MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION

ARLINGTON BIKEWAY CONNECTION AT INTERSECTION MASSACHUSETTS AVENUE & MYSTIC STREET			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.		1	34
PROJECT FILE NO.	606885		

TITLE SHEET & INDEX

25% DESIGN PLAN AND PROFILE OF

BIKEWAY CONNECTION AT INTERSECTION OF ROUTE 3 & ROUTE 60, MASSACHUSETTS AVENUE, PLEASANT STREET & MYSTIC STREET

IN THE CITY OF

ARLINGTON

MIDDLESEX COUNTY

FEDERAL AID PROJECT NO.

THE MASSACHUSETTS HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES DATED 1988, AS AMENDED, THE SUPPLEMENTAL SPECIFICATIONS DATED DATED JUNE 15, 2012, THE MARCH 2012 CONSTRUCTION STANDARD DETAILS, THE 1996 CONSTRUCTION AND TRAFFIC STANDARD DETAILS (AS RELATES TO TRAFFIC STANDARD DETAILS ONLY), THE 2009 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

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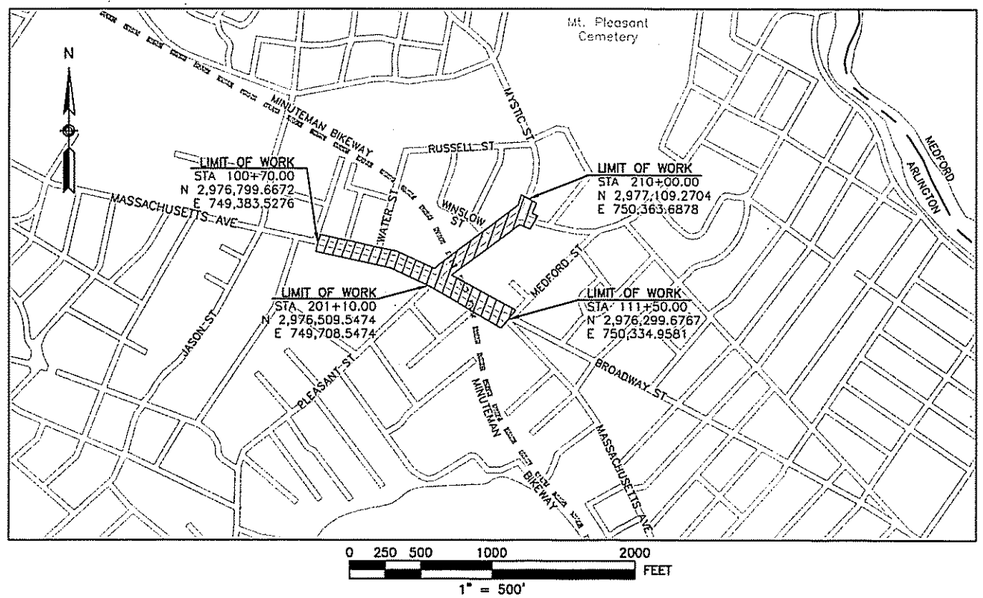

DESIGN DESIGNATION

MASSACHUSETTS AVENUE			MYSTIC STREET / PLEASANT STREET		
DESIGN SPEED	=	30 miles/hr	DESIGN SPEED	=	30 miles/hr
ADT (CURRENT)	=	20,556	ADT (CURRENT)	=	18,145
ADT (DESIGN YEAR)	=	22,712	ADT (DESIGN YEAR)	=	20,048
K	=	9.0%	K	=	9.0%
D	=	57.2%	D	=	50.2%
T (PEAK HOUR)	=	3.0%	T (PEAK HOUR)	=	3.8%
DHV	=	2,044	DHV	=	1,804
DDHV	=	1,169	DDHV	=	906
FUNC CLASS	=	URBAN PRINCIPAL ARTERIAL	FUNC CLASS	=	URBAN PRINCIPAL ARTERIAL

CONVENTIONAL SIGNS

COUNTY, CITY, OR TOWN BOUNDARY.....

COUNTY, CITY, OR TOWN SIDE LINE.....

FENCE LINE.....

BASE LINE OR SURVEY LINE..... N 57°18'41"E 58.57' 75

RIGHT OF WAY LINE.....

CULVERT.....

PROPOSED SURFACE

EXISTING SURFACE

PRES. 97.21 PROP. 97.78

75

ELEVATIONS.....

UTILITY POLE.....

NOTE:

LENGTH OF PROJECT = 1950.00 FEET= 0.37 MILES

DATE	DESCRIPTION	REV #
11/2012	25% HIGHWAY DESIGN PLANS	1

Moving Massachusetts Forward. massDOT Highway

RECOMMENDED FOR APPROVAL

CHIEF ENGINEER DATE

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED:

HIGHWAY ADMINISTRATOR DATE

APPROVED

HIGHWAY ADMINISTRATOR DATE

Howard/Stein-Hudson Associates, Inc.
38 Chauncy St., 9th Floor
Boston, MA 02111
617.482.7080

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GENERAL NOTES

SURVEY

1. ALL UNDERGROUND UTILITIES AS SHOWN WERE COMPILED UTILIZING FIELD SURVEY INFORMATION AND AVAILABLE RECORD INFORMATION PROVIDED BY NITSCH ENGINEERING INCORPORATED IN MAY 2007 AND BY A-PLUS CONSTRUCTION SERVICES CORPORATION IN FEBRUARY 2012.

