

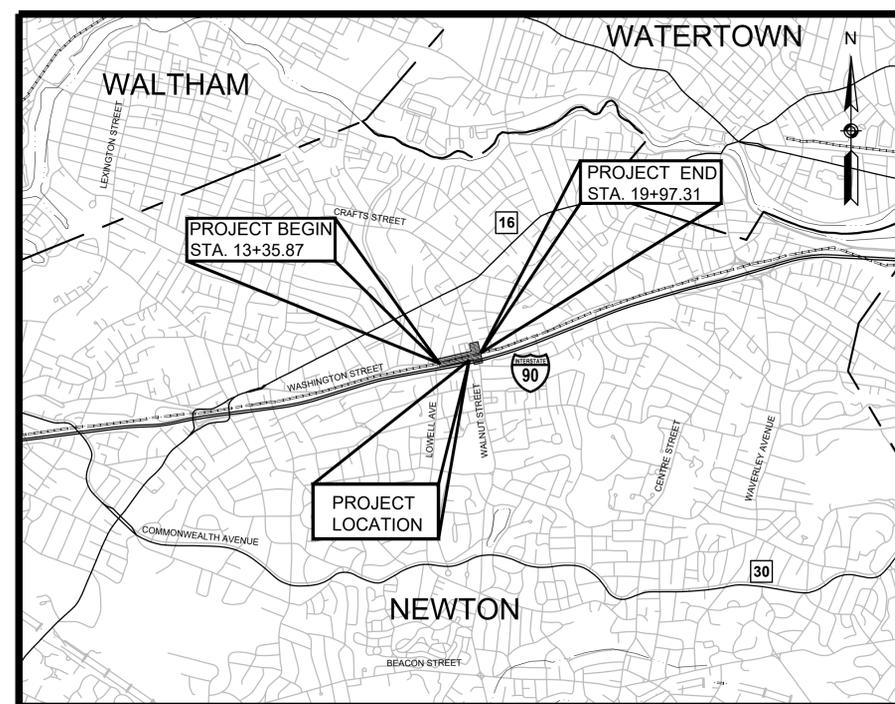
COMMONWEALTH OF MASSACHUSETTS

INTERSECTION IMPROVEMENTS OF WASHINGTON ST & WALNUT ST

IN THE CITY OF
 NEWTON
 MIDDLESEX COUNTY

PS&E SUBMISSION

INDEX	
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APRIL 5, 2019

THE MASSACHUSETTS HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES DATED 1988, AS AMENDED, THE SUPPLEMENTAL SPECIFICATIONS DATED JULY 1, 2015, THE OCTOBER 2017 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.

DATE	DESCRIPTION	REV #

CIVIL ENGINEER _____		DATE _____
 Vanasse Hangen Brustlin, Inc. 101 Walnut St., PO Box 9151 Watertown, MA 02472 617.924.1770 FAX 617.924.2286		
DESIGNED BY CRB	APPROVED BY ###	SHEET OF 1 22
DRAWN BY CRB/CTN	DFTG CHECKED BY JDT	WHB CAD FILE NAME 1326301.DWG
CHECKED BY SHK/PTN	DATE APRIL 5, 2019	JOB NO. 13263.01

GENERAL SYMBOLS

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

TRAFFIC SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
		CONTROLLER PHASE ACTUATED
		TRAFFIC SIGNAL HEAD (SIZE AS NOTED)
		WIRE LOOP DETECTOR (6' x 6' TYP UNLESS OTHERWISE SPECIFIED)
		VIDEO DETECTION CAMERA
		MICROWAVE DETECTOR
		PEDESTRIAN PUSH BUTTON, SIGN (DIRECTIONAL ARROW AS SHOWN) AND SADDLE
		EMERGENCY PREEMPTION CONFIRMATION STROBE LIGHT
		VEHICULAR SIGNAL HEAD
		VEHICULAR SIGNAL HEAD, OPTICALLY PROGRAMMED
		FLASHING BEACON
		PEDESTRIAN SIGNAL HEAD, (TYPE AS NOTED OR AS SPECIFIED)
		RAILROAD SIGNAL
		SIGNAL POST AND BASE (ALPHA-NUMERIC DESIGNATION NOTED)
		MAST ARM, SHAFT AND BASE (ARM LENGTH AS NOTED)
		HIGH MAST POLE OR TOWER
		SIGN AND POST
		SIGN AND POST (2 POSTS)
		MAST ARM WITH LUMINAIRE
		OPTICAL PRE-EMPTION DETECTOR
		CONTROL CABINET, GROUND MOUNTED
		CONTROL CABINET, POLE MOUNTED
		FLASHING BEACON CONTROL AND METER PEDESTAL
		LOAD CENTER ASSEMBLY
		PULL BOX 12"x12" (OR AS NOTED)
		ELECTRIC HANDHOLE 12"x24" (OR AS NOTED)
		TRAFFIC SIGNAL CONDUIT

PAVEMENT MARKINGS SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
		PAVEMENT ARROW - WHITE
		LEGEND "ONLY" - WHITE
		12" STOP LINE
		CROSSWALK (WIDTH AS NOTED)
		SOLID WHITE LINE (WIDTH AS NOTED)
		4" SOLID YELLOW LINE
		4" BROKEN WHITE LINE
		4" BROKEN YELLOW LINE
		4" DOTTED WHITE LINE
		4" DOTTED YELLOW LINE
		4" DOTTED WHITE LINE EXTENSION
		4" DOTTED YELLOW LINE EXTENSION
		4" DOUBLE WHITE LINE
		4" DOUBLE YELLOW LINE
		SOLID WHITE CHANNELIZATION LINE (6" OR 12" WIDTH AS NOTED)
		SHARROW (WHITE)
		BIKE LANE (WHITE)

GENERAL NOTES:

1. EXISTING CONDITIONS AND TOPOGRAPHICAL INFORMATION FROM AN ACTUAL FIELD SURVEY CONDUCTED BY CONTROL POINT ASSOCIATES, INC. IN JANUARY, 2018.
2. THE HORIZONTAL CONTROL IS BASED ON AN ASSUMED COORDINATE SYSTEM. ALL ELEVATION IS US FEET, REFERENCED TO THE NORTH AMERICA VERTICAL DATUM OF 1988 (NAVD88).
3. THE CONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND GRADES IN THE FIELD BEFORE COMMENCING WORK AND PROMPTLY NOTIFY THE ENGINEER OF ANY DISCREPANCIES.
4. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL 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.
5. DRAINAGE ELEVATIONS ARE PROVIDED FOR DESIGN PURPOSES ONLY. THE CONTRACTOR SHALL VERIFY BY TEST PIT, THE LOCATIONS OF EXISTING UTILITIES WHICH MAY CONFLICT WITH THE PROPOSED DRAINAGE DESIGN. ANY FIELD ADJUSTMENTS REQUIRED WILL BE MADE AS APPROVED OR DIRECTED BY THE ENGINEER. ONLY AFTER THE CONTRACTOR VERIFIES ELEVATIONS FOR THE CONSTRUCTABILITY OF THE DRAINAGE SYSTEM SHALL ANY STRUCTURES BE ORDERED. ANY FIELD ADJUSTMENTS TO LINE & GRADE UP TO A DEPTH OF 5' SHALL BE INCLUDED IN THE COST OF THE PIPE. PIPE EXCAVATION GREATER THAN 5' WILL BE PAID UNDER CLASS B TRENCH EXCAVATION.
6. THE CONTRACTOR SHALL VERIFY BY TEST PIT, THE LOCATIONS OF EXISTING UTILITIES WHICH MAY CONFLICT WITH PROPOSED CONDUIT AND SIGNAL EQUIPMENT. ANY FIELD ADJUSTMENTS REQUIRED WILL BE MADE AS APPROVED OR DIRECTED BY THE ENGINEER.
7. 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.
8. THE CONTRACTOR SHALL ALTER THE MASONRY OF THE TOP SECTION OF ALL EXISTING DRAINAGE AND SEWER 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.
9. THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE AND ANY OTHER PRIVATE UTILITIES BY THE UTILITY COMPANIES.
10. EXISTING UTILITY POLES WILL BE RELOCATED BY OTHERS IF REQUIRED.
11. TREES AND SHRUBS WITHIN THE LIMITS OF GRADING SHALL BE REMOVED ONLY UPON APPROVAL OF THE ENGINEER.
12. 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.
13. 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).
14. JOINTS BETWEEN NEW ASPHALT CONCRETE ROADWAY PAVEMENT AND SAWCUT EXISTING PAVEMENT SHALL BE SEALED WITH HMA JOINT SEALER AND BACKSANDDED.
15. AFTER MILLING OPERATIONS AND PRIOR TO PAVING THE SUPERPAVE INTERMEDIATE OR SURFACES COURSES THE ENGINEER SHALL EVALUATE THE MILLED SURFACE AND SHALL APPLY THE APPROPRIATE REPAIR METHOD IF REQUIRED.
16. EXISTING SIGNS WITHIN THE PROJECT LIMITS SHALL BE RETAINED UNLESS INDICATED OTHERWISE ON THE DRAWINGS.
17. IF SUITABLE, EXISTING GRANITE CURB & EDGING SHALL BE RE-USED IN THE PROPOSED WORK, EXCEPT CURVED STONES OF A DIFFERENT RADIUS THAN PROPOSED CURB.
18. EXISTING STATE, COUNTY, CITY, AND TOWN LOCATION LINES AND PRIVATE PROPERTY LINES HAVE BEEN ESTABLISHED FROM AVAILABLE INFORMATION AND THEIR EXACT LOCATIONS ARE NOT GUARANTEED.
19. PROPOSED BOUNDS SHALL BE PLACED BY A LICENSED PROFESSIONAL SURVEYOR. THE CONTRACTOR SHALL EXERCISE DUE CARE WHEN WORKING AROUND ALL PROPERTY BOUNDS WHICH ARE TO REMAIN. SHOULD ANY DAMAGE TO A BOUND RESULT FROM THE ACTIONS OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE THE BOUND REPLACED AND/OR REALIGNED BY A LICENSED PROFESSIONAL SURVEYOR AS DIRECTED BY THE ENGINEER AT NO ADDITIONAL COST.
20. DISPOSAL OF ALL SURPLUS MATERIAL SHALL BE AS APPROVED BY THE ENGINEER AND OWNER.
21. LATERAL DRAIN PIPES SHALL BE INSTALLED WITH A PITCH OF 0.01 FOOT PER FOOT (MINIMUM) UNLESS NOTED OTHERWISE ON THE PLANS.

GENERAL ABBREVIATIONS

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
CC	CEMENT CONCRETE
CCM	CEMENT CONCRETE MASONRY
CEM	CEMENT
CI	CURB INLET
CLF	CHAIN LINK FENCE
CL	CENTERLINE
CO.	COUNTY
CONC	CONCRETE
CONT	CONTINUOUS / CONTINUED
CONST	CONSTRUCTION
CR GR	CROWN GRADE
DIA	DIAMETER
DWY	DRIVEWAY
ELEV (or EL.)	ELEVATION
EMB	EMBANKMENT
EOP	EDGE OF PAVEMENT
EQ	EQUAL
EXIST (or EX)	EXISTING
EXC	EXCAVATION
FDN.	FOUNDATION
FDP	FULL DEPTH PAVEMENT
FLDSTN	FIELDSTONE
GAR	GARAGE
GD	GROUND
GRAN	GRANITE
GRAV	GRAVEL
GRD	GUARD
HMA	HOT MIX ASPHALT
HOR	HORIZONTAL
HWY	HIGHWAY
JCT	JUNCTION
LOAM	LOAM BORROW
LSA	LANDSCAPED AREA
LT	LEFT
MAHWL	MEAN AVERAGE HIGH WATER LINE
MAX	MAXIMUM
MB	MAILBOX
MHB	MASSACHUSETTS HIGHWAY BOUND
MIN	MINIMUM
MOD	MODIFIED
MSE	MECHANICALLY STABILIZED EARTH
NERR	NEW ENGLAND RAILROAD
NIC	NOT IN CONTRACT
NO.	NUMBER
NTS	NOT TO SCALE
O.C.	ON CENTER
O.D.	OUTSIDE DIAMETER
P.G.L.	PROFILE GRADE LINE
PREV	PREVIOUS/PREVIOUSLY
PROJ	PROJECT
PROP	PROPOSED
PSB	PLANTABLE SOIL BORROW
PVMT	PAVEMENT
R&D	REMOVE AND DISCARD
R&R	REMOVE AND RESET
R&S	REMOVE AND STACK
RD	ROAD
RDWY	ROADWAY
REB	REBUILD
REM	REMOVE
REMOD	REMODEL
RET	RETAIN
RET WALL	RETAINING WALL
ROW	RIGHT OF WAY
RR	RAILROAD
RT	RIGHT
SB	STONE BOUND
SHLD	SHOULDER
SHLO/S.H.L.O.	STATE HIGHWAY LAYOUT LINE

GENERAL ABBREVIATIONS (CONT)

ST	STREET
STA	STATION
STD	STANDARD
SW	SIDEWALK
TEMP	TEMPORARY
TC	TOP OF CURB
TOS	TOP OF SLOPE
TRANS	TRANSITION
TRM	TURF REINFORCING MAT
TYP	TYPICAL
VAR	VARIES
VERT	VERTICAL
WCR	WHEEL CHAIR RAMP
WP	WORKING POINT
X-SECT	CROSS SECTION

UTILITY ABBREVIATIONS

CB	CATCH BASIN
CBCI	CATCH BASIN WITH CURB INLET
CIP	CAST IRON PIPE
CIT	CHANGE IN TYPE
CMP	CORRUGATED METAL PIPE
CSP	CORRUGATED STEEL PIPE
DI	DROP INLET
DIP	DUCTILE IRON PIPE
FES	FLARED END SECTION
F&C	FRAME AND COVER
F&G	FRAME AND GRATE
GG	GAS GATE
GI	GUTTER INLET
GICI	GUTTER INLET W/ CURB INLET
GIP	GALVANIZED IRON PIPE
HDPE	HIGH DENSITY POLYETHYLENE PIPE
HDW	HEADWALL
HYD	HYDRANT
INV	INVERT
LB	LEACH BASIN
LP	LIGHT POLE
MH	MANHOLE
MW	MONITORING WELL
OHW	OVERHEAD WIRE
PVC	POLYVINYLCHLORIDE PIPE
PWW	PAVED WATER WAY
RCP	REINFORCED CONCRETE PIPE
SMH	SEWER MANHOLE
TSV&B	TAPPING SLEEVE VALVE & BOX
UP	UTILITY POLE
WG	WATER GATE
WIP	WROUGHT IRON PIPE
WM	WATER METER/WATER MAIN

ALIGNMENT & GRADING ABBREVIATIONS

CC	CENTER OF CURVE
HP	HIGH POINT
I.T.	INTERSECTION OF TANGENT
LP	LOW POINT
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVATURE
PI	POINT OF INTERSECTION
PNT	POINT
POC	POINT ON CURVE
POT	POINT ON TANGENT
PRC	POINT OF REVERSE CURVATURE
PT	POINT OF TANGENCY
LPT	ANGLE POINT
R	RADIUS OF CURVATURE
T	TANGENT DISTANCE OF CURVE
TAN	TANGENT
25.45	SPOT ELEVATION

