110		

STREETSCAPE PLAN



	PROJECT TREE PLANT LIST					
ITEM NO.	QTY	CODE	BOTANICAL NAME	COMMON NAME	SIZE	NOTES
772.348	8	PM	PSEUDOTSUGA MENZIESII	DOUGLAS FIR	5-6' HEIGHT	
775.266	4	TC	TILIA CORDATA TOMENTOSA 'GREEN MOUNTAIN'	SILVER LINDEN	3-3½" CALIPER	
777.043	11	QR	QUERCUS RUBRA	RED OAK	3-3½" CALIPER	
777.243	9	QC	QUERCUS COCCINEA	SCARLET OAK	3-3½" CALIPER	
778.387	16	PS	PRUNUS SARGENTII COLUMNARIS	SARGENT CHERRY	2-2½" CALIPER	

11052_LANDSCAPE.DWG Plotted on 22-Aug-2016 2:56 PM

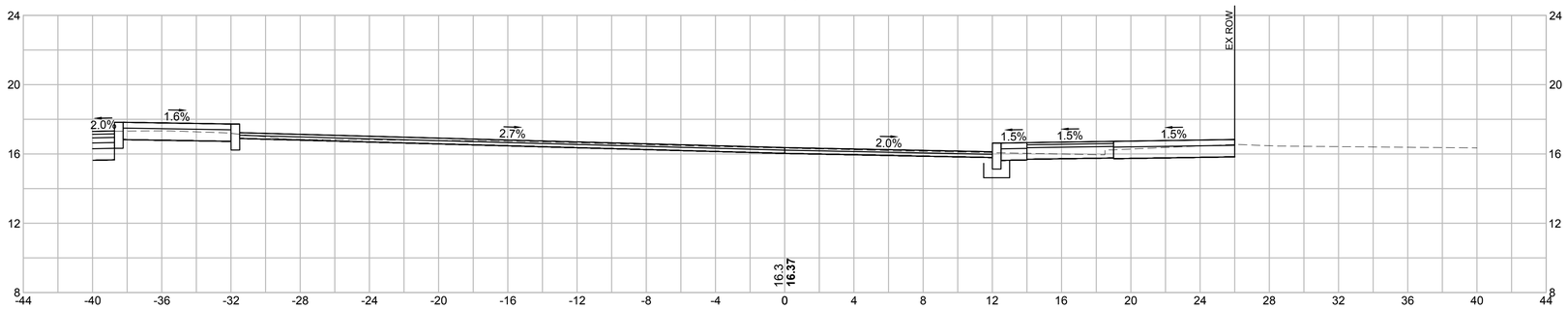
BROOKLINE
WASHINGTON ST. (ROUTE 9) & WALNUT ST.

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	XXXX	34	39
PROJECT FILE NO. 605110			