2. THE ACCURACY AND COMPLETENESS OF UNDERGROUND UTILITIES AS SHOWN ON THE PLANS ARE NOT GUARANTEED. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE EXACT LOCATION, SIZE, TYPE, ETC. OF ALL UNDERGROUND UTILITIES THAT MAY BE AFFECTED BY THE WORK. AT LEAST 72 HOURS BEFORE DIGGING BEGINS THE CONTRACTOR IS REQUIRED TO CALL DIG SAFE AT (888)344-7233. ALL TOWN OWNED UTILITY STRUCTURES WITHIN AREAS AFFECTED BY THE WORK SHALL BE ADJUSTED TO NEW LINE AND GRADE AS DIRECTED BY THE ENGINEER. ANY UTILITY POLES AND/OR GUY POLES WITHIN AREAS AFFECTED BY THE WORK SHALL BE REMOVED AND RESET BY THE RESPECTIVE UTILITY COMPANY. ALTERATIONS TO UTILITIES NOT OWNED BY THE CITY SHALL BE MADE BY THE RESPECTIVE UTILITY OWNERS.

3. THE CONTRACTOR SHALL FIELD VERIFY CONDITIONS AND DIMENSIONS PRIOR TO CONSTRUCTION.

4. ALL EXISTING PROPERTY LINES HAVE BEEN ESTABLISHED FROM AVAILABLE INFORMATION AND THEIR EXACT LOCATIONS ARE NOT GUARANTEED.

5. ELEVATIONS SHOWN REFER TO NAVD 88 VERTICAL DATUM. THE COORDINATE INFORMATION INCLUDED ON THESE PLANS IS BASED UPON MASSACHUSETTS GRID SYSTEM, NAD 1983, AS DERIVED FROM GPS CONTROL COORDINATES PROVIDED BY THE MASSDOT HIGHWAY DEPARTMENT SURVEY SECTION, FIELDBOOK NUMBER 40756.

6. BENCHMARK INFORMATION:
   SEE CONSTRUCTION BASELINE TIES SHEET 9 FOR BENCHMARK INFORMATION AND LOCATIONS.

   TEMPORARY BENCHMARKS SET:

   TBM #1 (PK NAIL)
   ELEV = 48.36

   TBM #2 (PK NAIL)
   ELEV = 27.16

   TBM #3 (PK NAIL)
   ELEV = 27.16

   TBM #4 (PK NAIL)
   ELEV = 50.48

   TBM #13 (L.O.C. CONC. SLAB @ STREET LEVEL)
   ELEV = 55.37

   TBM #14 (R.O.C. CONC. SLAB @ STREET LEVEL)
   ELEV = 48.95

   TBM #15 (L.O.C. GRANITE STEP)
   ELEV = 45.28

7. MASSDOT HIGHWAY DIVISION SHALL RE-ESTABLISH SURVEY CONTROL PRIOR TO BEGINNING WORK ON THIS CONTRACT.

UTILITIES

1. 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.

2. THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT OF ELECTRIC, TELEPHONE, AND ANY OTHER PRIVATE UTILITIES BY THE UTILITY COMPANIES AT NO ADDITIONAL COST TO THE OWNER. IF THE CONTRACTOR ADJUSTS UTILITY COVERS IT SHALL BE DEEMED PART OF THE WORK AND THERE WILL BE NO ADDITIONAL COMPENSATION.

3. "THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE NECESSITY OF MAKING HIS/HER OWN INVESTIGATION IN ORDER TO ASSURE THAT NO DAMAGE TO EXISTING STRUCTURES, DRAINAGE LINES, TRAFFIC SIGNAL CONDUITS, ETCETERA, WILL OCCUR.

4. THE CONTRACTOR SHALL NOTIFY MASSACHUSETTS DIG SAFE AND PROCURE A DIG SAFE NUMBER FOR EACH LOCATION PRIOR TO DISTURBING EXISTING GROUND IN ANY WAY. THE TELEPHONE NUMBER OF THE DIG SAFE CALL CENTER IS 1-888-344-7233."

5. NO EXISTING PUBLIC UTILITY STRUCTURES SHALL BE ABANDONED AND/OR DISMANTLED WITHOUT AUTHORIZATION FROM THE ENGINEER.

6. DRAINAGE ELEVATIONS ARE PROVIDED FOR DESIGN PURPOSE 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 ADJUSTMENT TO LINE AND GRADE UP TO A DEPTH OF 5 FEET SHALL BE INCLUDED IN THE COST OF THE PIPE. PIPE EXCAVATION GREATER THAN 5 FEET WILL BE PAID UNDER CLASS B TRENCH EXCAVATION.

CONSTRUCTION

1. AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DAMAGED BY THE CONTRACTOR'S OPERATIONS, INCLUDING STAGING AREAS, SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.

2. THE CONTRACTOR IS HEREBY NOTIFIED THAT ADDITIONAL WORK WITHIN THE PROJECT LIMITS MAY BE PERFORMED BY OTHERS.

3. JOINTS BETWEEN NEW HOT MIX ASPHALT, ROADWAY PAVEMENT, AND THE LOCATIONS OF SAW CUT FOR EXISTING PAVEMENT SHALL BE SEALED WITH HOT POURED RUBBERIZED ASPHALT AND BACKSANDED.

4. ALL GRADING SHALL COMPLY WITH THE RULES AND REGULATIONS OF THE MASSACHUSETTS ARCHITECTURAL ACCESS BOARD (MAAB) AND THE AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES FOR BUILDINGS AND FACILITIES (ADAAG), LATEST EDITION. IN CASE OF CONFLICT BETWEEN REGULATIONS, THE GUIDELINE PROVIDING GREATER ACCESS SHALL APPLY. WHEELCHAIR RAMP INSTALLATIONS SHALL BE IN ACCORDANCE WITH THE MASSDOT WHEELCHAIR RAMP STANDARDS-LATEST EDITION AND THE PLANS.