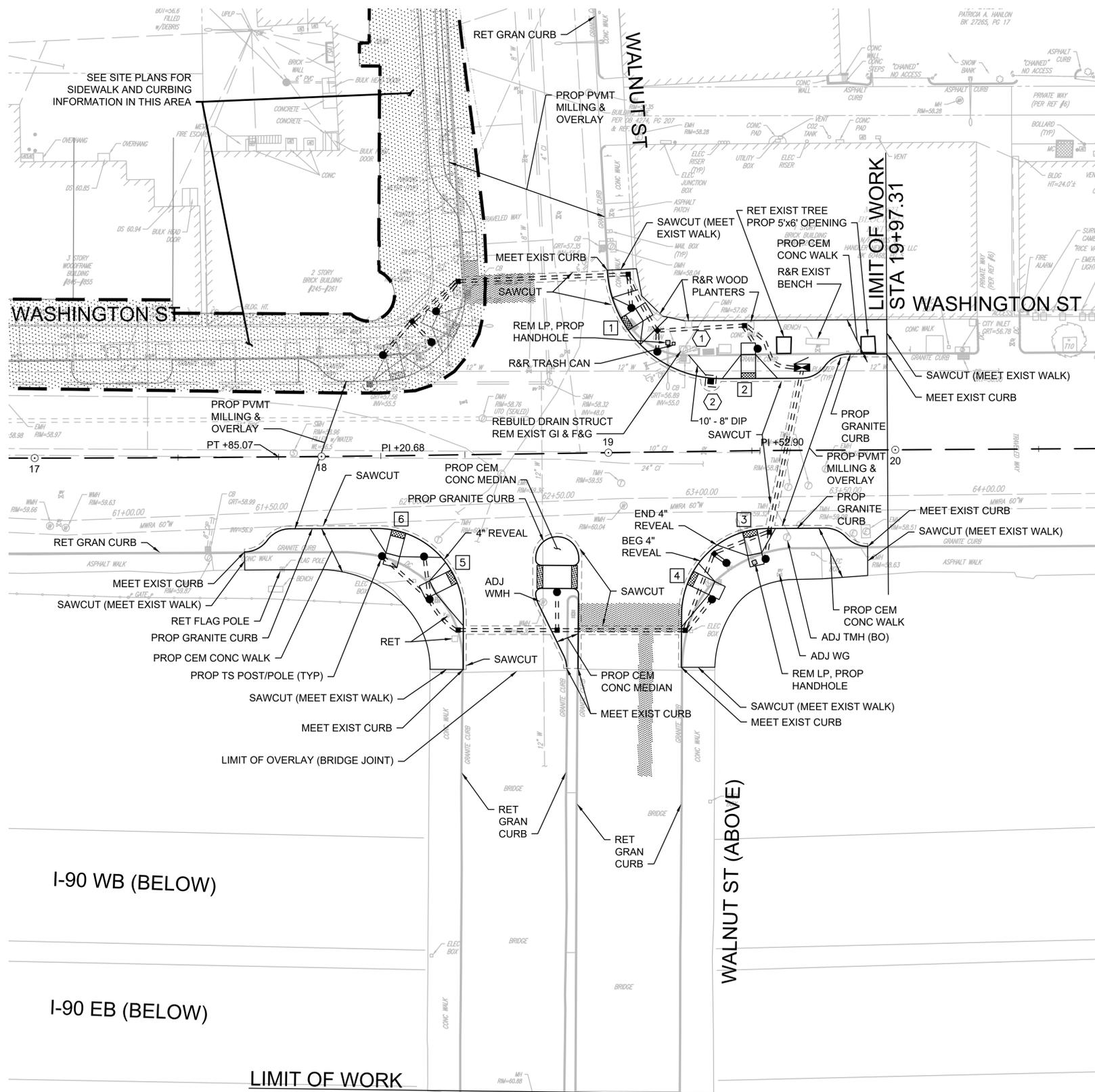
PROFILE ABBREVIATIONS

AD	ALGEBRAIC DIFFERENCE IN RATES OF GRADE
HSD	HORIZONTAL SIGHT DISTANCE
K	RATE OF VERTICAL CURVATURE
L	LENGTH OF CURVE
PVC	POINT OF VERTICAL CURVATURE
PVCC	POINT OF VERTICAL COMPOUND CURVATURE
PVI	POINT OF VERTICAL INTERSECTION
PVRC	POINT OF VERTICAL REVERSE CURVATURE
PVT	POINT OF VERTICAL TANGENCY
SSD	STOPPING SIGHT DISTANCE
VC	VERTICAL CURVE

TRAFFIC & SIGNAL ABBREVIATIONS

AADT	ANNUAL AVERAGE DAILY TRAFFIC
CAB.	CABINET
CCVE	CLOSED CIRCUIT VIDEO EQUIPMENT
COND	CONDUIT
CW	CROSS WALK
DW	STEADY DON'T WALK - PORTLAND ORANGE
DHV	DESIGN HOURLY VOLUME
FDW	FLASHING DON'T WALK
FR	FLASHING CIRCULAR RED
FRL	FLASHING RED LEFT ARROW
FRR	FLASHING RED RIGHT ARROW
FY	FLASHING CIRCULAR AMBER
FYL	FLASHING AMBER LEFT ARROW
FYR	FLASHING AMBER 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
HH	HAND HOLE
OL	OVERLAP
PB	PULL BOX
PED	PEDESTRIAN
PTZ	PAN, TILE, ZOOM
R	STEADY CIRCULAR RED
RL	STEADY RED LEFT ARROW
RR	STEADY RED RIGHT ARROW
SL	STOP LINE
T	TRUCK %
TS OR TR SIG	TRAFFIC SIGNAL
TSC	TRAFFIC SIGNAL CONDUIT
W	STEADY WALK
Y	STEADY CIRCULAR AMBER
YL	STEADY AMBER LEFT ARROW

SEE TRAFFIC PLANS ON SHEET 09 FOR LIMIT OF WORK ON WALNUT ST



LEGEND
 (#) DRAINAGE STRUCTURE #
 # WCR #

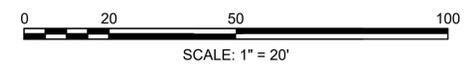
PAVEMENT NOTES

PROPOSED PAVEMENT MICROMILLING & OVERLAY
 SURFACE: 1 1/2" SUPERPAVE SURFACE COURSE - 12.5 (SSC 12.5)
 MILLING: 1 1/2" PAVEMENT MICROMILLING

PROPOSED CEM CONC WALK/WCR/MEDIAN
 SURFACE: 4" CEMENT CONCRETE
 AIR ENTRAINED 4000 PSI, 3/4", 610
 SUBBASE: 8" GRAVEL BORROW (TYPE b)

NOTE: SEE TRAFFIC PLANS FOR PROPOSED TRAFFIC SIGNAL EQUIPMENT DETAILS

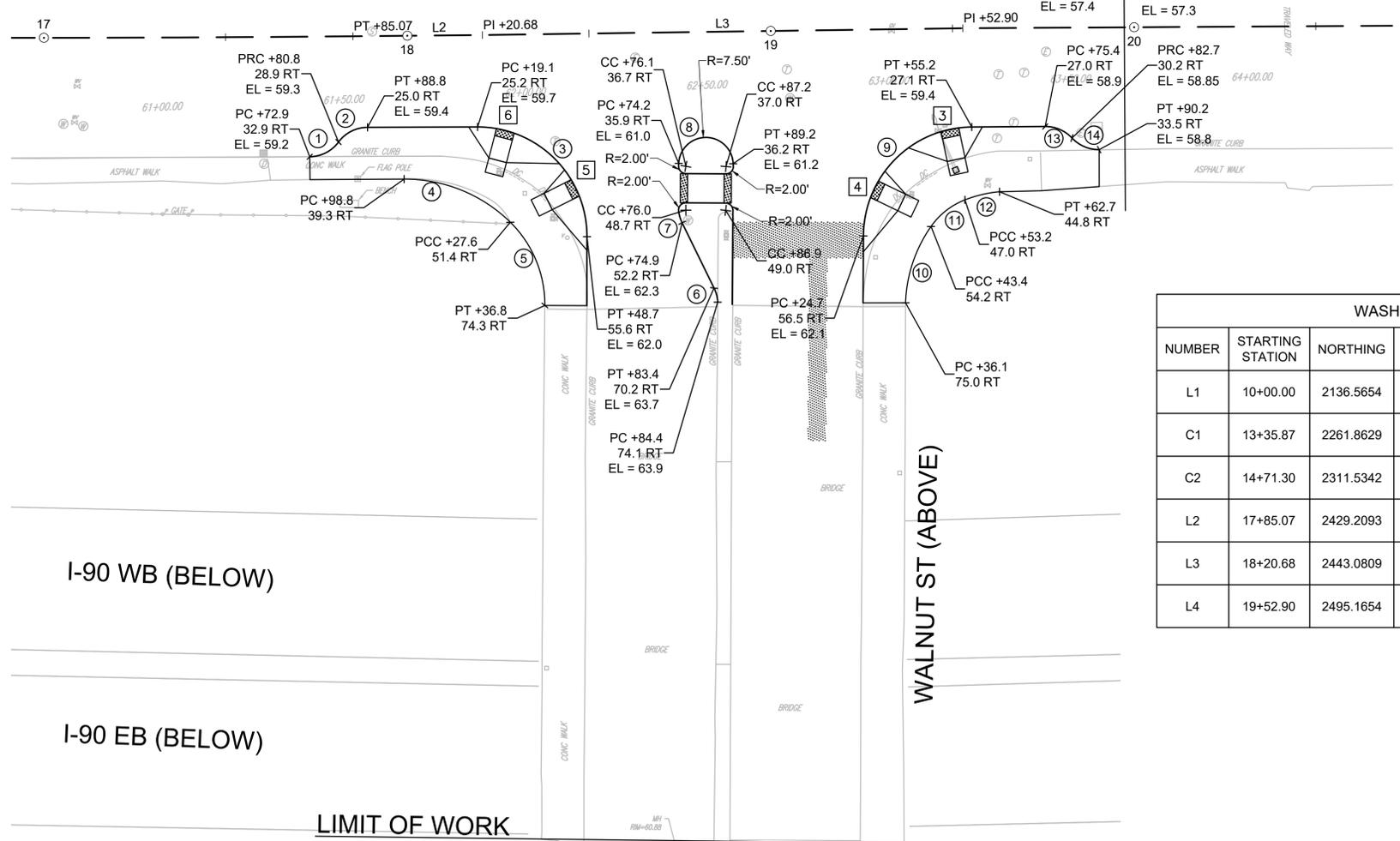
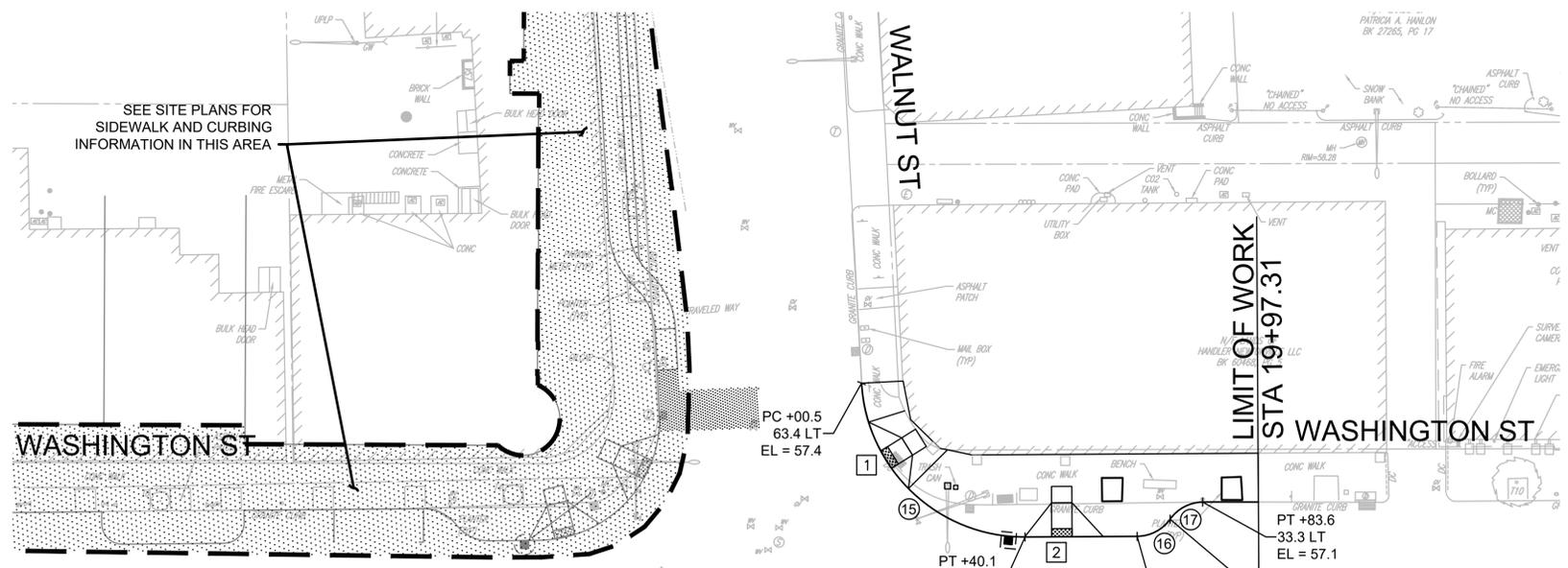
WASHINGTON STREET DRAINAGE STRUCTURE DATA						
NO.	TYPE	STATION	RIM ELEV.	INV. IN	INV. OUT	REMARKS
1	EXIST DMH	19+26.9 35.4 LT	57.67	(2) 55.00	EXIST	PROP F&C
2	GICI	19+36.0 24.4 LT	57.20		55.10	



SEE TRAFFIC PLANS ON SHEET 08 FOR LIMIT OF WORK ON WASHINGTON ST



SEE TRAFFIC PLANS ON SHEET 09 FOR LIMIT OF WORK ON WALNUT ST



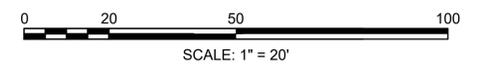
SEE TRAFFIC PLANS ON SHEET 08 FOR LIMIT OF WORK ON WASHINGTON ST

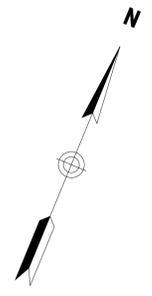
CURVE #	RADIUS	LENGTH	TANGENT	DELTA
1	10.00	9.22	4.967	52° 49' 36"
2	10.00	9.29	5.009	53° 12' 59"
3	30.00	47.28	30.159	90° 18' 08"
4	41.50	32.32	17.031	44° 37' 31"
5	31.50	25.37	13.418	46° 08' 37"
6	10.00	4.03	2.045	23° 06' 36"
7	10.00	3.38	1.704	19° 20' 39"
8	7.50	22.89	168.098	174° 53' 26"
9	30.00	46.76	29.636	89° 18' 05"
10	38.46	22.37	11.509	33° 19' 24"
11	20.47	12.03	6.195	33° 40' 04"
12	35.33	9.81	4.937	15° 54' 49"
13	10.00	8.26	4.379	47° 18' 03"
14	10.00	8.36	4.440	47° 52' 50"
15	40.00	60.73	37.952	86° 59' 24"
16	10.00	9.46	5.116	54° 11' 23"
17	10.00	9.38	5.066	53° 43' 48"

LEGEND

- # CURVE #
- # WCR #

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L1	10+00.00	2136.5654	7556.7501		N68°05'44"E 335.87'	13+35.87	2261.8629	7868.3687
C1	13+35.87	2261.8629	7868.3687	R=10000.00' Δ=0°46'33" L=135.43' T=67.72'		14+71.30	2311.5342	7994.3609
C2	14+71.30	2311.5342	7994.3609	R=10000.00' Δ=1°47'52" L=313.77' T=156.90'		17+85.07	2429.2093	8285.2179
L2	17+85.07	2429.2093	8285.2179		N67°04'26"E 35.61'	18+20.68	2443.0809	8318.0147
L3	18+20.68	2443.0809	8318.0147		N66°48'07"E 132.22'	19+52.90	2495.1654	8439.5488
L4	19+52.90	2495.1654	8439.5488		N67°16'28"E 447.10'	24+00.00	2667.8853	8851.9348





LOWELL AVE

WASHINGTON ST

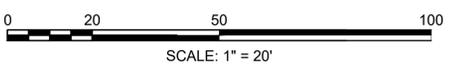
R&S EXIST CONTROLLER TIMER UNIT
PROP 80 CONTROLLER TIMER UNIT
PROP GPS SYNCHRONIZATION UNIT
IN EXIST CABINET

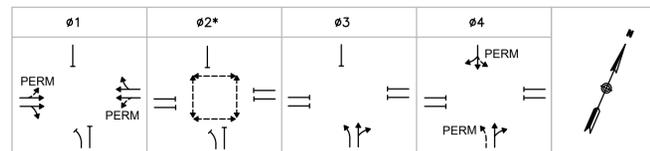
10 11 12 13

I-90 WB (BELOW)

I-90 EB (BELOW)

CONSTRUCTION NOTE
1. RETAIN ALL EXISTING SIGNS UNLESS OTHERWISE NOTED.