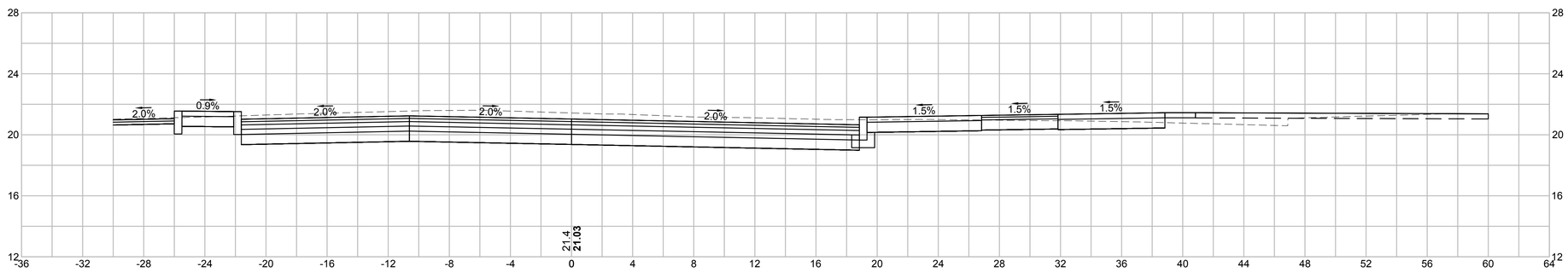
CRITICAL CROSS SECTIONS

11052_XSEC2.DWG Plotted on 22-Aug-2016 2:56 PM

11+50



8+00



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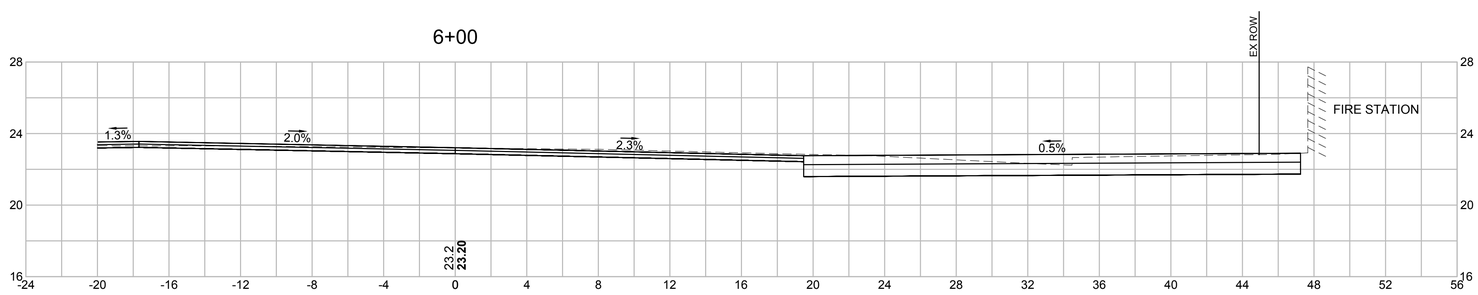
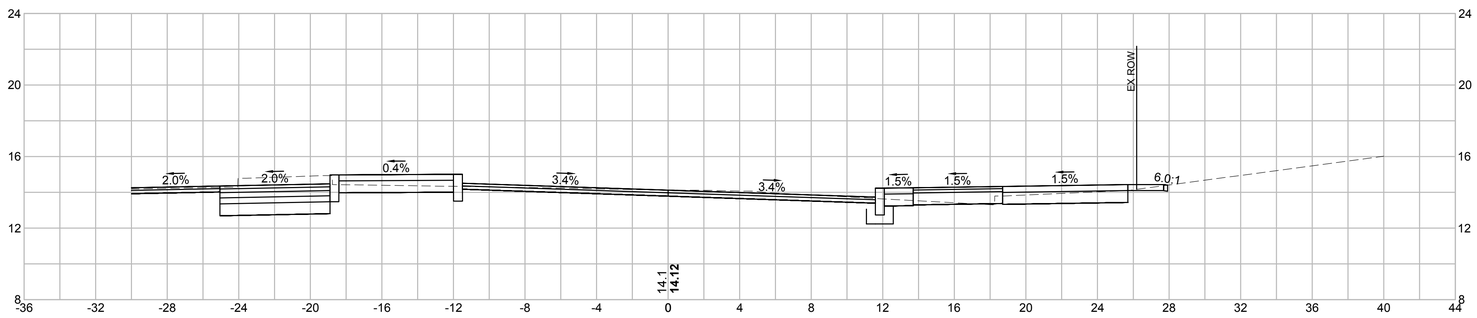


BROOKLINE
WASHINGTON ST. (ROUTE 9) & WALNUT ST.