5. WHERE THE NEW CONSTRUCTION IS WITHIN THE EXISTING TRAVELED WAY, THE CONTRACTOR SHALL PERFORM WORK SO THAT INTERFERENCE TO BUSINESS CONCERNS AND ABUTTERS, ON ACCOUNT OF THE CONSTRUCTION WORK, IS KEPT TO A MINIMUM. THE CONTRACTOR WILL NOT BE ALLOWED TO PARK EQUIPMENT, OR STOCKPILE MATERIAL ON THE TRAVELED WAYS OVERNIGHT OR WHEN NOT IN USE. THE CONTRACTOR SHALL MAINTAIN SAFE AND REASONABLE ACCESS TO AND FROM ABUTTING PROPERTIES AT ALL TIMES AT NO ADDITIONAL COST.

6. THE CONTRACTOR SHALL DISPOSE OF ALL WASTE MATERIAL IN ACCORDANCE WITH ALL FEDERAL, STATE AND LOCAL REGULATIONS AT HIS OWN EXPENSE, OUTSIDE OF THE PROJECT LIMITS.

7. CONTRACTOR SHALL BE RESPONSIBLE FOR INVESTIGATING AND CONFIRMING THAT ALL ITEMS TO BE REUSED ARE IN SERVICEABLE CONDITION. IF IT IS DEEMED THAT ANY ITEM IS NOT ABLE TO BE REUSED, THE CONTRACTOR SHALL NOTIFY THE OWNER IN WRITING AND INCLUDE ESTIMATED COSTS TO INSTALL NEW.

TRAFFIC

1. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE SHOP DRAWINGS FOR TRAFFIC MANAGEMENT AND TO COMPLY WITH CONDITIONS OUTLINED WITHIN THE SPECIFICATIONS AND MASSDOT HIGHWAY DIVISION STANDARD DETAILS AND DRAWINGS FOR THE DEVELOPMENT OF TRAFFIC MANAGEMENT PLANS MANUAL.

TEMPORARY TRAFFIC CONTROL

1. THIS PLAN DEPICTS IN SCHEMATIC FORM, THE ELEMENTS OF AN APPROACH TO THE LAYOUT AND PLANNING OF THE WORK DURING THE PROGRESS OF THE CONSTRUCTION OPERATIONS.THE PREPARER OF THIS PLAN HAS NO ROLE IN THE OVERSIGHT OR OTHERWISE IN THE IMPLEMENTATION OF THIS PLAN.

2. CONTRACTOR SHALL SUBMIT TO THE RESIDENT ENGINEER TRAFFIC MANAGEMENT PLANS FOR REVIEW AND APPROVAL BY MASSDOT HIGHWAY DIVISION. CONTRACTOR SHALL COORDINATE THE CONSTRUCTION EFFORT WITH OTHER PROJECTS IN THE VICINITY IN ORDER TO MINIMIZE POTENTIAL TRAFFIC AND PARKING IMPACTS.

3. THE TEMPORARY TRAFFIC CONTROL PLANS CONTAINED HERE ARE GIVEN AS A GUIDE FOR TYPICAL WORK ZONE TRAFFIC CONTROL APPLICATIONS FOR THE TYPES OF WORK ANTICIPATED FOR THIS PROJECT. THEY ARE NOT INTENDED TO COVER ALL POSSIBLE CONSTRUCTION OPERATIONS WHICH THE CONTRACTOR MAY CHOOSE TO EMPLOY. WORK ZONE TRAFFIC CONTROL FOR OTHER CONSTRUCTION OPERATIONS OR OTHER TRAFFIC SITUATIONS IF APPLICABLE SHALL BE IN ACCORDANCE WITH THE CURRENT M.U.T.C.D. AND AS APPROVED OR DIRECTED BY RESIDENT ENGINEER.

4. LANE RESTRICTIONS (OTHER THAN ACTIVE WORK ZONES) MAY NOT REMAIN OVERNIGHT OR DURING NON-WORKING HOURS AND MUST BE REMOVED BY THE END OF EACH WORKING TIME RESTRICTION. AFTER EACH WORKING DAY, TRAFFIC CONTROL DEVICES THAT ARE NOT REQUIRED SHALL BE MOVED OFF THE ROADWAY OR FULL DEPTH CONSTRUCTION AREA AND PLACED SO AS NOT TO IMPEDE PEDESTRIAN AREAS, ABUTTER ACCESS OR CAUSE CONFUSION TO ROADWAY USERS. IN CERTAIN CIRCUMSTANCES, AND ONLY WITH THE APPROVAL OF MASSDOT HIGHWAY DIVISION, CAN LANE RESTRICTIONS REMAIN OVERNIGHT, REFLECTORIZED DRUMS SHALL BE FITTED WITH STEADY BURN AND/OR FLASHING WARNING LIGHTS AT THE RESIDENT ENGINEERS DIRECTION.

5. PLACE ALL CONSTRUCTION SIGNING, TRAFFIC CONTROL DEVICES AND TEMPORARY PAVEMENT MARKINGS FOR EACH PHASE PRIOR TO COMMENCEMENT OF CONSTRUCTION.

6. THESE PLANS ARE NOT INTENDED TO LIMIT THE CONTRACTORS RIGHT TO SCHEDULE THE WORK BUT TO OUTLINE ONE WAY OF PROGRESSING. THE CONTRACTOR IS EXPECTED TO USE KNOWLEDGE AND EXPERIENCE TO PERFORM THE WORK IN THE MOST EFFICIENT MANNER IN COMPLIANCE WITH THE DRAWING AND SPECIFICATIONS AND THE REQUIREMENTS OF THE INDIVIDUAL AGENCIES AND ABUTTERS.

7. CONTRACTOR SHALL SECURE WORK AREAS ACCORDING TO CURRENT CONDITIONS TO ENSURE PUBLIC SAFETY AND CONVENIENCE. THIS SHALL INCLUDE ENSURING THAT ALL EXCAVATIONS ARE PROTECTED AT ALL TIMES AND WHEN WORK SHIFT IS COMPLETED.