SEQUENCE AND TIMING FOR FULLY ACTUATED CONTROL (COORDINATED)

APPROACH	DIRECTION	HOUSING	1	2	3	4	5	6	7	8	9	10	11	12	FLASH
WASHINGTON ST	EB	A,B	G	Y	R	R	R	R	R	R	R	R	R	R	FY
WASHINGTON ST	WB	C,D	G	Y	R	R	R	R	R	R	R	R	R	R	FY
LOWELL AVE	NB	E	R	R	R	R	R	R	G	Y	R	G	Y	R	FR
LOWELL AVE	NB	F	R	R	R	R	R	R	G	Y	R	G	Y	R	FR
LOWELL AVE	SB	G,H	R	R	R	R	R	R	R	R	R	G	Y	R	FR
PEDESTRIAN X-ING	EB-WB	P1-P8	DW	DW	DW	W	FDW	DW	OUT						

TIMING IN SECONDS

MINIMUM GREEN (INITIAL)	15					6			8						
PASSAGE TIME (VEHICLE)	4					2			3						
MAXIMUM 1	45					10			35						
MAXIMUM 2	45					10			35						
YELLOW CLEARANCE		4						3					4		
RED CLEARANCE				1						2				1	
PEDESTRIAN WALK					7										
PEDESTRIAN CLEARANCE						20									
DETECTOR MEMORY			LOCK			LOCK			NON-LOCK					NON-LOCK	
RECALL			MAX			OFF			OFF					OFF	

CONFLICT FLASH
OPERATION ONLY

COORDINATION DATA			COORDINATION PHASE SPLIT TIMES			
TIMING PLAN	CYCLE	OFFSET	Ø1	Ø2	Ø3	Ø4
1/1/1 M-F 7AM-9AM	100	91	47	15	13	25
2/1/1 M-F 4PM-6PM	100	91	47	15	13	25
MODE			COORD Ø			

- NOTES:
1. AUTOMATIC FLASHING OPERATION PER 2009 M.U.T.C.D., AS AMENDED.
 2. * UPON PEDESTRIAN PUSH BUTTON ACTUATION
 3. PERM = PERMISSIVE
 4. MAXIMUM 1 = NORMAL OPERATION
 5. MAXIMUM 2 = NOT USED
 6. STOP AND GO OPERATION FOR 24 HOURS PER DAY. FLASHING OPERATION FOR EMERGENCY ONLY.
 7. DURING PEDESTRIAN INTERVAL, FDW THROUGH YELLOW OPERATION SHALL BE IN EFFECT.
 8. INHIBIT MAX TERMINATION SHALL BE IN EFFECT DURING COORDINATION.
 9. WHEN PEDESTRIAN PHASE IS ACTUATED THAT CANNOT BE ACCOMMODATED IN THE GIVEN SPLIT TIME, THE INTERSECTION SHALL DROP OUT OF 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.

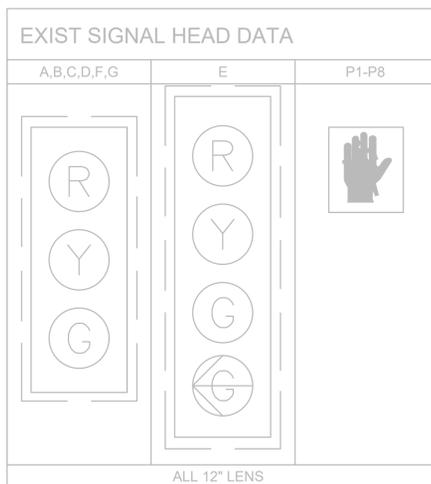
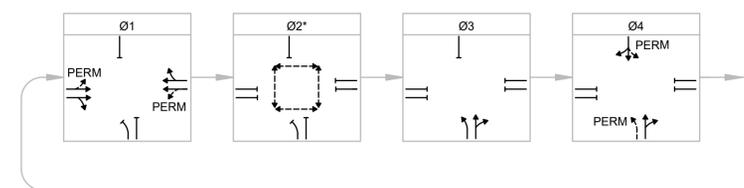
LIST OF MAJOR ITEMS REQUIRED

WASHINGTON STREET AT LOWELL AVENUE

PAY ITEM	QUANTITY	DESCRIPTION
816.02	1	8Ø CONTROLLER TIMER UNIT
	1	GPS SYNCHRONIZATION UNIT

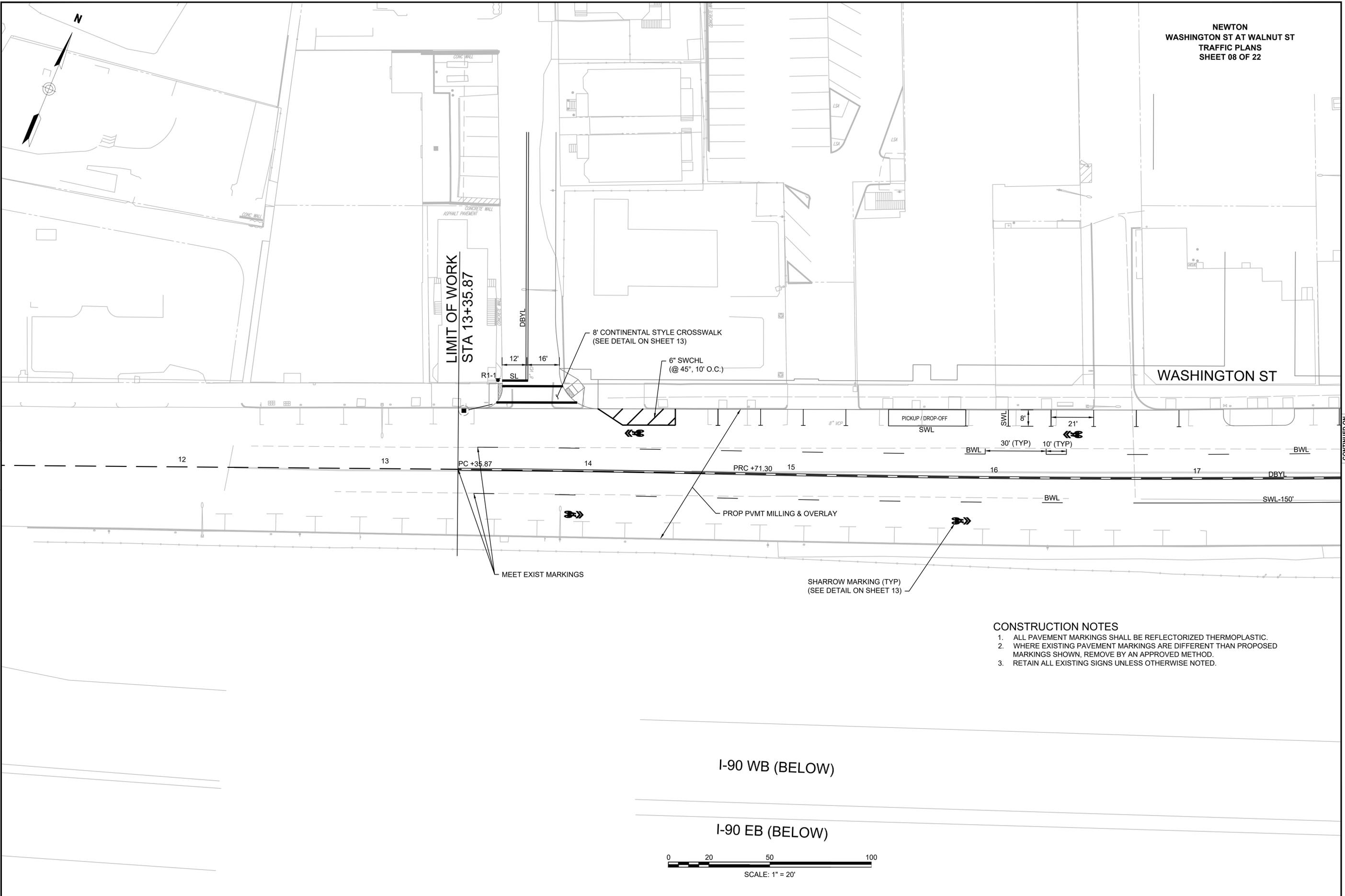
PLUS NECESSARY DUCT, CABLE, LABOR, MISCELLANEOUS MATERIAL AND EQUIPMENT TO COMPLETE THE INSTALLATION AND PROVIDE AN OPERATING TRAFFIC CONTROL SIGNAL.

EXIST PREFERENTIAL PHASE SEQUENCE



PROP CONTROLLER COORDINATION SETUP

SET-UP	CODE	0	1	2	3
OPERATION	1	FREE	AUTO	MANUAL	---
MODE (NORMAL)	0	PERM	YIELD	PM YLD	PM OMT
MAXIMUM	0	M INH	MAX 1	MAX 2	---
CORRECTION	2	DWELL	MX DW	SH WAY	SW+
OFFSET	1	BEGIN	END	---	---
FORCE	1	PLAN	CYCLE	---	---



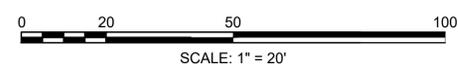
CONTINUED ON
SHEET 08

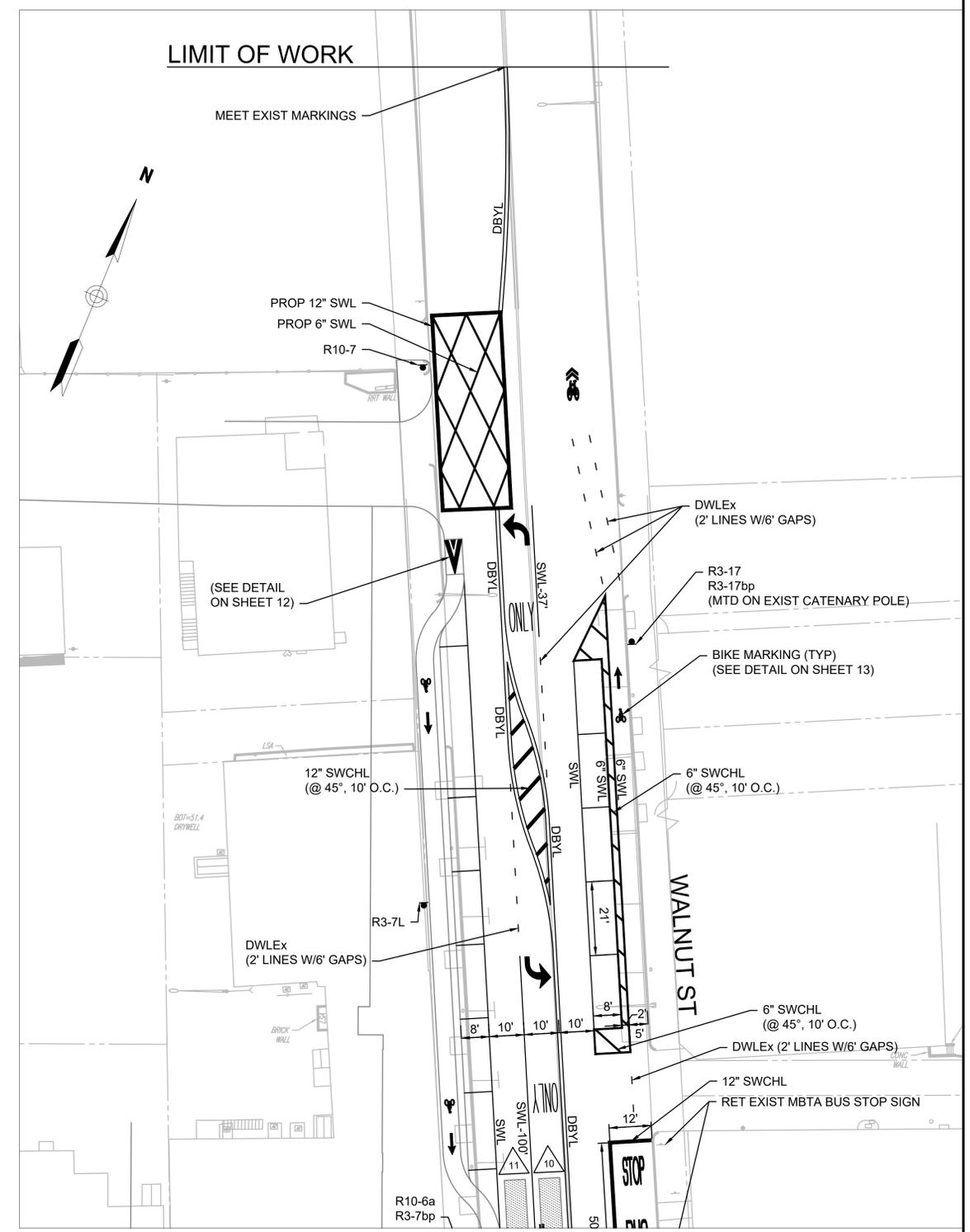
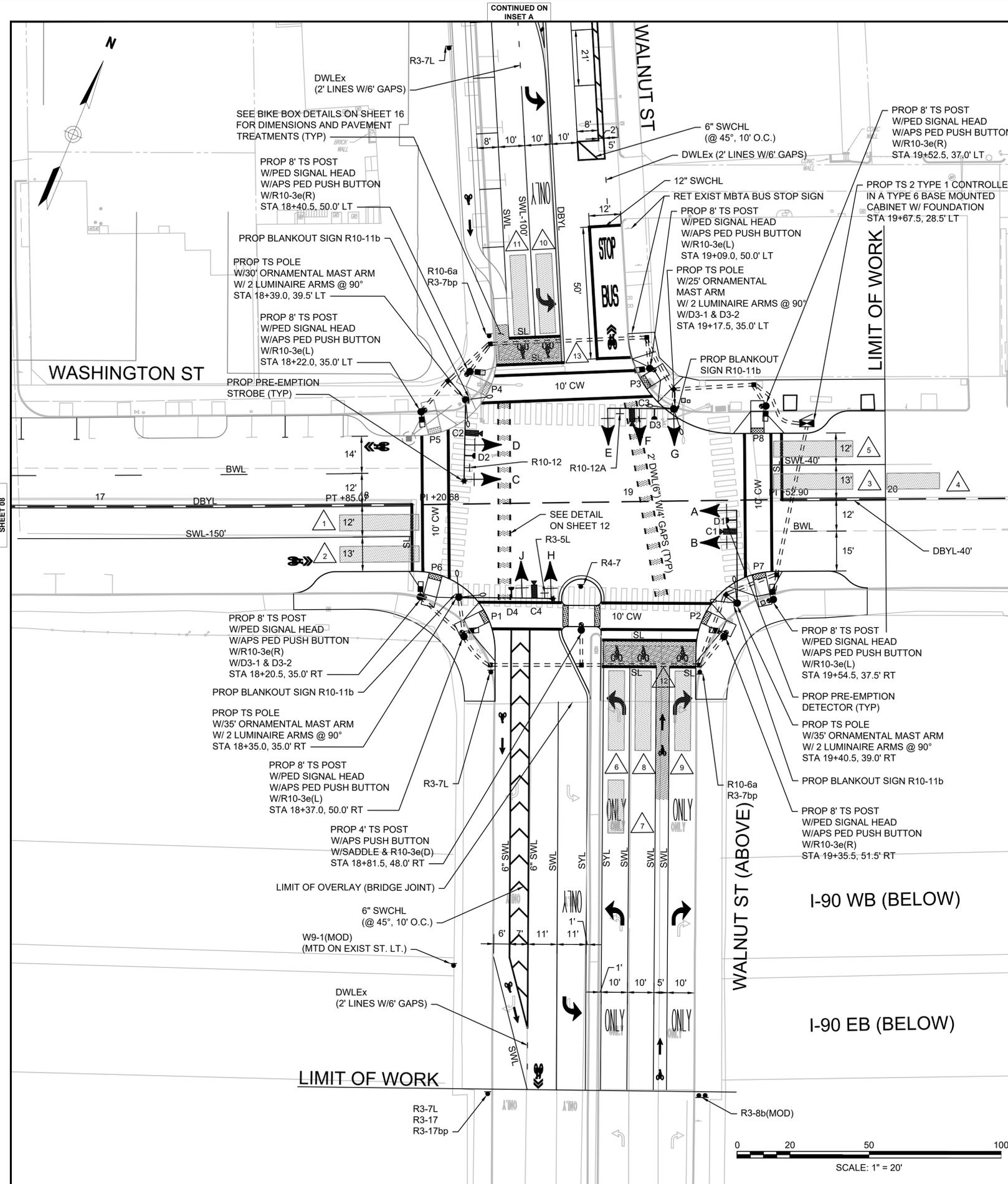
CONTINUED ON
SHEET 09