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	XXXX	35	39
PROJECT FILE NO. 605110			

CRITICAL CROSS SECTIONS

14+50



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11052_XSEC2.DWG

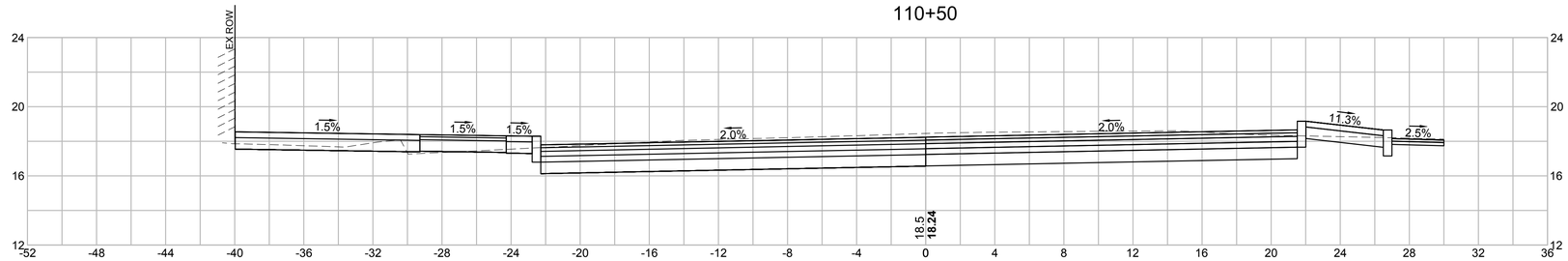
BROOKLINE
WASHINGTON ST. (ROUTE 9) & WALNUT ST.

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	XXXX	36	39
PROJECT FILE NO. 605110			

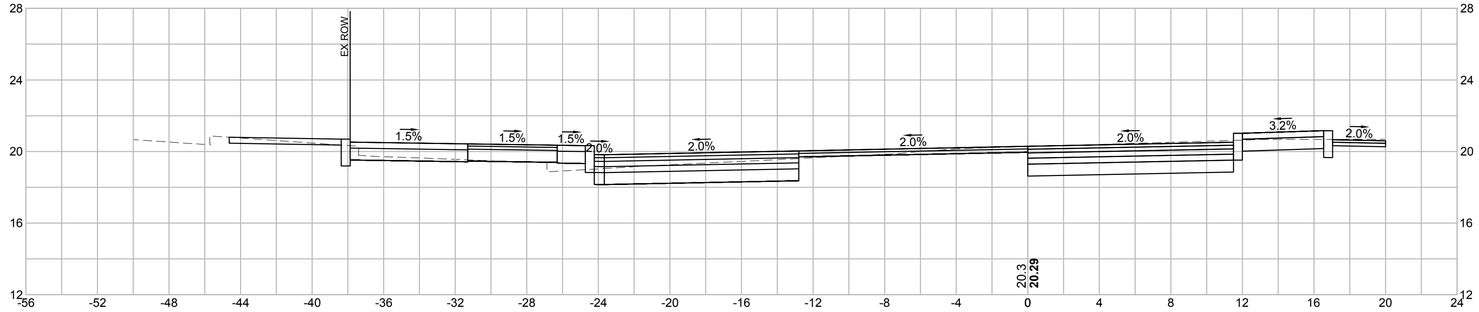
CRITICAL CROSS SECTIONS

11052_XSEC2.DWG Plotted on 22-Aug-2016 2:56 PM

110+50



108+60



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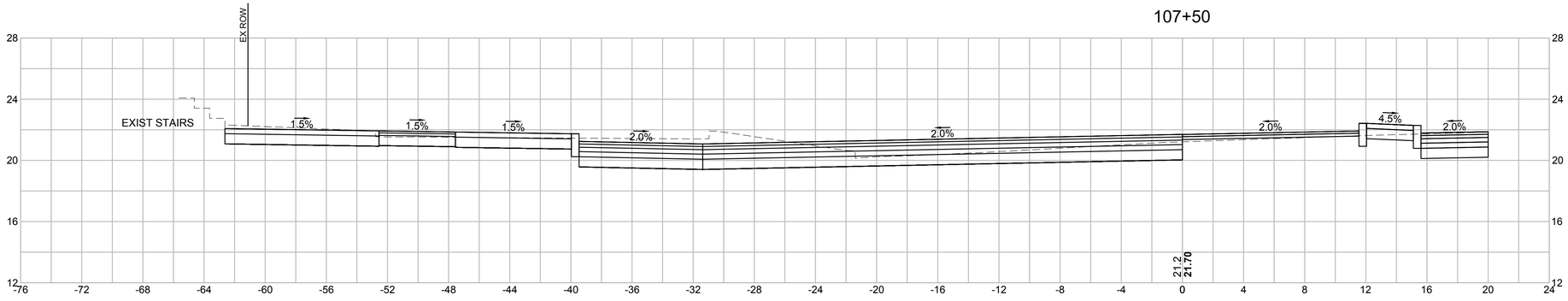