8. THE CONTRACTOR SHALL SUBMIT TO THE RESIDENT ENGINEER FOR REVIEW AND APPROVAL BY MASSDOT HIGHWAY DIVISION, THE DESIGNER, TEMPORARY TRAFFIC CONTROL PLANS FOR ANY WORK OUTSIDE THE WORK ZONES INDICATED IN THESE DRAWINGS, INCLUDING ALTERNATIVE PHASING OR MODIFICATION OF ANY ASPECT OF THE TEMPORARY TRAFFIC CONTROL PLANS OR CONSTRUCTION STAGING. THE CONTRACTOR SHALL BEAR RESPONSIBILITY FOR THE SUBMISSION AND REVIEW OF ALTERNATIVE PLANS, AT NO ADDITIONAL COST.

9. EXISTING CONDITIONS ARE FOR CONTRACTOR INFORMATION ONLY AND ARE EXISTING CONDITIONS AT THE TIME OF DESIGN. THE CONTRACTOR SHALL VERIFY, AS NECESSARY, ACTUAL FIELD CONDITIONS AT TIME OF CONSTRUCTION.

10. TYPICAL DAYTIME WORK HOURS ARE FROM 9:00 AM TO 3:30 PM ON WEEKDAYS, UNLESS OTHERWISE PERMITTED BY MASSDOT HIGHWAY DIVISION. WORK SHALL NOT BE PERFORMED THE DAY BEFORE, OR THE DAY AFTER, A HOLIDAY WEEKEND,UNLESS OTHERWISE PERMITTED BY MASSDOT HIGHWAY DIVISION . REFER TO TEMPORARY TRAFFIC CONTROL PLANS, SPECIFICATIONS, AND PERMITS FOR MODIFICATION TO ALLOWABLE WORK PERIODS. ALL WORK SCHEDULES, HOWEVER, SHALL BE PRE-APPROVED BY THE DEPARTMENT PRIOR TO BEGINNING WORK. WORK NECESSARY OUTSIDE OF THESE NORMAL WORK HOURS BECAUSE OF TRAFFIC CONDITIONS, AS NOTED IN THE PLANS OR SPECIFICATIONS, SHALL BE APPROVED BY MASSDOT HIGHWAY DIVISION.

11. CONTRACTOR SHALL PROVIDE DETAILS FOR TRAFFIC CONTROL AS DIRECTED BY THE MASSDOT RESIDENT ENGINEER AND IN ACCORDANCE WITH THE SPECIFICATIONS. CONTRACTOR SHALL BE GUIDED BY TEMPORARY TRAFFIC CONTROL LAYOUTS PROVIDED FOR SPECIFIC LOCATIONS, AND BY TYPICAL LAYOUTS AT ALL OTHER LOCATIONS. TYPICAL LAYOUTS SHALL CONFORM TO PART 6 OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.

12. WORK ZONES INDICATED ON THE TEMPORARY TRAFFIC CONTROL PLANS ARE INTENDED FOR THE DURATION OF THE WORK WITHIN THE ZONES ONLY AND SHALL BE RESTORED TO CONDITIONS ACCEPTABLE TO THE MASSDOT HIGHWAY DIVISION AT COMPLETION OF THE WORK INDICATED.

13. CONTRACTOR SHALL COORDINATE WITH MASSDOT HIGHWAY DIVISION CONCERNING ALL SCHEDULED SPECIAL EVENTS WITHIN THE LIMITS OF WORK.

14. THE CONTRACTOR SHALL AT ALL TIMES COORDINATE ROAD AND LANE CLOSURED, AND OTHER DISRUPTIONS IN THE PROJECT AREA, WITH MBTA BUS OPERATIONS.

CHANNELIZATION:

1. CHANNELIZATION SHALL BE ACCOMPLISHED THROUGH THE USE OF REFLECTORIZED PLASTIC DRUMS WITH LIGHTS IN ACCORDANCE WITH THE CURRENT M.U.T.C.D. ALL LANE TAPERS SHALL BE IN ACCORDANCE WITH THE CURRENT M.U.T.C.D.

2. ALL DRUMS SHALL BE PLACED AND MOVED AS NECESSARY TO MAINTAIN ADEQUATE ABUTTER ACCESS AT ALL TIMES. WORK MAY REQUIRE ADDITIONAL SIGNS, DRUMS, AND OTHER TRAFFIC CONTROL DEVICES.

3. THE MAXIMUM SPACING BETWEEN CHANNELIZATION DEVICES (DRUMS OR CONES) SHALL BE APPROXIMATELY EQUAL IN FEET TO THE POSTED SPEED LIMIT. THE MINIMUM SPACING SHALL BE 20' O.C.

4. METAL DRUMS ARE PROHIBITED AS CHANNELIZATION DEVICES.

GRADE DIFFERENCES:

1. WHERE THERE IS A LONGITUDINAL DIFFERENCE IN ELEVATION BETWEEN EXISTING PAVEMENT AND COLD PLANED OR NEW PAVEMENT, THE CONTRACTOR SHALL PATCH A TEMPORARY HMA WEDGE WITH A 12:1 (OR FLATTER) SLOPE FOR A SMOOTH TRANSITION.

2. CROSS-SECTIONAL GRADE DIFFERENCED IN EXCESS OF 2" DURING NON-WORKING HOURS WILL REQUIRE DELINEATION BY USE OF REFLECTORIZED DRUMS, OR CONES AS DIRECTED BY MASSDOT HIGHWAY DIVISION.

3. CROSS-SECTIONAL GRADE DIFFERENCES IN EXCESS OF 4" DURING NON-WORKING HOURS SHALL BE PROTECTED BY BACKFILLING WITH A WEDGE OF EARTHWORK TO BE COMPACTED AT 4:1 SLOPE AND WILL ALSO REQUIRE DELINEATION BY USE OF DRUMS.