- CONSTRUCTION NOTES**
1. ALL PAVEMENT MARKINGS SHALL BE REFLECTORIZED THERMOPLASTIC.
 2. WHERE EXISTING PAVEMENT MARKINGS ARE DIFFERENT THAN PROPOSED MARKINGS SHOWN, REMOVE BY AN APPROVED METHOD.
 3. RETAIN ALL EXISTING SIGNS UNLESS OTHERWISE NOTED.

I-90 WB (BELOW)

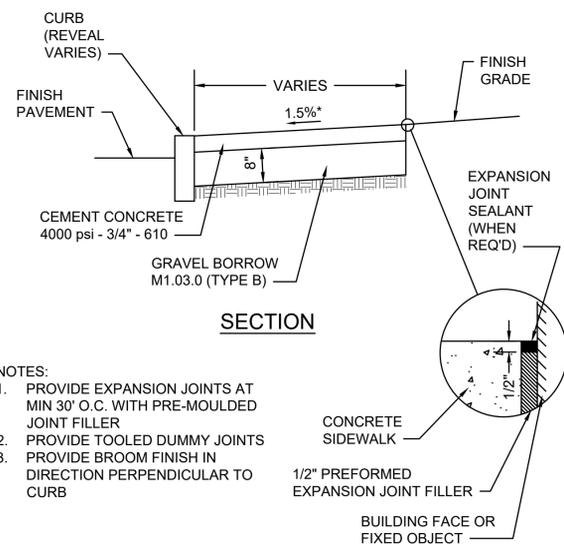
I-90 EB (BELOW)





CONSTRUCTION NOTES

1. SEE SHEET 10 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, UNLESS OTHERWISE NOTED.
5. WHERE EXISTING PAVEMENT MARKINGS ARE DIFFERENT THAN PROPOSED MARKINGS SHOWN, REMOVE BY AN APPROVED METHOD.
6. TRAFFIC SIGNAL FOUNDATIONS TO BE LOCATED BY STATION AND OFFSET.
7. THE TOP OF ALL MAST ARM FOUNDATIONS IN SIDEWALK AREAS SHALL BE LOCATED FLUSH WITH FINISH GRADE.
8. RETAIN ALL EXISTING SIGNS UNLESS OTHERWISE NOTED.
9. CONTRACTOR SHALL COORDINATE PARKING METER RELOCATION WITH THE CITY OF NEWTON.

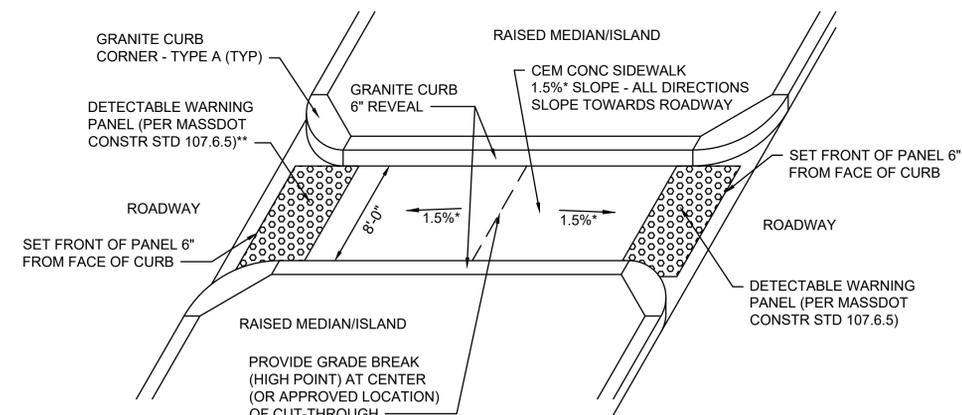


- NOTES:
1. PROVIDE EXPANSION JOINTS AT MIN 30' O.C. WITH PRE-MOULDED JOINT FILLER
 2. PROVIDE TOOLED DUMMY JOINTS
 3. PROVIDE BROOM FINISH IN DIRECTION PERPENDICULAR TO CURB

* TOLERANCE FOR CONSTRUCTION ±0.5%

CEMENT CONCRETE SIDEWALK

SCALE: N.T.S.



NOTES:

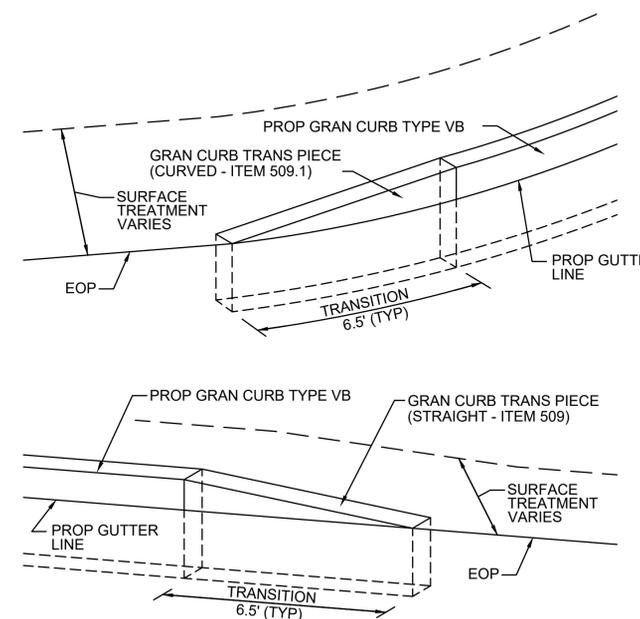
1. *ALL SLOPES ARE MAXIMUMS, TOLERANCE FOR CONSTRUCTION ±0.5%

MEDIAN CUT-THROUGH DETAIL

SCALE: N.T.S.

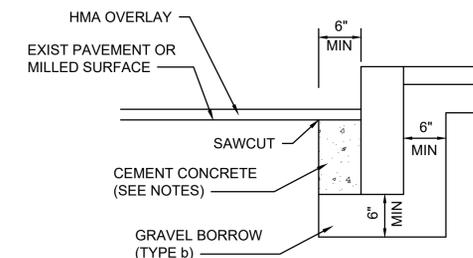
DWG: WALK-03

DATE: AUGUST 2013



GRANITE CURB TRANSITION PIECE

SCALE: N.T.S.

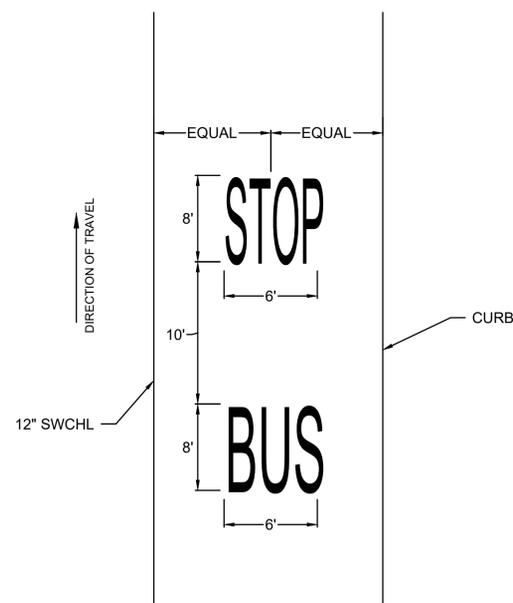


NOTES:

1. CONCRETE SHALL BE INCLUDED IN PRICE BID FOR GRANITE CURB.
2. SAWCUT 6" FROM CURB LINE AND REMOVE EXISTING PAVEMENT AND GRAVEL. REPLACE WITH CEMENT CONCRETE.
3. ANY DESIGNATED CEMENT CONCRETE THAT IS ACCEPTABLE UNDER SECTION M4 OF THE STANDARD SPECIFICATIONS MAY BE USED. ALL TEST REQUIREMENTS ARE WAIVED. HOT MIX ASPHALT SHALL NOT BE USED AS A SUBSTITUTE.

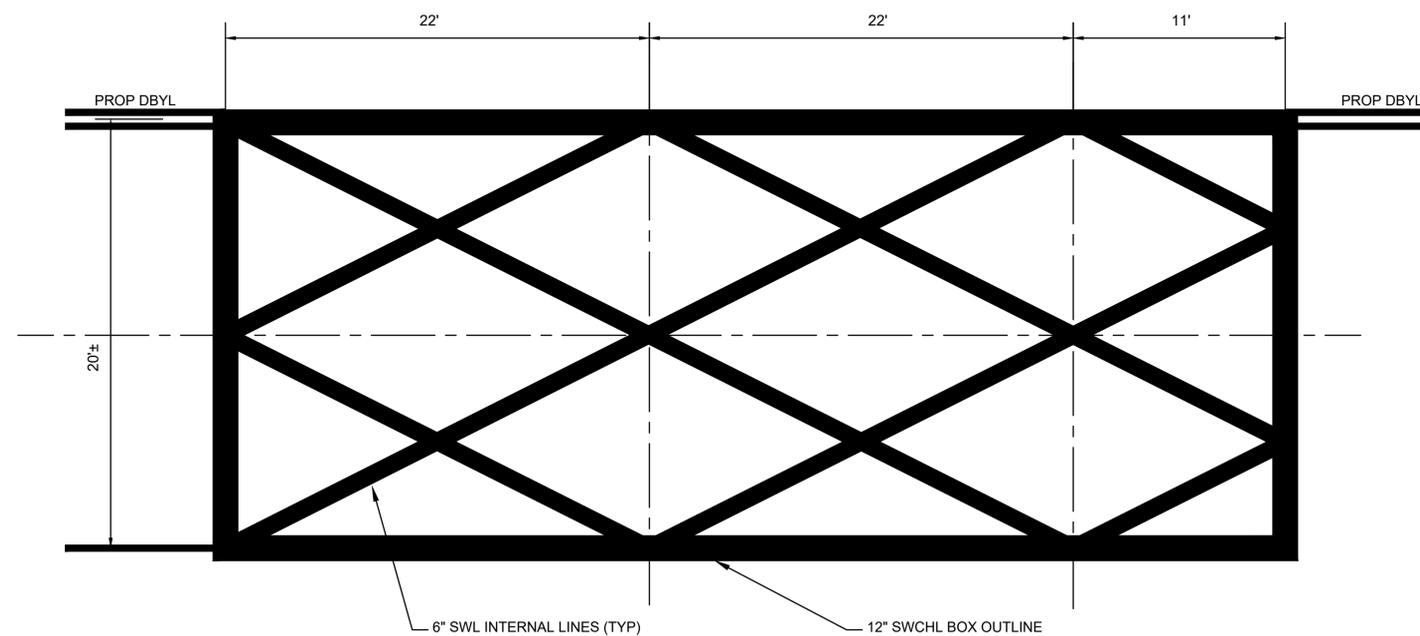
GRANITE CURB IN EXISTING PAVEMENT - WITH OVERLAY

SCALE: N.T.S.



NOTES:
1. PAVEMENT MARKINGS AS PER MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD)
2. ALL PAVEMENT MARKINGS SHALL BE REFLECTORIZED THERMOPLASTIC.

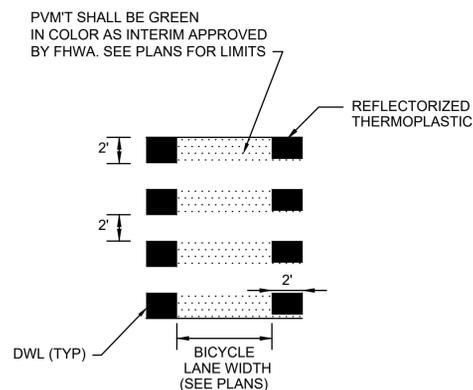
TEMP SHARED BUS-BIKE LANE MARKINGS
SCALE: N.T.S.



NOTE:
ALL 12" REFLECTORIZED THERMOPLASTIC LINES SHALL BE APPLIED IN ONE APPLICATION, NO COMBINATION OF LINES (TWO - 6" LINES) WILL BE ACCEPTED.

DO NOT BLOCK INTERSECTION MARKINGS

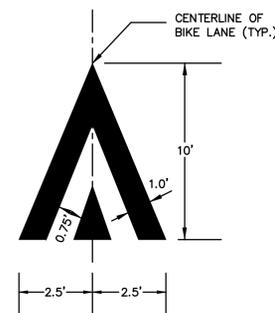
SCALE: NTS



NOTE:
1. DWL SHALL BE APPLIED IN TWO 12" APPLICATIONS.

BICYCLE CROSSING

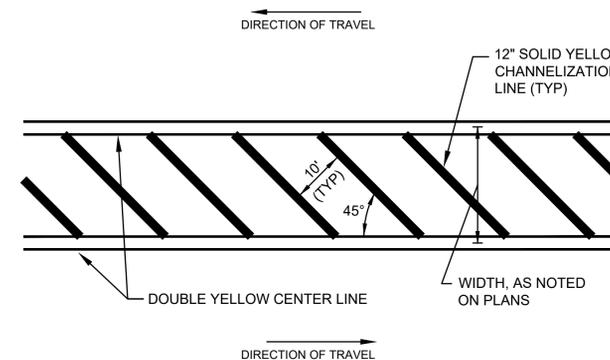
SCALE: N.T.S.