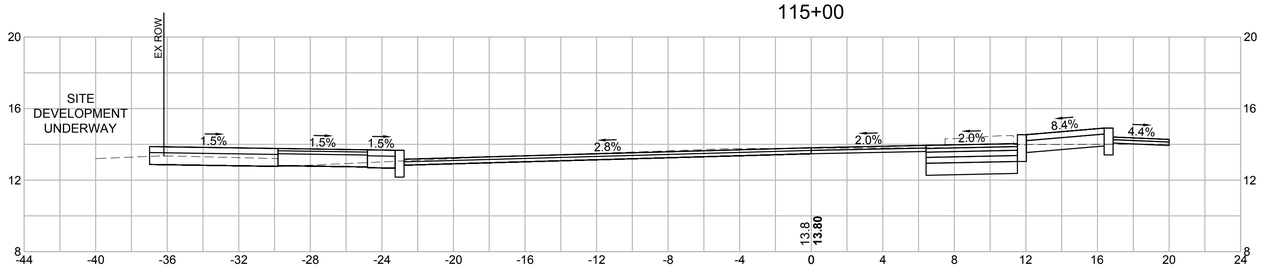
BROOKLINE
WASHINGTON ST. (ROUTE 9) & WALNUT ST.

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	XXXX	37	39
PROJECT FILE NO. 605110			

CRITICAL CROSS SECTIONS

11052_XSEC2.DWG Plotted on 22-Aug-2016 2:56 PM

115+00

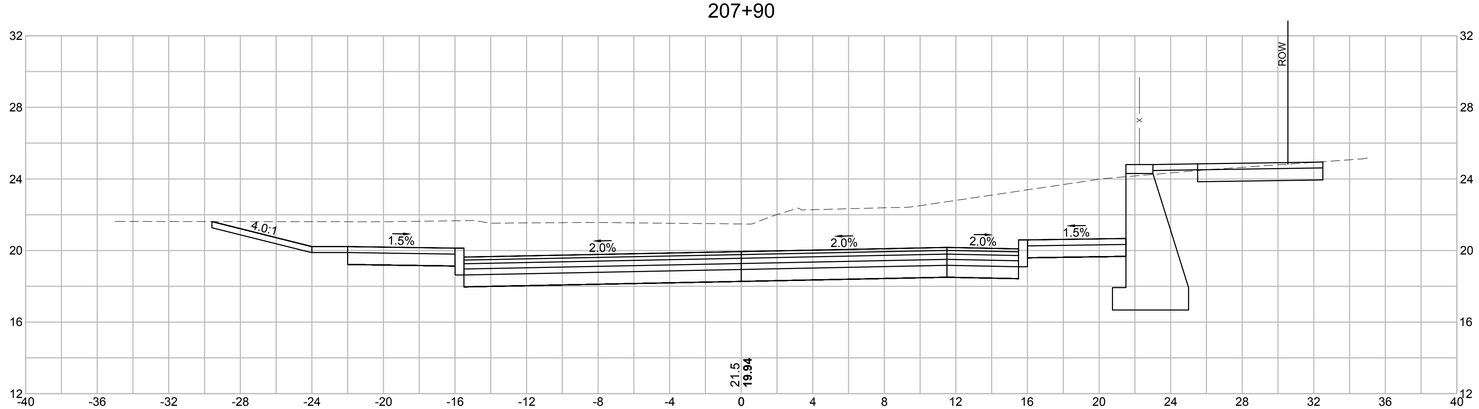


BROOKLINE
WASHINGTON ST. (ROUTE 9) & WALNUT ST.