4. A MINIMUM SLOPE OF 4:1 MUST BE MAINTAINED AFTER WORKING HOURS DURING SUBBASE AND BASE COURSE INSTALLATION ALONG EDGE OF THE TRAVEL WAY. A MINIMUM SLOPE OF 8:1 MUST BE MAINTAINED ON ALL ABUTTER ACCESS DRIVES AND A MINIMUM SLOPE OF 12:1 MUST BE MAINTAINED ON ALL SIDEWALKS.

CONSTRUCTION SIGNING:

1. LOCATIONS OF SIGNS SHOWN ARE APPROXIMATE. EXACT LOCATION SHALL BE DETERMINED BY THE CONTRACTOR IN THE FIELD. THE CONTRACTOR SHALL ENSURE THAT SIGNS ARE PLACED IN ACCORDANCE WITH THE CURRENT M.U.T.C.D.

2. EXISTING SIGNING WHICH CONFLICTS WITH PROPOSED CONSTRUCTION TRAFFIC MANAGEMENT SIGNING SHALL BE REMOVED AND STACKED OR COVERED AND RESTORED AT THE END OF THE WORK.

3. ALL SIGNS SHALL BE COVERED OR REMOVED WHEN CONDITION IS NOT IN EFFECT.

4. THE MINIMUM MOUNTING HEIGHT OF POST-MOUNTED SIGNS, MEASURED VERTICALLY FROM THE BOTTOM OF THE SIGN TO THE TOP OF THE CURB OR SIDEWALK, OR TO THE ELEVATION OF THE NEAR EDGE OF THE TRAVELED WAY, SHALL BE 7 FEET UNLESS OTHERWISE SPECIFIED ON THE PLANS.

ARLINGTON
BIKEWAY CONNECTION AT INTERSECTION OF MASSACHUSETTS AVENUE & MYSTIC STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.		2	34
PROJECT FILE NO.	606885		

LEGEND, ABBREVIATIONS, & GENERAL NOTES

PAVEMENT MARKINGS:

1. UNLESS OTHERWISE NOTED, ALL PAVEMENT MARKINGS, SIGNS AND OTHER TRAFFIC EQUIPMENT REMOVED OR DAMAGED AS A RESULT OF THE CONTRACTOR'S OPERATIONS SHALL BE REPLACED IN ACCORDANCE WITH THE REQUIREMENTS OF MASSDOT HIGHWAY DIVISION.

2. CONTRACTOR SHALL INSTALL, RENEW AND MAINTAIN ALL TRAFFIC CONTROL DEVICES INCLUDING PAVEMENT MARKINGS AS SHOWN ON THE DRAWINGS, IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND AS REQUIRED BY THE MASSDOT RESIDENT ENGINEER.

3. CONTRACTOR SHALL REMOVE ALL PAVEMENT MARKINGS WHICH CONFLICT WITH PROPOSED PAVEMENT MARKINGS. THE METHOD OF REMOVAL SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF MASSDOT HIGHWAY DIVISION.

4. ALL TEMPORARY PAVEMENT MARKINGS SHALL BE MAINTAINED THROUGHOUT THE ENTIRE SEQUENCE. ALL EXISTING MARKING WITHIN THE PROJECT LIMITS SHALL BE REMOVED AND REPLACED AS INDICATED ON THE PAVEMENT MARKING PLANS.

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LEGEND

CIVIL/UTILITY/SURVEY LEGEND

EXISTING	PROPOSED	
D;MH	MH	DRAIN MANHOLE
	S	SEWER MANHOLE
	T	TELEPHONE MANHOLE
	C	CABLE TV MANHOLE
	E	ELECTRIC MANHOLE
	?	OTHER MANHOLE
		DEEP SUMP CATCH BASIN
		CATCH BASIN WITH OFFSET
		LANDSCAPE DRAIN
		DROP INLET
		GAS GATE
		WATER GATE
		LIGHT POLE
		UTILITY POLE
		UTILITY POLE WITH LIGHT
GUY	GUY	GUY WIRE
	HYD	HYDRANT
		SIGN
		MAILBOX
		LIGHT POLE
		ELECTRIC HANDHOLE
		TRAFFIC CONTROL BOX
		TREE UNDER 12" DIAMETER
		MONUMENT
		ORNAMENTAL BOLLARD
		GRANITE CURB
	SURVEY TRAVERSE	SURVEY TRAVERSE
		TEMPORARY BENCHMARK
WATER	WATER	WATER
DRAIN	X'-X" RCP	DRAIN
SEWER	SEWER	SEWER
F	F	FIBER OPTICS
L	L	LIGHTING
E	E	ELECTRIC
T	T	TELEPHONE
C	CATV	CABLE TELEVISION
G	G	GAS

CONSTRUCTION PLAN LEGEND

#	PROPOSED WHEELCHAIR RAMP
#	PROPOSED CATCH BASIN
PDMH#X	PROPOSED DRAINAGE MANHOLE
#	PROPOSED DRIVEWAY
#	PROPOSED CATCH BASIN
C##	CURVE NUMBER
	PAVEMENT SAWCUT LINE
	LINE OF EASEMENT

TEMPORARY TRAFFIC CONTROL PLAN LEGEND

	DIRECTION OF TRAVEL / NUMBER OF TRAVEL LANES
	STACKABLE REFLECTORIZED TRAFFIC DRUM
	42" TRAFFIC CONE
	WORK AREA
	SINGLE SIGN POST
F	FLAGGER
P	POLICE DETAIL
	PEDESTRIAN FLOW
	TYPE III BARRICADE
	TAPERED PRECAST CONCRETE TRAFFIC BARRIER
	HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW
	VARIABLE MESSAGE BOARD
	72" CHAIN LINK FENCE
	TEMPORARY CONCRETE BARRIER
	TEMPORARY CONCRETE BARRIER WITH 72" CLF
	TEMPORARY IMPACT ATTENUATOR
	VEHICLE MOUNTED MOVABLE IMPACT ATTENUATOR
	PROPOSED GRANITE CURB TO BE INSTALLED
	PROPOSED NEW CURB
	PROPOSED WORKZONE