NOTES:
1. MARKINGS SHALL BE REFLECTORIZED PREFORMED THERMOPLASTIC.

BIKE LANE RAISED CROSSING MARKING

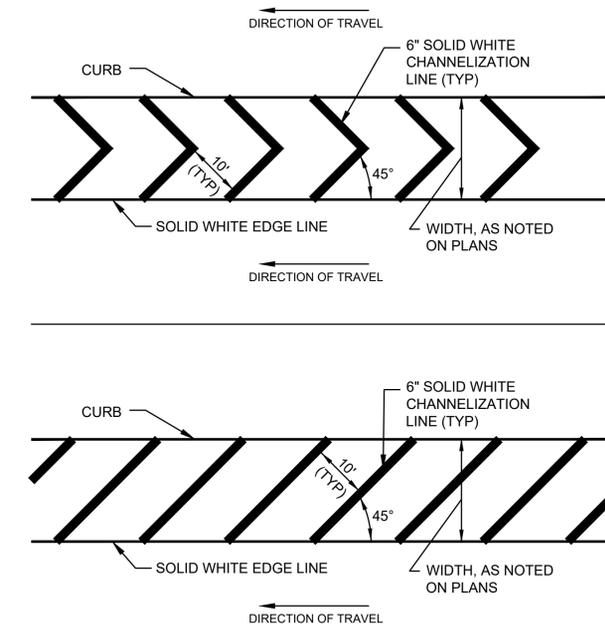
SCALE: N.T.S.



NOTES:
1. ALL 12" LINES SHALL BE APPLIED IN ONE APPLICATION, NO COMBINATION OF LINES (e.g. TWO - 6" LINES) WILL BE ACCEPTED.

GORE MARKINGS - MEDIAN FOR ROADWAYS 40MPH OR LESS

SCALE: NTS



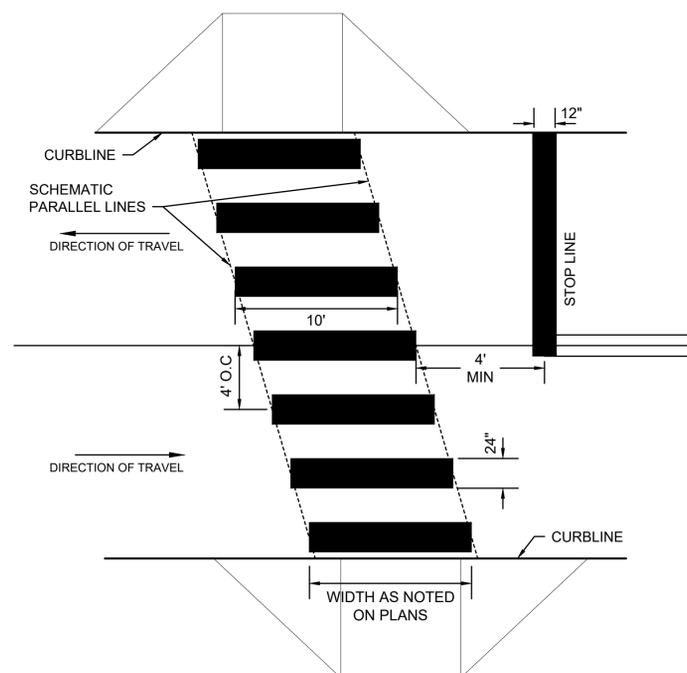
NOTES:
1. ALL 12" LINES SHALL BE APPLIED IN ONE APPLICATION, NO COMBINATION OF LINES (e.g. TWO - 6" LINES) WILL BE ACCEPTED.

CHANNELIZED MARKINGS FOR ROADWAYS 40MPH OR LESS

SCALE: NTS

DWG: PM-15

DATE: OCT 2015



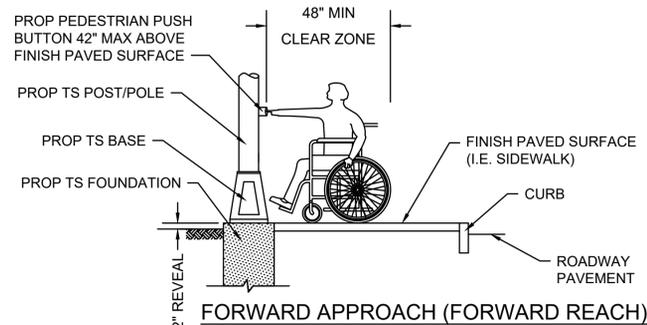
- NOTES:**
1. ALL EXISTING CROSSWALK MARKINGS SHALL BE FULLY ERADICATED BY APPROVED METHOD PRIOR TO THE APPLICATION OF PROPOSED MARKINGS.
 2. ALL 24" THERMOPLASTIC LINES SHALL BE APPLIED IN TWO 12" APPLICATIONS.
 3. LAYOUT OF CROSSWALKS SHALL BE ORIENTATED IN THE DIRECTION OF TRAVEL AND LOCATED OUTSIDE OF THE WHEEL PATH OF VEHICLES. LAYOUT SHALL BE APPROVED BY THE CITY OF NEWTON PRIOR TO APPLICATION OF THERMOPLASTIC.
 4. ALL CROSSWALKS INSTALLED SHALL CONFORM TO THE RELEVANT PROVISIONS OF THE MASSACHUSETTS HIGHWAY DEPARTMENT "STANDARD SPECIFICATION FOR HIGHWAY AND BRIDGES" DATED 1988, SECTION 860 FOR REFLECTORIZED LINE (THERMO-PLASTIC) & MATERIAL M7.01.20, LATEST REVISIONS.

CONTINENTAL-STYLE CROSSWALK - 24" WIDE LINES

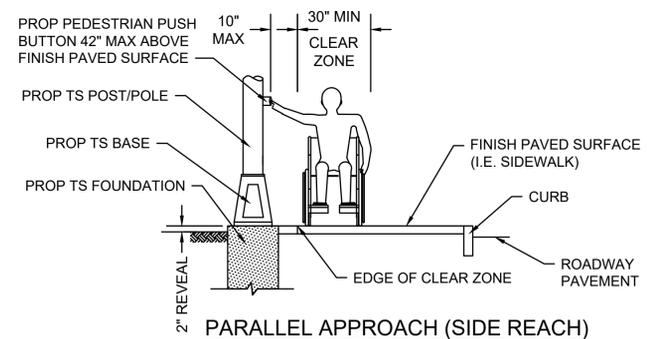
SCALE: N.T.S.

DWG: PM-27

DATE: MAY 2017



FORWARD APPROACH (FORWARD REACH)



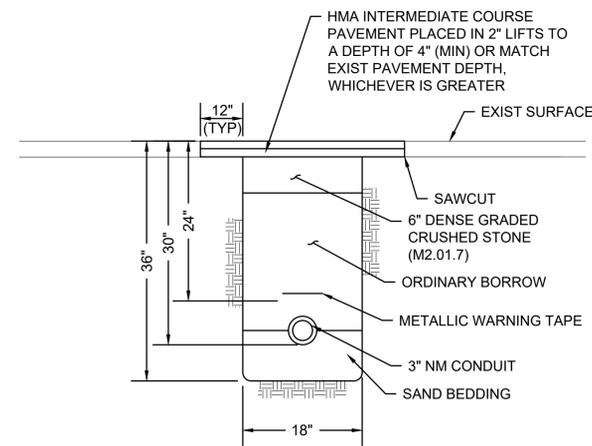
PARALLEL APPROACH (SIDE REACH)

PEDESTRIAN PUSH BUTTON CLEAR ZONE

SCALE: N.T.S.

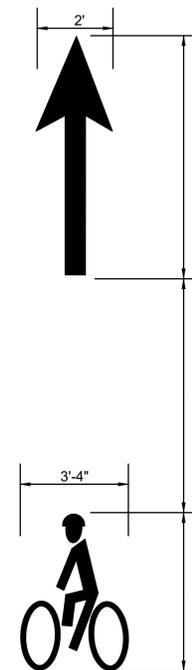
DWG: PM-10

DATE: APRIL 2013



TRAFFIC SIGNAL CONDUIT CROSSING ROADWAY/DRIVEWAY

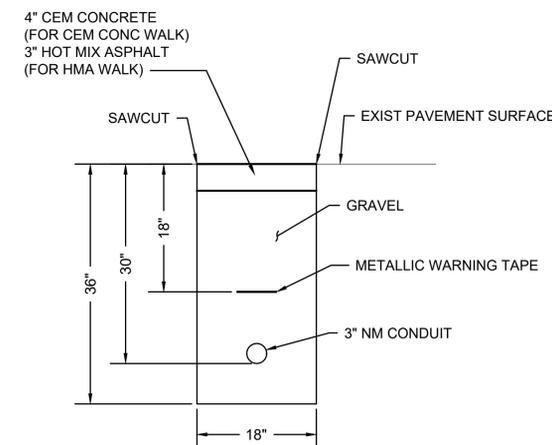
SCALE: N.T.S.



- NOTE:**
1. SEE MUTCD FIGURE 9C-6 FOR MORE INFORMATION.
 2. BIKE LANE MARKINGS SHALL BE REFLECTORIZED PREFORMED THERMOPLASTIC.

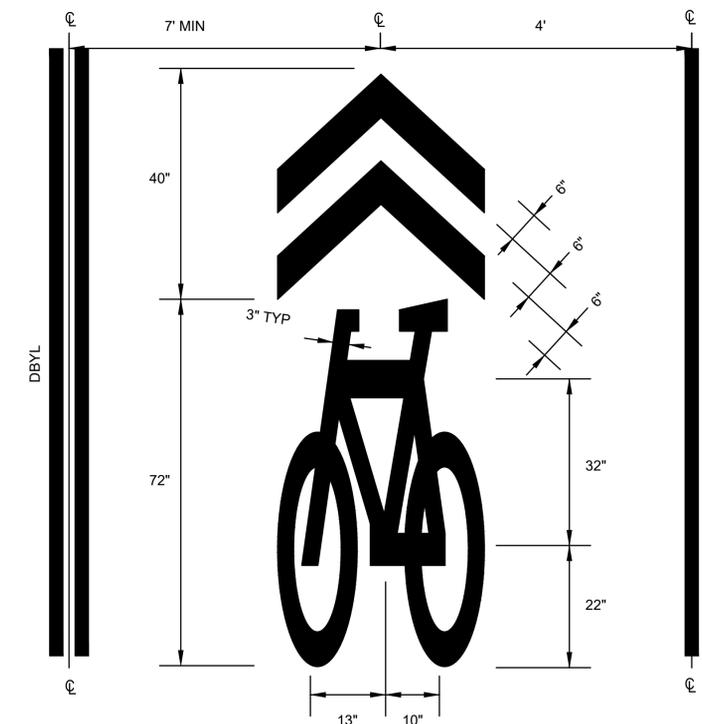
BIKE LANE PAVEMENT MARKINGS

SCALE: N.T.S.



CONDUIT IN SIDEWALK

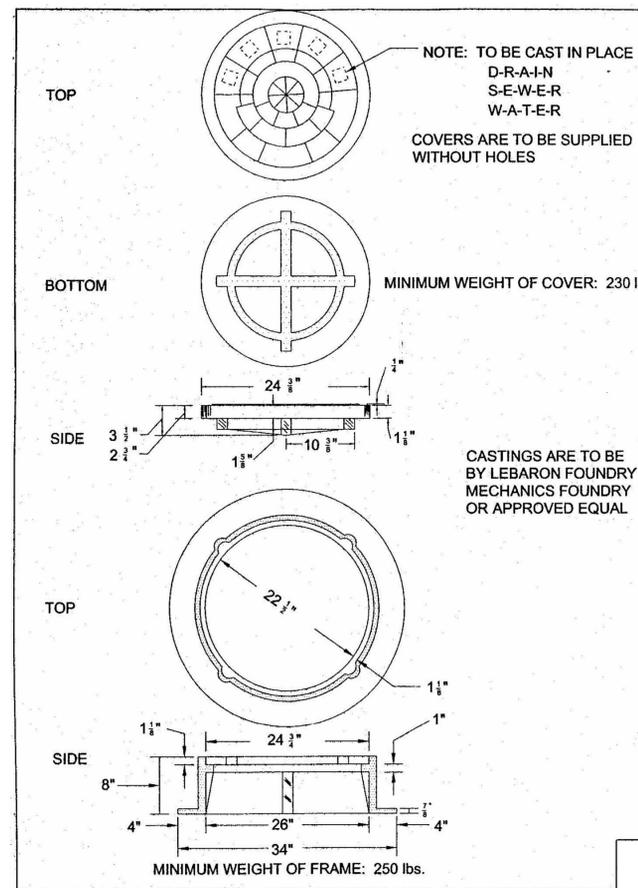
SCALE: N.T.S.



- NOTES:**
1. SEE MUTCD FIGURE 9C-9 FOR MORE INFORMATION.
 2. SHARROW MARKINGS SHALL BE REFLECTORIZED PREFORMED THERMOPLASTIC.

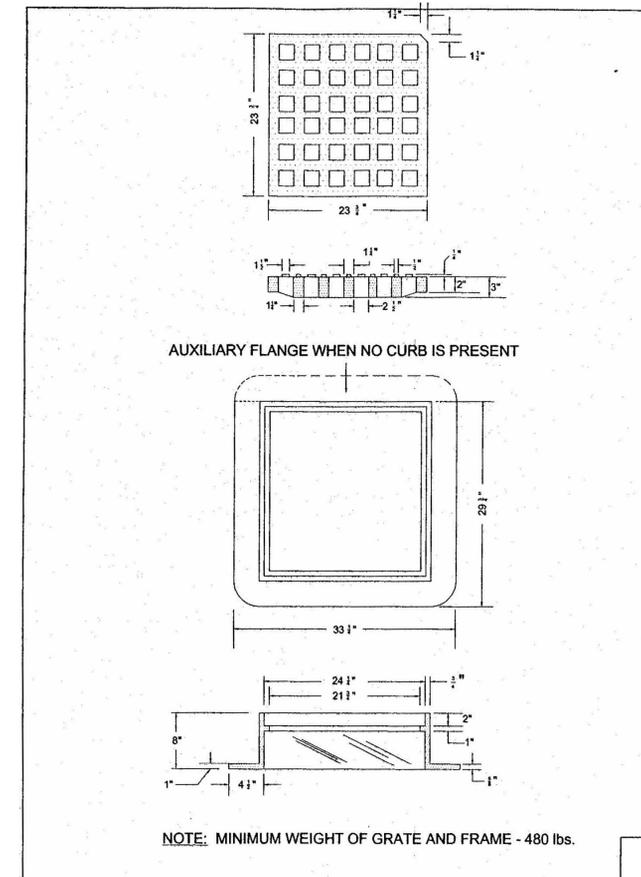
SHARROW PAVEMENT MARKING LAYOUT

SCALE: N.T.S.