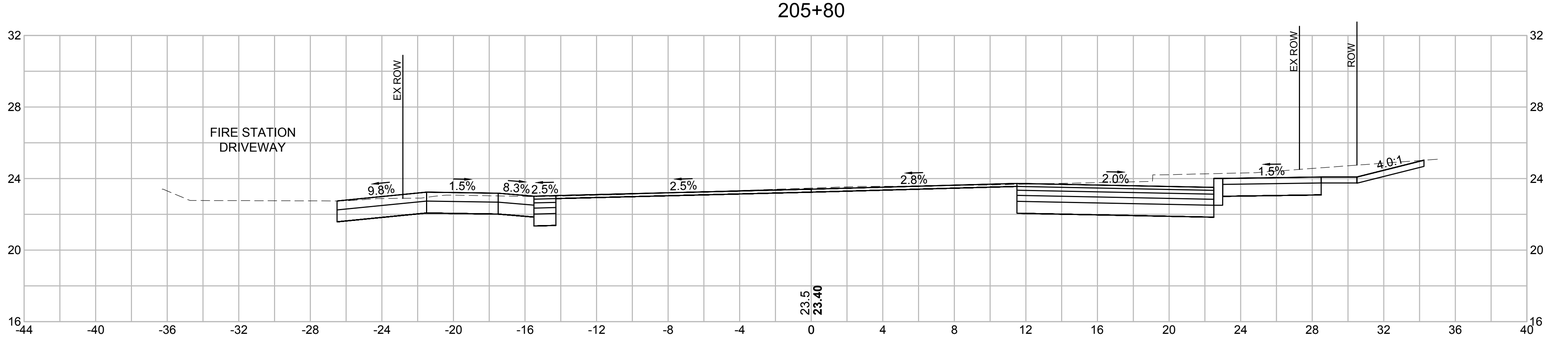
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	XXXX	38	39
PROJECT FILE NO. 605110			

CRITICAL CROSS SECTIONS

207+90



205+80



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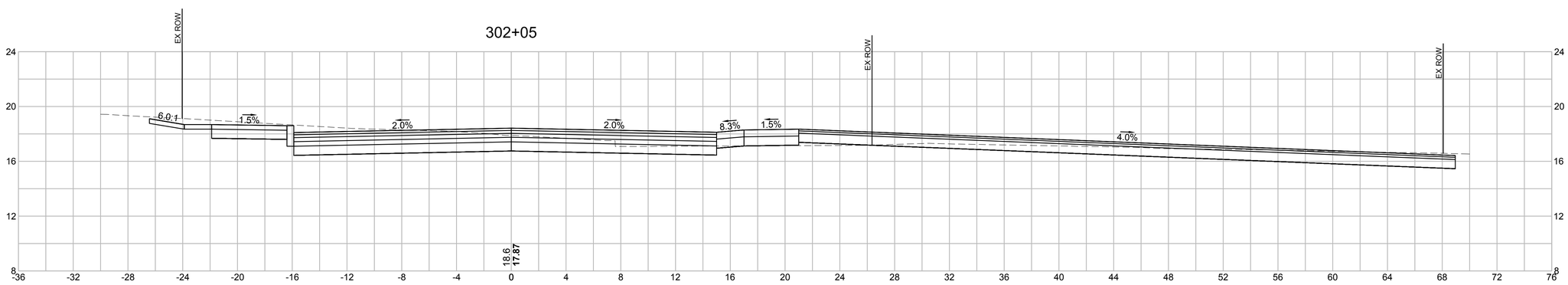
BROOKLINE
WASHINGTON ST. (ROUTE 9) & WALNUT ST.

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	XXXX	39	39
PROJECT FILE NO. 605110			

CRITICAL CROSS SECTIONS



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