PAVEMENT MARKING LEGEND

SWEL	6" SOLID WHITE EDGE LINE
SYEL	6" SOLID YELLOW EDGE LINE
SWLL	6" SOLID WHITE LANE LINE
BWLL	6" BROKEN WHITE LANE LINE 10' MARK - 30' SKIP
DWEL	6" DOTTED WHITE EDGE LINE 2' MARK - 4' SKIP
BWEL	12" DOTTED WHITE EDGE LINE 2' MARK - 3' SKIP
SWCHL	12" SOLID WHITE CHANNELIZATION LINE
SYCHL	12" SOLID YELLOW CHANNELIZATION LINE
DYCL	2-6" YELLOW CENTER LINES, 10" O.C.
SL	WHITE STOP LINE (12" UNLESS OTHERWISE SPECIFIED)
CW	WHITE - CROSS WALK (12" LINES, 10' O.C.; 12" LONGITUDINAL LINES, 4' O.C.) (UNLESS OTHERWISE SHOWN)
SWGL	12" SOLID WHITE GORE LINE (5' O.C. @45°).
SYGL	12" SOLID YELLOW GORE LINE (5' O.C. @45°).
DDYCL	6" DOTTED YELLOW CENTER LINES, 6" GAP 2' MARK - 4' SKIP
YL	YIELD LINE
	RAISED INTERSECTION MARKING
	BIKE LANE SYMBOL
	SHARROW SYMBOL
	BIKE DETECTION SYMBOL

ABBREVIATIONS

GENERAL

AADT	ANNUAL AVERAGE DAILY TRAFFIC
ABAN	ABANDON
ADJ	ADJUST
AD	ALGEBRAIC DIFFERENCE
ADT	AVERAGE DAILY TRAFFIC
APPROX.	APPROXIMATE
A.C.	ASPHALT CONCRETE
ACCM PIPE	ASPHALT COATED CORRUGATED METAL PIPE
BIT.	BITUMINOUS
BC	BOTTOM OF CURB
BD.	BOUND
℄	BASELINE
BLDG	BUILDING
BM	BENCH MARK
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
CL	CLASS (CONCRETE, EXCAVATION, ETC.)
CIT	CHANGE IN TYPE
CLF	CHAIN LINK FENCE
℄	CENTERLINE
CMP	CORRUGATED METAL PIPE
CSP	CORRUGATED STEEL PIPE
CO.	COUNTY
CONC	CONCRETE
CONT	CONTINUOUS
CONST	CONSTRUCTION
CR GR	CROWN GRADE
DDHV	DIRECTIONAL DESIGN HOURLY VOLUME
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
HP	HIGH POINT
HSD	HEADLIGHT SIGHT DISTANCE
HYD	HYDRANT
INV	INVERT
JCT	JUNCTION
L	LENGTH OF CURVE
LB	LEACHING BASIN
LP	LOW POINT
LT	LEFT
MAX	MAXIMUM
MB	MAIL BOX
MH	MANHOLE
MHB	MASSACHUSETTS HIGHWAY BOUND
MIN	MINIMUM
NIC	NOT IN CONTRACT
NO.	NUMBER
O.C.	ON CENTER
PBS	POST BOTH SIDES
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

ARLINGTON
BIKEWAY CONNECTION AT INTERSECTION OF
MASSACHUSETTS AVENUE & MYSTIC STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.		3	34
PROJECT FILE NO.	606885		

LEGEND, ABBREVIATIONS,
& GENERAL NOTES

GENERAL (CONT.)

PVC	POINT OF VERTICAL CURVATURE
PVI	POINT OF VERTICAL INTERSECTION
PVT	POINT OF VERTICAL TANGENCY
PVMT	PAVEMENT
PWW	PAVED WATER WAY
R	RADIUS OF CURVATURE
R&D	REMOVE AND DISCARD
R&T	REMOVE & TRANSPORT
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
RDWY	ROADWAY
REB	REBUILT
REM	REMOVE
REMOD	REMODELED
RET	RETAIN
RET WALL	RETAINING WALL
ROW	RIGHT-OF-WAY
RR	RAILROAD
R&R	REMOVE AND RESET
R&S	REMOVE AND STACK
RT	RIGHT
S	SLOPE
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 PERCENTAGE
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	WHEELCHAIR 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	UPRAISED HAND SYMBOL
FDW	FLASHING UPRAISED HAND SYMBOL
FR	FLASHING CIRCULAR RED
FY	FLASHING CIRCULAR YELLOW
FRL	FLASHING RED LEFT ARROW
FRR	FLASHING RED 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
OP	OPTICOM
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	WALKING PERSON SYMBOL
Y	STEADY CIRCULAR YELLOW
YL	STEADY YELLOW LEFT ARROW
YR	STEADY YELLOW RIGHT ARROW