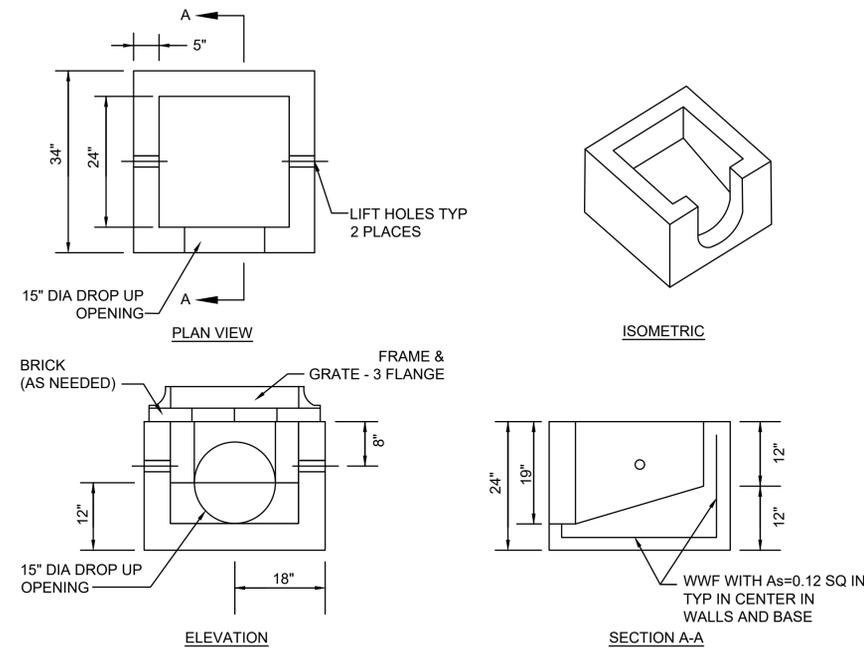
MANHOLE FRAME AND COVER - MUNICIPAL STANDARD

SCALE: NTS



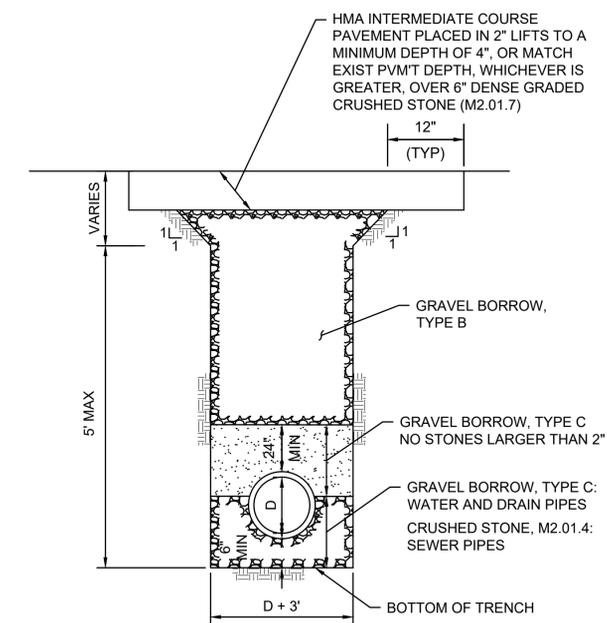
CATCH BASIN FRAME AND GRATE - MUNICIPAL STANDARD

SCALE: NTS



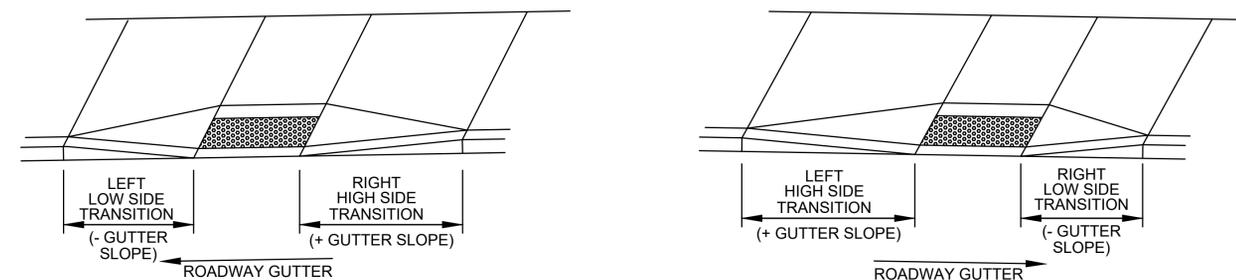
GUTTER INLET

SCALE: N.T.S.



TRENCH DETAIL

SCALE: N.T.S.



ROADWAY GUTTER SLOpes EXPLANATORY DIAGRAM FOR WHEELCHAIR RAMP DATA CHARTS

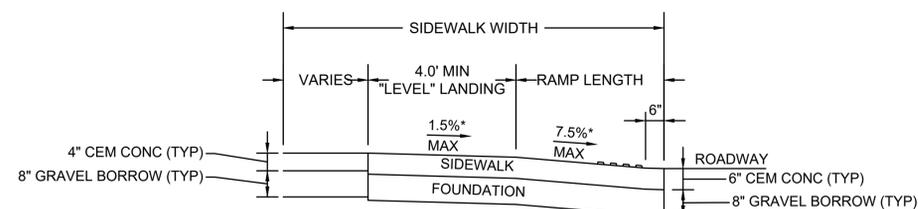
SCALE: N.T.S.

WHEELCHAIR RAMP DATA												
NO.	LOCATION (REF POINT)	SIDEWALK WIDTH	RAMP WIDTH	RAMP LENGTH	LEFT SIDE			RIGHT SIDE				
					ROADWAY GUTTER	REVEAL	TRANS	OPENING ELEV	ROADWAY GUTTER	REVEAL	TRANS	OPENING ELEV
2	19+49.0 25.0' LT	20.2'	5.0'	8.3'	-0.28%	6"	6'-6"	57.32	0.59%	6"	7'-8"	57.35
3	19+49.1 27.8' RT	19.7'	5.0'	8.3'	-2.51%	6"	6'-6"	59.49	4.70%	3"	10'-0"	59.64
4	19+28.1 43.9' RT	19.0'	5.0'	8.3'	-6.06%	3"	3'-3"	60.87	8.01%	6"	15'-0"	61.20
5	18+45.6 42.2' RT	20.4'	5.0'	8.3'	7.71%	6"	15'-0"	61.15	-3.31%	3"	3'-3"	60.89
6	18+26.7 26.3' RT	20.5'	5.0'	8.3'	6.52%	3"	15'-0"	59.74	0.05%	6"	7'-8"	59.70

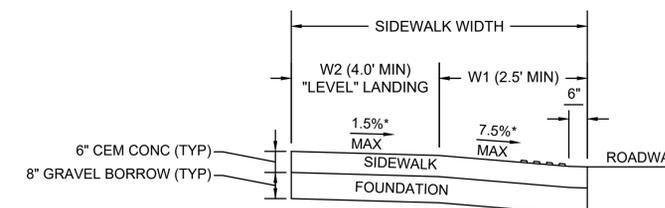
NOTES:
1. NEGATIVE (-) ROADWAY GUTTER MAX DENOTES A LOW SIDE TRANSITION.

WHEELCHAIR RAMP DATA													
NO.	LOCATION (REF POINT)	SIDEWALK WIDTH	RAMP WIDTH	W1	W2	LEFT SIDE			RIGHT SIDE				
						ROADWAY GUTTER	REVEAL	TRANS	OPENING ELEV	ROADWAY GUTTER	REVEAL	TRANS	OPENING ELEV
1	19+06.2 44.3' LT	11.6'	5.0'	6.1'	4.0'	0.18%	6"	7'-8"	57.49	-2.33%	6"	6'-6"	57.45

NOTES:
1. NEGATIVE (-) ROADWAY GUTTER MAX DENOTES A LOW SIDE TRANSITION.



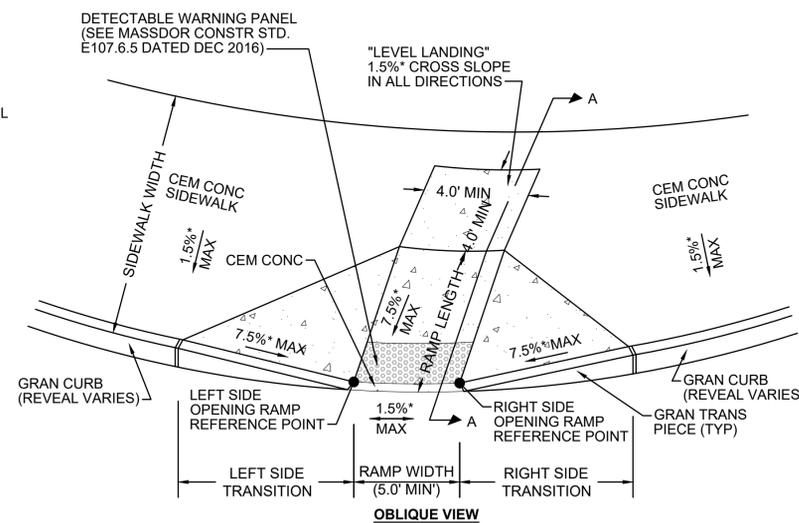
SECTION A-A



SECTION A-A

LEGEND

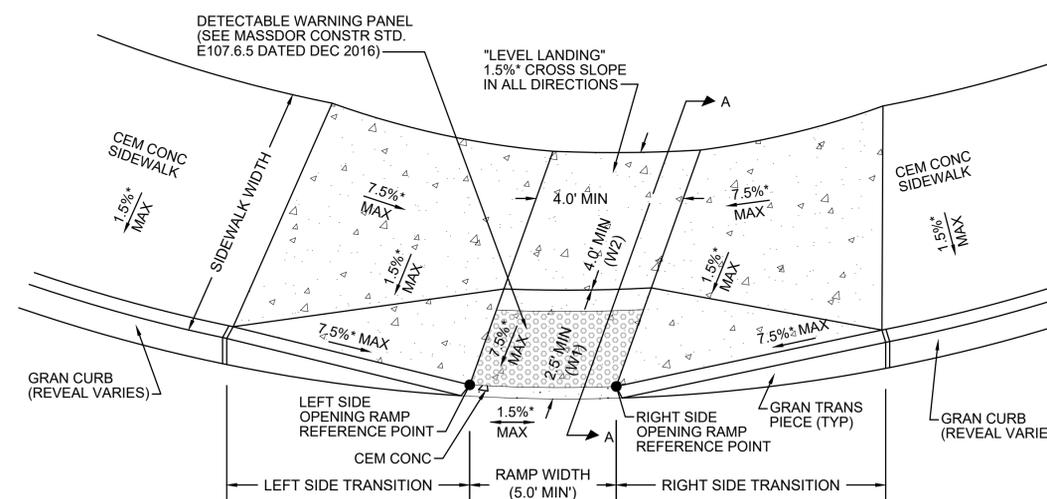
- LIMITS OF CEM CONC RAMP
- DETECTABLE WARNING PANEL



OBLIQUE VIEW

LEGEND

- LIMITS OF CEM CONC RAMP
- DETECTABLE WARNING PANEL



OBLIQUE VIEW

*TOLERANCE FOR CONSTRUCTION ±0.5%

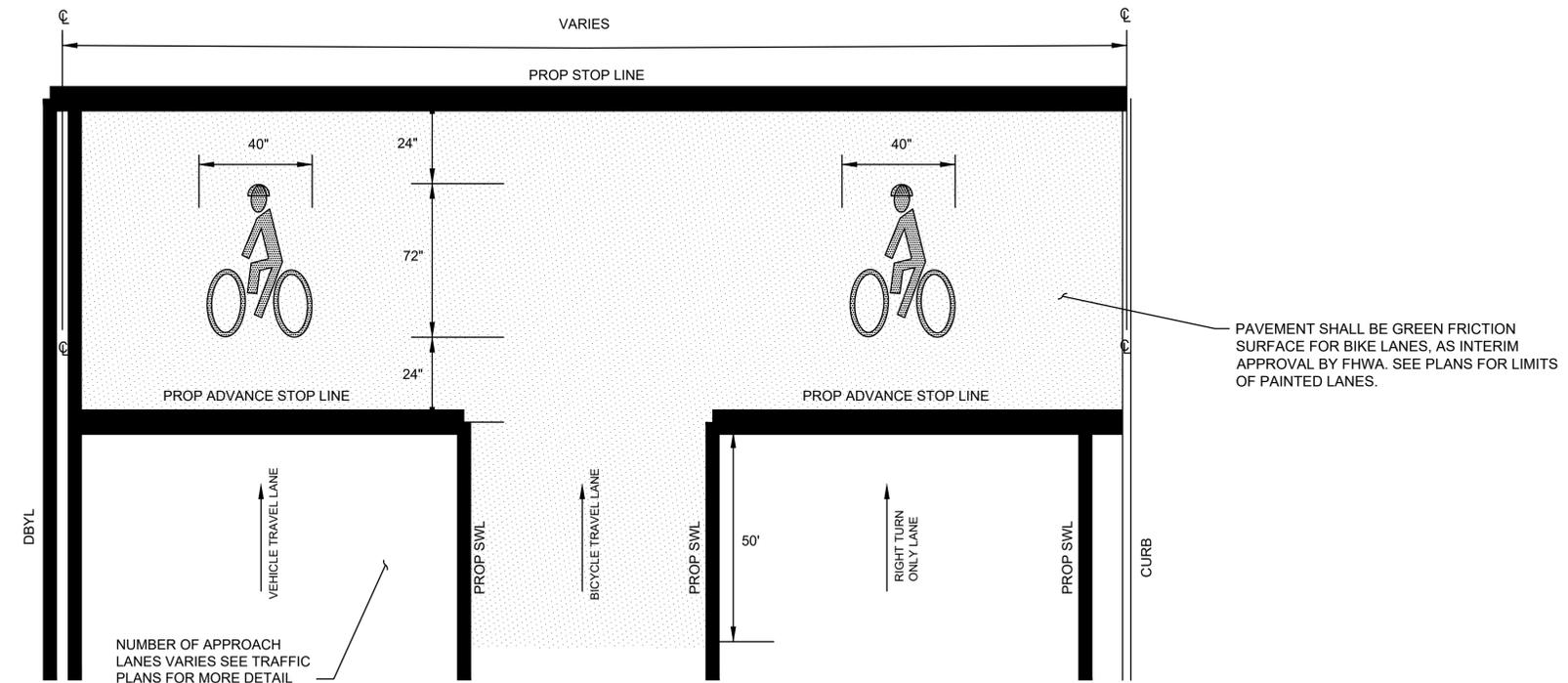
WHEELCHAIR RAMP - 12.0' OR GREATER - CURVED