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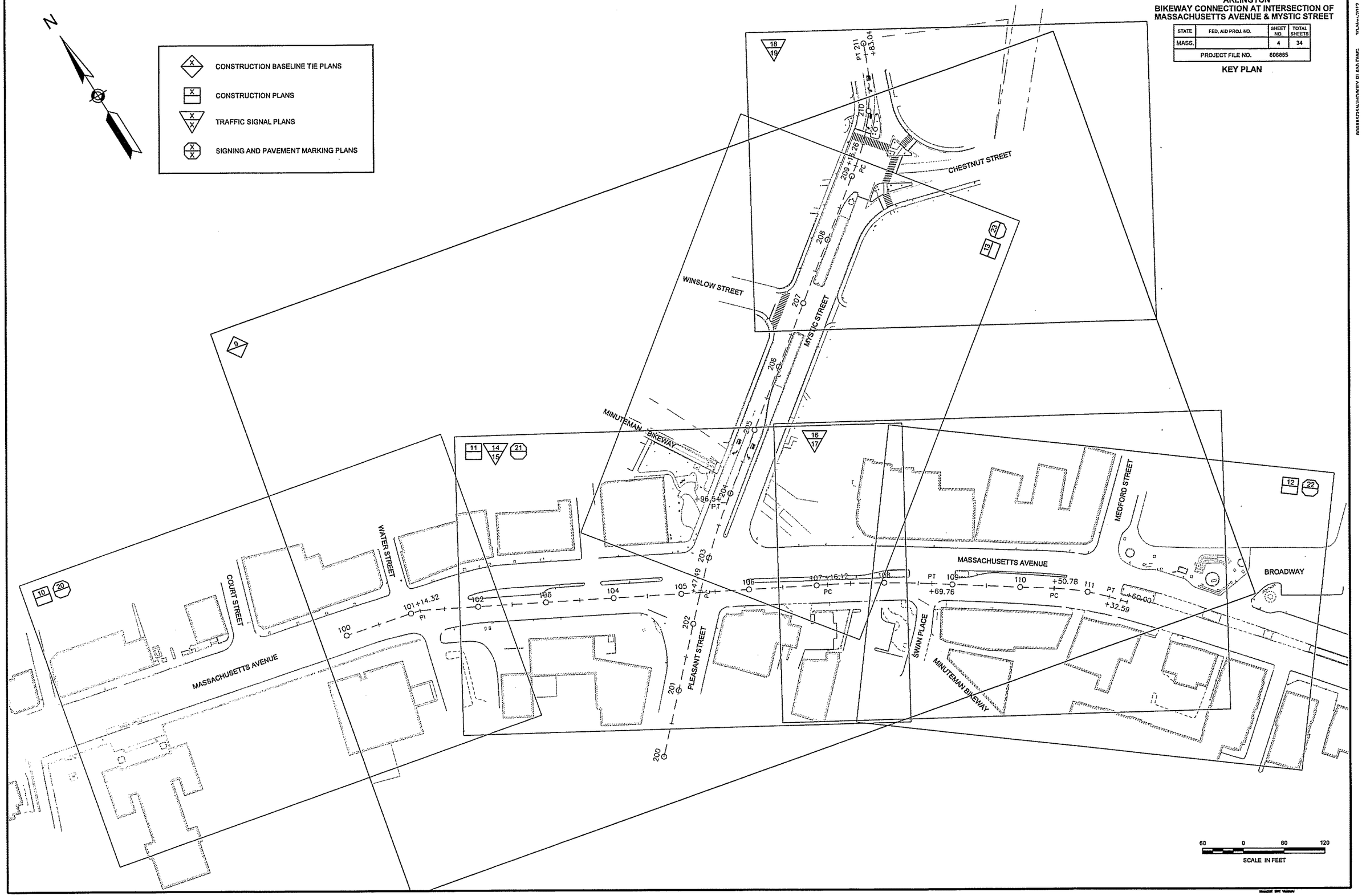
ARLINGTON
BIKEWAY CONNECTION AT INTERSECTION OF MASSACHUSETTS AVENUE & MYSTIC STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.		4	34
PROJECT FILE NO.	606885		

KEY PLAN



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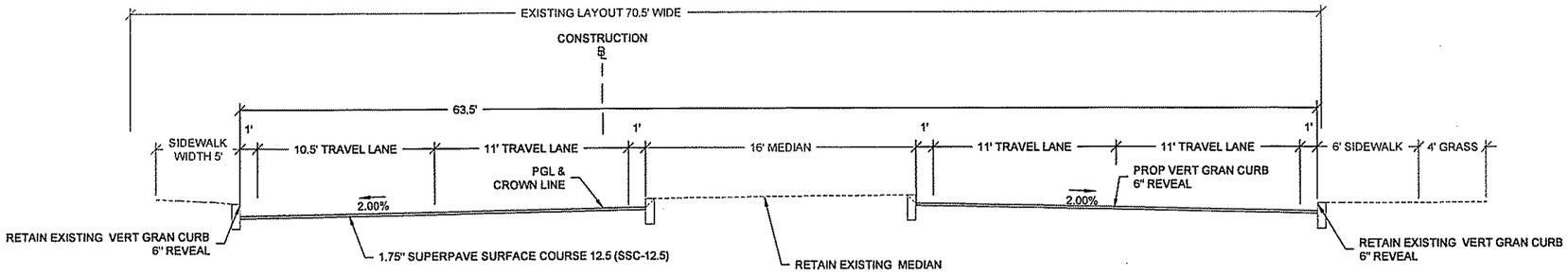
ARLINGTON
BIKEWAY CONNECTION AT INTERSECTION OF
MASSACHUSETTS AVENUE & MYSTIC STREET

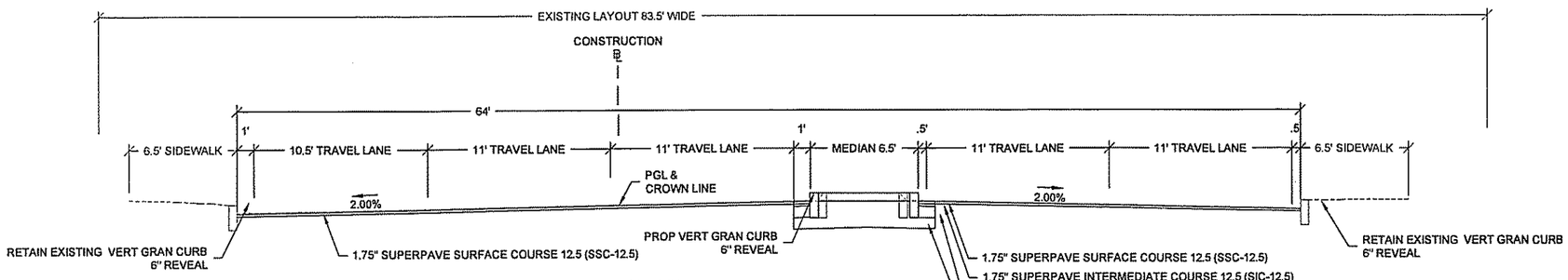
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.		5	34
PROJECT FILE NO.	606885		