SCALE: NTS

*TOLERANCE FOR CONSTRUCTION ±0.5%

WHEELCHAIR RAMP - GREATER THAN 6.5' - CURVED

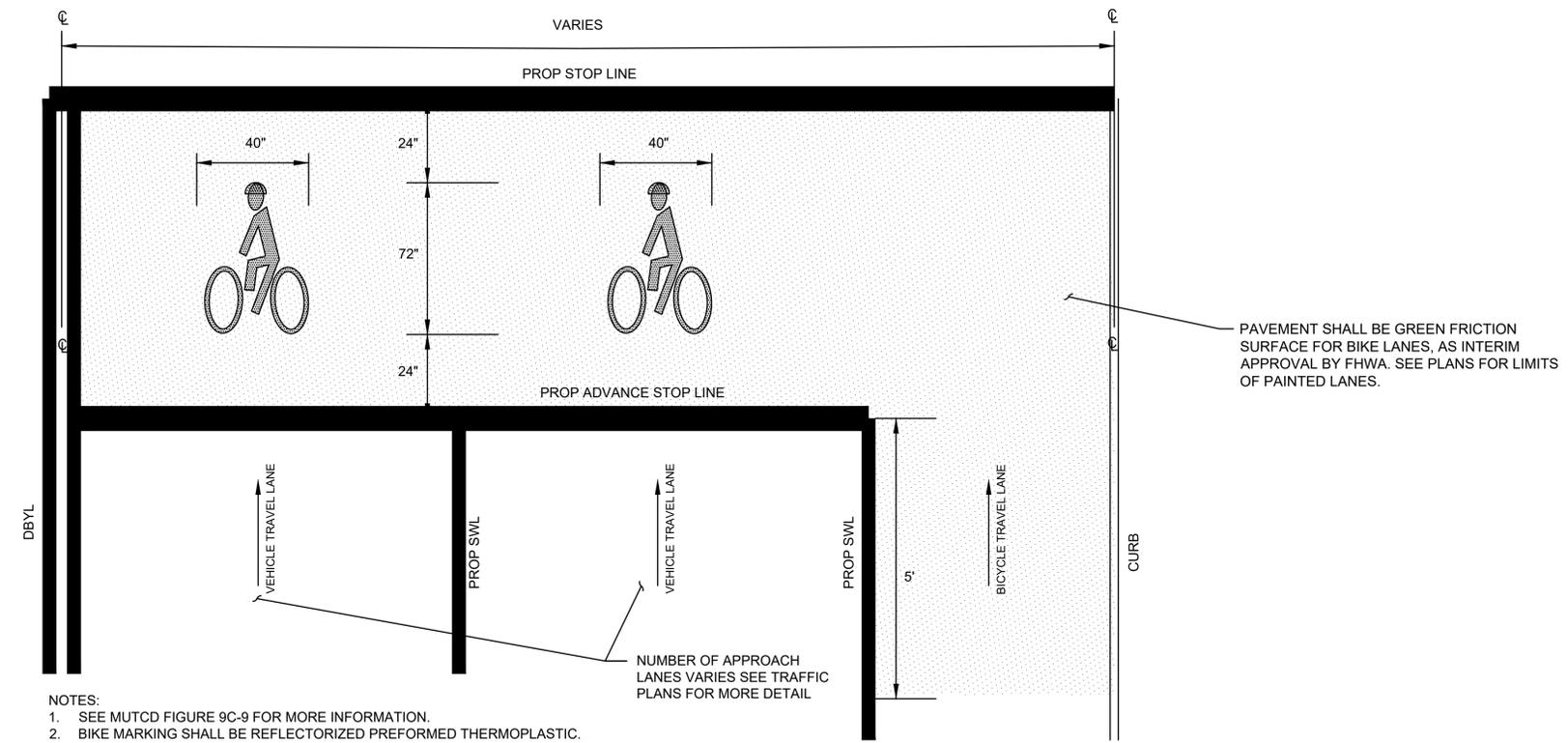
SCALE: NTS



- NOTES:
1. SEE MUTCD FIGURE 9C-9 FOR MORE INFORMATION.
2. BIKE MARKING SHALL BE REFLECTORIZED PREFORMED THERMOPLASTIC.

BIKE BOX PAVEMENT MARKING SYMBOL - RIGHT TURN ONLY LANE

SCALE: NTS



- NOTES:
1. SEE MUTCD FIGURE 9C-9 FOR MORE INFORMATION.
2. BIKE MARKING SHALL BE REFLECTORIZED PREFORMED THERMOPLASTIC.

BIKE BOX PAVEMENT MARKING SYMBOL

SCALE: NTS

TRAFFIC SIGN SUMMARY													
IDENTIFICATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (INCHES)			NUMBER OF SIGNS REQUIRED	COLOR			POST SIZE AND NUMBER REQUIRED	UNIT AREA (S.F.)	AREA IN SQUARE FEET
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.		BACK-GROUND	LEGEND	BORDER			
R1-1	30"	30"		SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED.			1	RED	WHITE	WHITE	P5-1	6.25	6.25
R3-5L	30"	36"					1	WHITE	BLACK	BLACK	1 MTD ON MAST ARM	7.50	7.50
R3-7bp	24"	12"					2	WHITE	BLACK	BLACK	2 MTD W/OTHER	2.00	4.00
R3-7L	30"	30"					3	WHITE	BLACK	BLACK	P5-2 1 MTD W/OTHER	6.25	18.75
R3-8(MOD)	60"	30"					1	WHITE	BLACK	BLACK	P5-2	12.50	12.50
R3-17	30"	24"					2	BLACK WHITE	WHITE BLACK	WHITE BLACK	1 MTD ON EXIST CATENARY POLE 1 MTD W/OTHER	5.00	10.00
R3-17bp	30"	12"					2	WHITE	BLACK	BLACK	1 MTD ON EXIST CATENARY POLE 1 MTD W/OTHER	2.50	5.00
R4-7	24"	30"					1	WHITE	BLACK	BLACK	P5-1	5.00	5.00
R10-3e(D)	9"	15"					1	WHITE	WHITE/ BLACK/ ORANGE	BLACK	1 MTD ON TS POST/POLE	INCLUDED UNDER ITEM 816.01	
R10-3e(L)	9"	15"					4	WHITE	WHITE/ BLACK/ ORANGE	BLACK	4 MTD ON TS POST/POLE	INCLUDED UNDER ITEM 816.01	
R10-3e(R)	9"	15"					4	WHITE	WHITE/ BLACK/ ORANGE	BLACK	4 MTD ON TS POST/POLE	INCLUDED UNDER ITEM 816.01	
R10-6a	24"	30"					2	WHITE	BLACK	BLACK	P5-2	5.00	10.00
R10-7	24"	30"					1	WHITE	BLACK	BLACK	P5-1	5.00	5.00
R10-11b BLANKOUT SIGN	24"	24"					4	WHITE	BLACK	BLACK	4 MTD ON TS POLE	INCLUDED UNDER ITEM 816.01	
R10-12	24"	30"					1	WHITE	BLACK/ GREEN	BLACK	1 MTD ON MAST ARM	5.00	5.00
R10-12A	30"	36"					1	WHITE	BLACK/ YELLOW	BLACK	1 MTD ON MAST ARM	7.50	7.50
W9-1(MOD)	30"	30"					1	FLUOR-ESCENT ORANGE	BLACK	BLACK	P5-1	6.25	6.25

TRAFFIC SIGN SUMMARY													
IDENTIFICATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (INCHES)			NUMBER OF SIGNS REQUIRED	COLOR			POST SIZE AND NUMBER REQUIRED	UNIT AREA (S.F.)	AREA IN SQUARE FEET
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.		BACK-GROUND	LEGEND	BORDER			
D3-1	48"	12"		6"C	3" 3"	N/A	2	GREEN	WHITE	WHITE	2 MOUNTED OVERHEAD ON MAST ARM	INCLUDED UNDER ITEM 874	
D3-2	36"	12"		6"C	3" 3"	N/A	2	GREEN	WHITE	WHITE	2 MOUNTED OVERHEAD ON MAST ARM	INCLUDED UNDER ITEM 874	

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.

GENERAL NOTES

- 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 HARDWARE (MASH).
- WORK HOURS SHALL BE 7:00AM TO 3:00PM MONDAY THRU FRIDAY UNLESS OTHERWISE APPROVED BY THE CITY OF NEWTON. NO WORK IMPACTING THE TRAVEL WAY WILL BE ALLOWED DURING PEAK TRAFFIC PERIODS. PEAK PERIODS ARE DEFINED AS MONDAY THRU FRIDAY, 6:00AM TO 9:00AM AND 3:00PM TO 7:00PM.
- NO WORK SHALL OCCUR WITHIN THE PUBLIC WAY THE DAY BEFORE, AFTER OR ON A STATE RECOGNIZED HOLIDAY UNLESS OTHERWISE APPROVED BY THE ENGINEER.
- 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 AND PUBLIC RIGHTS-OF WAY ACCESSIBILITY GUIDELINES (PROWAG).
- ALL DRUMS OUTSIDE TAPERS SHALL BE SET AT 20' ON CENTER MAX. UNLESS OTHERWISE NOTED OR ADJUSTED BY THE ENGINEER.
- ALL DRUMS SHALL BE APPROXIMATELY PLACED AND MOVED AS NECESSARY TO MAINTAIN SAFE AND REASONABLE ABUTTER ACCESS. 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.
- THE FIRST 10 DRUMS ON TAPERS SHALL BE REFLECTORIZED DRUMS WITH SEQUENTIAL FLASHING WARNING LIGHTS AND SHALL BE OPERATING, AT A MINIMUM, BETWEEN DUSK AND DAWN, WHEN TAPER IS DEPLOYED.
- REFLECTORIZED CONES SHALL BE A MINIMUM OF 36 INCHES IN HEIGHT.
- CONES MAY BE USED IN LIEU OF DRUMS OUTSIDE OF TAPER AREAS.
- 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.
- FOR DROP-OFFS 3" OR LESS WITHIN THE CLEAR ZONE, CONDITION MAY BE MITIGATED WITH W8-9 (LOW SHOULDER) SIGN OR TEMPORARY CHANNELIZATION DEVICES.
- CONTRACTOR SHALL STAGE WORK SUCH THAT A DROP-OFF OF NO MORE THAN 3" AT THE END OF EACH WORK DAY EXISTS WITHIN THE CLEAR ZONE AT ANY TIME AND ENSURE DROP-OFF IS MITIGATED WITHOUT BARRIER PER NOTE 11.
- CONSTRUCTION CLEAR ZONE SHALL BE IN ACCORDANCE WITH MASSDOT BOSTON TRAFFIC GUIDELINES AS FOLLOWS:
4' IF POSTED SPEED IS LESS THAN 35 MPH
8' IF POSTED SPEED IS 35 MPH
15' IF POSTED SPEED IS 40 MPH
- 11' MINIMUM LANE WIDTHS SHALL BE MAINTAINED UNLESS OTHERWISE NOTED.
- TEMPORARY TRAFFIC CONTROL DEVICES AND SIGNS SHALL BE COVERED OR REMOVED DURING NON-WORKING HOURS WHEN NOT IN USE.
- SIGNS INSTALLED ON PORTABLE STANDS REQUIRE 12 INCH MINIMUM MOUNTING HEIGHT FROM THE ROADWAY SURFACE TO THE BOTTOM OF THE SIGN.
- 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.
- SIGNS MOUNTED ON POSTS REQUIRE A MINIMUM 84 INCH MOUNTING HEIGHT FROM THE ROADWAY OR SIDEWALK SURFACE TO THE BOTTOM OF THE SIGN. CONTRACTOR SHALL MAINTAIN A MINIMUM SIDEWALK HORIZONTAL CLEAR WIDTH OF 36" AT ALL TIMES.
- ALL SIGNS SHALL BE MOUNTED ON THEIR OWN NCHRP 350 AND/OR MASH CRASH TESTED SIGN SUPPORTS AND INSTALLED IN ACCORDANCE WITH THE MUTCD.
- 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 REQUESTED BY THE ENGINEER.
- W8-15 SIGNS SHALL BE INSTALLED IN ADVANCE (100' MIN) OF PAVEMENT MILLING AREAS OR AS REQUESTED BY THE ENGINEER.
- TEMPORARY MARKINGS SHALL BE WATER-BORNE PAINT OR SURFACE-APPLIED REMOVEABLE TAPE, AS APPROVED BY THE ENGINEER.
- ALL TEMPORARY CROSSWALKS AND STOP LINES SHALL BE 12 INCHES WIDE.
- ALL TEMPORARY DOUBLE YELLOW LINES (DBYL) SHALL BE 6 INCHES WIDE.
- CONTRACTOR SHALL SECURE WORK AREAS BY APPROPRIATE MEANS, TO PREVENT UNAUTHORIZED ACCESS AT ALL TIMES.
- NIGHTTIME WORK SHALL REQUIRE PRIOR APPROVAL FROM THE CITY OF NEWTON.
- ILLUMINATION REQUIRED FOR NIGHTTIME WORK APPROVED BY THE ENGINEER SHALL BE DIFFUSED OR ANTI-GLARE LIGHTING AND IN ACCORDANCE WITH MASSDOT STANDARDS.
- THERE IS NO DESIGNATED BICYCLE LANE ON THE ROADWAY WITHIN THE PROJECT LIMITS. BICYCLES ARE EXPECTED TO SHARE THE ROAD WITH GENERAL VEHICULAR TRAFFIC.

ADVANCE SIGN SPACING				
ROADWAY	DISTANCE BETWEEN SIGNS (FEET)			
	A	B	C	D
ALL OTHER ROADWAYS	100	50	100	100
WASHINGTON ST	350	150	350	350

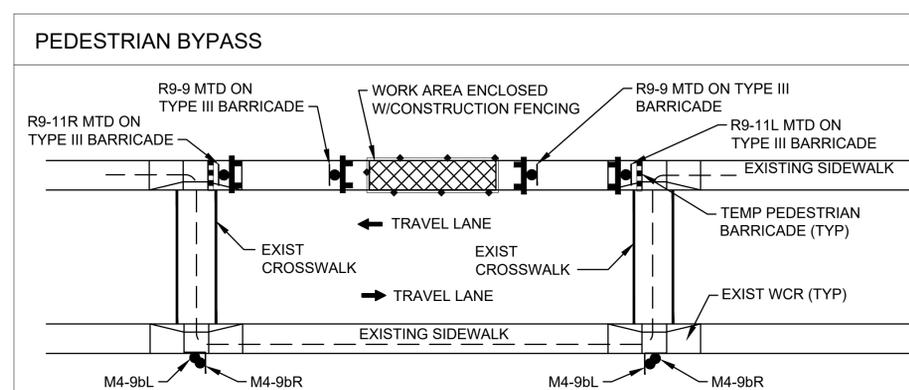
LANE TAPER LENGTH FORMULAS	
L= TAPER LENGTH IN FEET	
W= WIDTH OF ROADWAY TO BE SHIFTED OR REDIRECTED IN FEET	
S= POSTED SPEED LIMIT IN MPH	
POSTED SPEED	
40 MPH OR LESS	GREATER THAN 40 MPH
$L = \frac{WS^2}{60}$	L= WS

LEGEND

	POLICE OFFICER
	TRAFFIC SIGNAL
	REFLECTORIZED DRUM
	REFLECTORIZED DRUMS WITH SEQUENTIAL FLASHING WARNING LIGHTS (SEE NOTE 7)
	TEMPORARY CONSTRUCTION SIGN
	TRAFFIC CONE
	TYPE III BARRICADE
	ARROW BOARD (AB) (RIGHT OR LEFT)
	WORK AREA (PUBLIC ACCESS RESTRICTED)
	TRAFFIC FLOW
	PEDESTRIAN ROUTE
	CONSTRUCTION FENCE
	TEMPORARY PORTABLE PEDESTRIAN BARRICADE
NTS	NOT TO SCALE

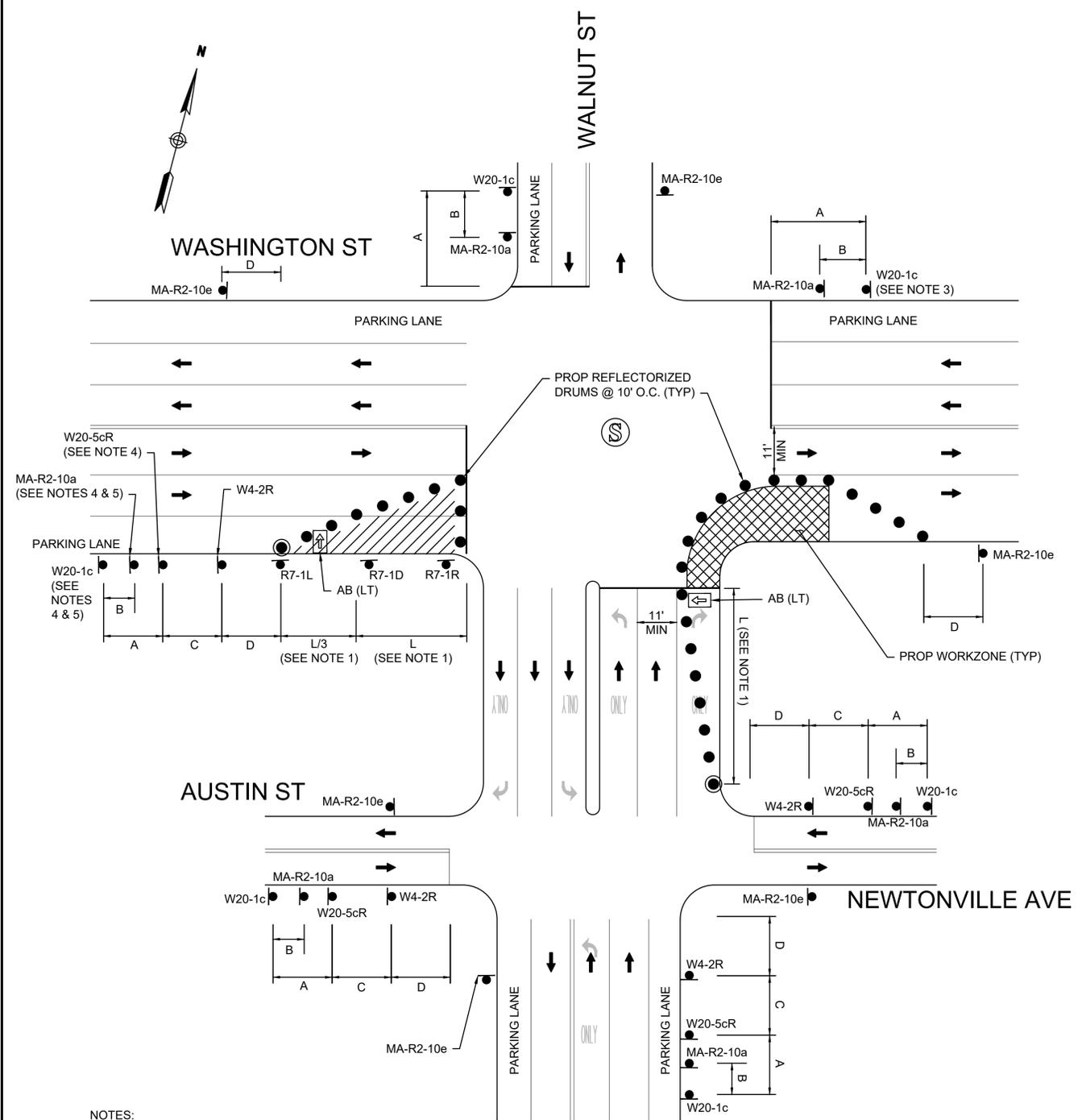
NOTES:

- ADDITIONAL ADVANCE WARNING SIGNS MAY BE NECESSARY AS DETERMINED BY THE ENGINEER.
- CONTROLS FOR PEDESTRIAN TRAFFIC ONLY, ARE SHOWN. VEHICULAR TRAFFIC SHALL BE MAINTAINED AS SHOWN ELSEWHERE.
- STREET LIGHTING SHOULD BE CONSIDERED WHEN LOCATING CONTROL DEVICES.
- INDICATES DIRECTION OF PEDESTRIAN TRAVEL.
- ALL TEMPORARY PEDESTRIAN PATHWAYS SHALL COMPLY FULLY WITH ALL REQUIREMENTS OF THE MUTCD AND ALL APPLICABLE MAAB AND ADAAG REQUIREMENTS AND INCLUDE THE USE OF A COMPLIANT TEMPORARY PEDESTRIAN MANAGEMENT GUIDANCE SYSTEM AT ALL TIMES.
- 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. A 5' x 5' PASSING AREA SHALL BE PROVIDED IN INTERVALS NOT EXCEEDING 200 FEET.
- TEMPORARY PEDESTRIAN BARRICADE SHALL BE PAID FOR UNDER ITEM 852.11 TEMPORARY PEDESTRIAN BARRICADE.



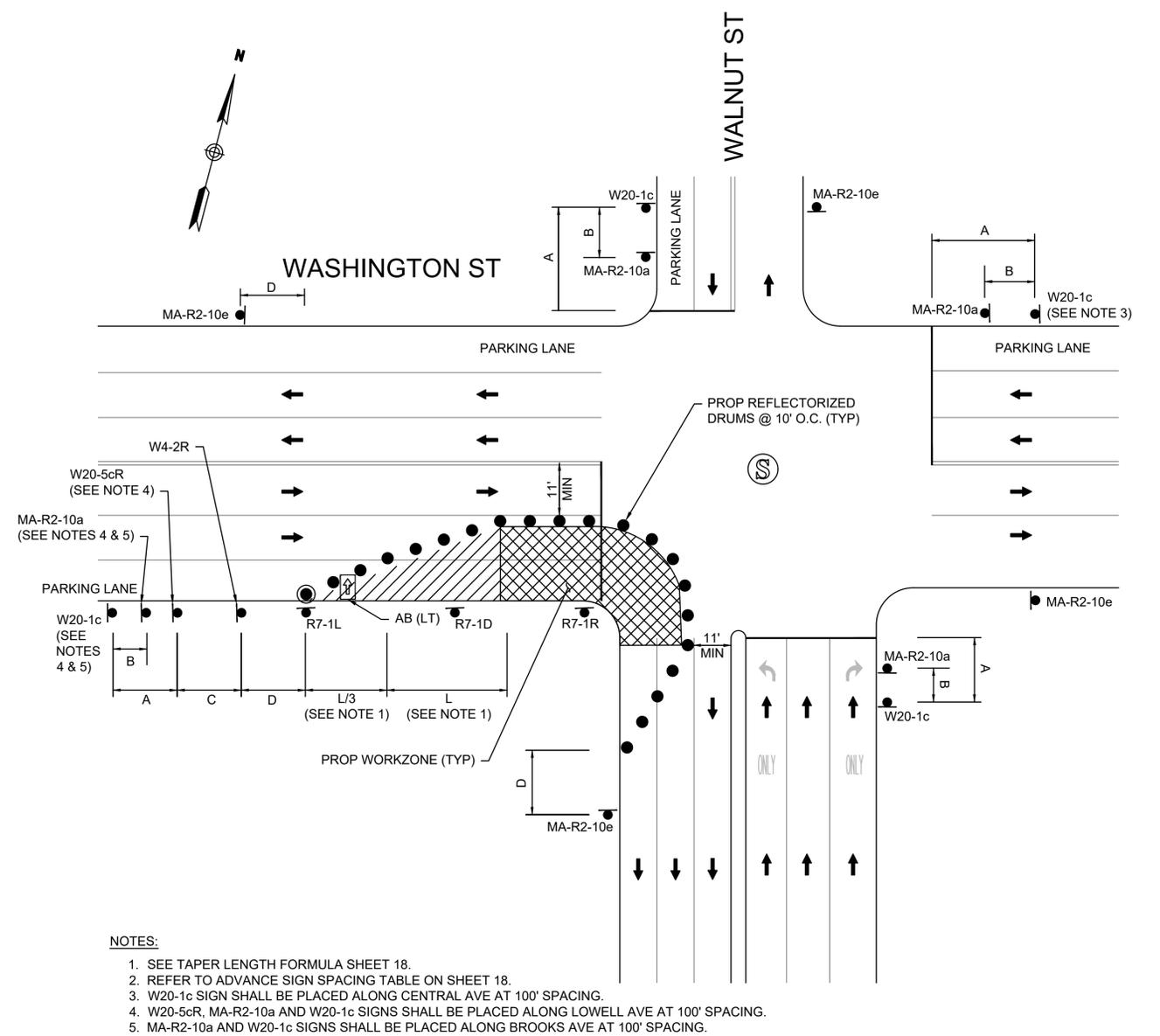
PEDESTRIAN BYPASS DETAIL

SCALE: NTS



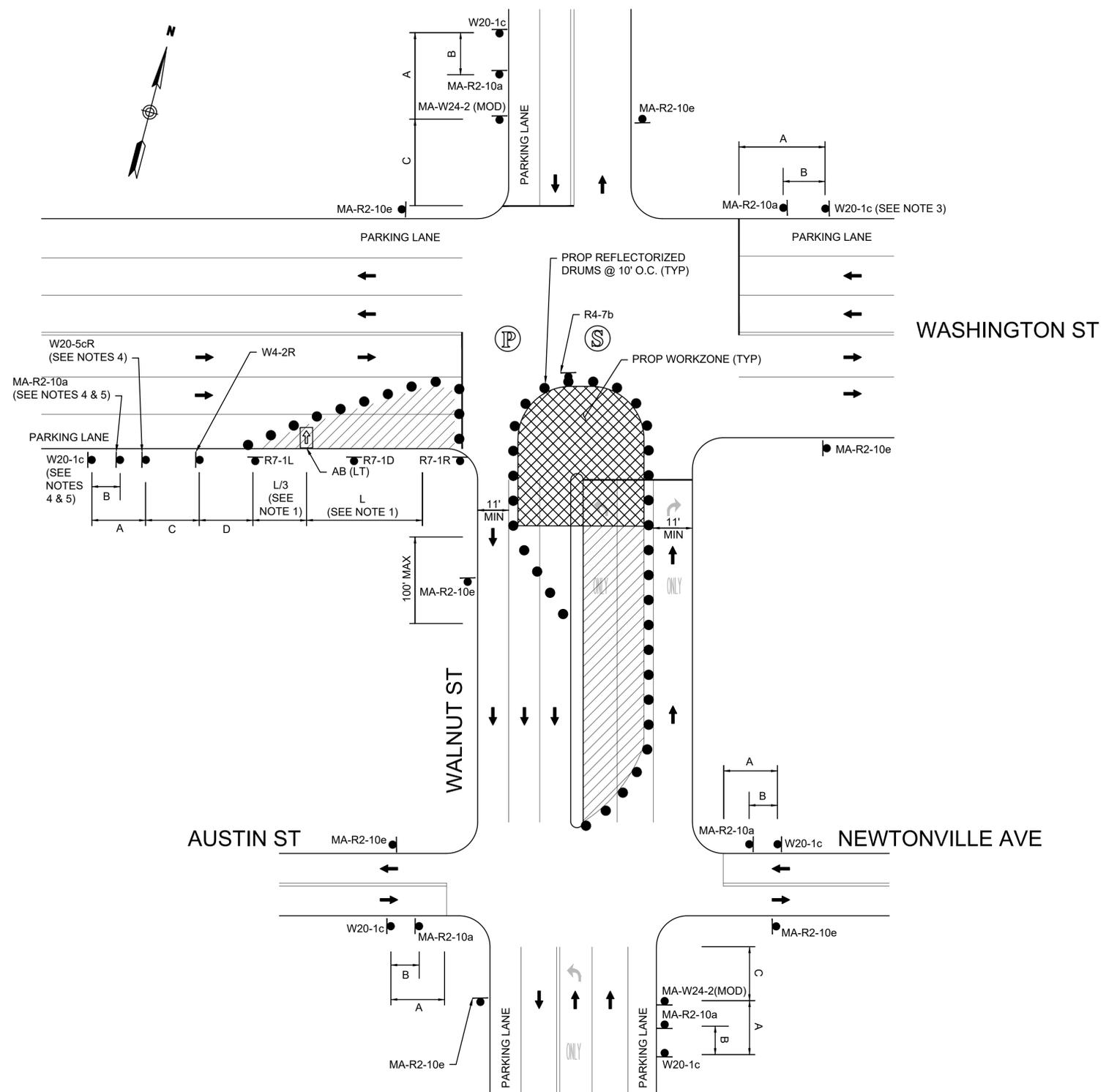
- NOTES:
1. SEE TAPER LENGTH FORMULA SHEET 18.
 2. REFER TO ADVANCE SIGN SPACING TABLE ON SHEET 18.
 3. W20-1c SIGN SHALL BE PLACED ALONG CENTRAL AVE AT 100' SPACING.
 4. W20-5cR, MA-R2-10a AND W20-1c SIGNS SHALL BE PLACED ALONG LOWELL AVE AT 100' SPACING.
 5. MA-R2-10a AND W20-1c SIGNS SHALL BE PLACED ALONG BROOKS AVE AT 100' SPACING.

WASHINGTON ST AT WALNUT ST - SOUTHWEST CORNER
SCALE: NTS



- NOTES:
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 2. REFER TO ADVANCE SIGN SPACING TABLE ON SHEET 18.
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WASHINGTON ST AT WALNUT ST - SOUTHWEST CORNER
SCALE: NTS



- NOTES:
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WASHINGTON ST AT WALNUT ST - MEDIAN
 SCALE: NTS

TEMPORARY TRAFFIC CONTROL SIGN SUMMARY									
IDENTIFICATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (INCHES)			COLOR		
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.	BACK-GROUND	LEGEND	BORDER
MA-R2-10a	48"	36"		AS PER MASSDOT STANDARD			FLUOR-ESCENT ORANGE	BLACK	BLACK
MA-R2-10e	36"	48"		↓			FLUOR-ESCENT ORANGE	BLACK	BLACK
R4-7b	24"	30"		SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED			WHITE	BLACK	BLACK
R7-1D	12"	18"					WHITE	RED	RED
R7-1L	12"	18"					WHITE	RED	RED
R7-1R	12"	18"					WHITE	RED	RED
R9-9	24"	12"					WHITE	BLACK	BLACK
R9-11L	24"	12"					WHITE	BLACK	BLACK
R9-11R	24"	12"					WHITE	BLACK	BLACK
W1-4L	36"	36"					FLUOR-ESCENT ORANGE	BLACK	BLACK
W1-4R	36"	36"					FLUOR-ESCENT ORANGE	BLACK	BLACK
W4-2R	36"	36"					FLUOR-ESCENT ORANGE	BLACK	BLACK
W8-15	36"	36"					FLUOR-ESCENT ORANGE	BLACK	BLACK
W20-1c	36"	36"					FLUOR-ESCENT ORANGE	BLACK	BLACK
W20-5cR	36"	36"					FLUOR-ESCENT ORANGE	BLACK	BLACK
W21-7	36"	36"		↓			FLUOR-ESCENT ORANGE	BLACK	BLACK
MA-W24-2(MOD)	36"	36"		AS PER MASSDOT STANDARD			FLUOR-ESCENT ORANGE	BLACK	BLACK
M4-9bL	30"	24"		SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED			FLUOR-ESCENT ORANGE	BLACK	BLACK
M4-9bR	30"	24"		↓			FLUOR-ESCENT ORANGE	BLACK	BLACK

NOTES:

- 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; THE MASSHIGHWAY DEPARTMENT SIGN LISTINGS 1993 EDITION, AS AMENDED; THE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR MOUNTING REQUIREMENTS; AND THE 2017 MASSDOT STANDARD SIGNS BOOK, AS AMENDED.
- ALL SIGNS SHOWN GRAPHICALLY FOR INFORMATION ONLY. SIGN VENDOR SHALL FABRICATE ALL SIGNS IN ACCORDANCE WITH THE APPLICABLE STANDARDS.