TYPICAL SECTIONS & PAVEMENT NOTES
PLEASANT STREET AND MYSTIC STREET



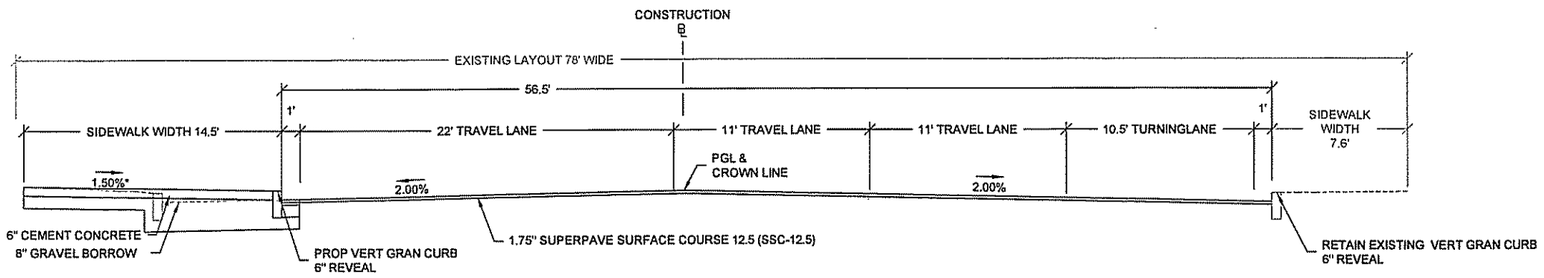
MYSTIC STREET

MILL AND OVERLAY
STA. 207+50 TO STA. 209+75
NOT TO SCALE



MYSTIC STREET

MILL AND OVERLAY
STA. 203+25 TO STA. 206+50
NOT TO SCALE



PLEASANT STREET

MILL AND OVERLAY
STA. 201+10 TO STA. 202+00
NOT TO SCALE

PAVEMENT NOTES: MASSACHUSETTS AVENUE, MYSTIC STREET, AND PLEASANT STREET.

PAVEMENT MILL AND OVERLAY:

SURFACE COURSE: 1.75" SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5) (LATEX MODIFIED)

PAVEMENT MILLING: 1.75" PAVEMENT MICROMILLING

FULL DEPTH CONSTRUCTION LESS THAN 4' WIDE

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

INTERMEDIATE COURSE: 1.75" SUPERPAVE INTERMEDIATE COURSE 12.5 (SIC-12.5) (LATEX MODIFIED) OVER

BASE COURSE: 6" HES CEMENT CONCRETE BASE OVER

SUB-BASE: 8" GRAVEL BORROW TYPE B

CEMENT CONCRETE DRIVEWAYS

SURFACE COURSE: 6" CEMENT CONCRETE SURFACE COURSE OVER

SUB-BASE: 8" GRAVEL BORROW TYPE B

CEMENT CONCRETE SIDEWALK AND RAMPS

SURFACE COURSE: 6" CEMENT CONCRETE SURFACE COURSE OVER

SUB-BASE: 8" GRAVEL BORROW TYPE B

NOTES: THE HOT MIX ASPHALT (HMA) WALKS AND DRIVES MAY BE SUPERPAVE HMA MIXTURES PAVED IN ACCORDANCE WITH SECTION 701 OF THE STANDARD SPECIFICATIONS WHICH SHALL BE THE BASIS FOR THE WORK AND PAID FOR UNDER ITEM 702. HMA WALKS AND ITEM 703. HMA DRIVES.

TACK COAT SHALL BE SPRAY APPLIED DOUBLE OVERLAP FOR UNIFORM COVERAGE AT 0.07 GAL/SY OVER MILLED SURFACE AND 0.05 GAL/SY OVER SMOOTH SURFACES (BASE AND INTERMEDIATE COURSES) PRIOR TO PAVING OVERLAY.

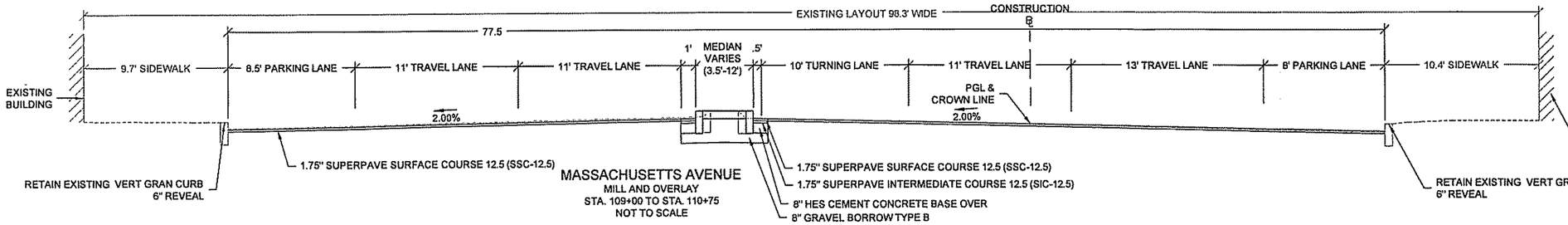
* = TOLERANCE FOR CONSTRUCTION ± 0.5% ON SIDEWALK SLOPES, DRIVEWAY SLOPES, AND WHEELCHAIR RAMPS.

:\10191\CURRENT\CUTSHEETS\606885(25%)HD(TYPICAL SECTION).dwg, 11/30/2012 12:44:16 PM

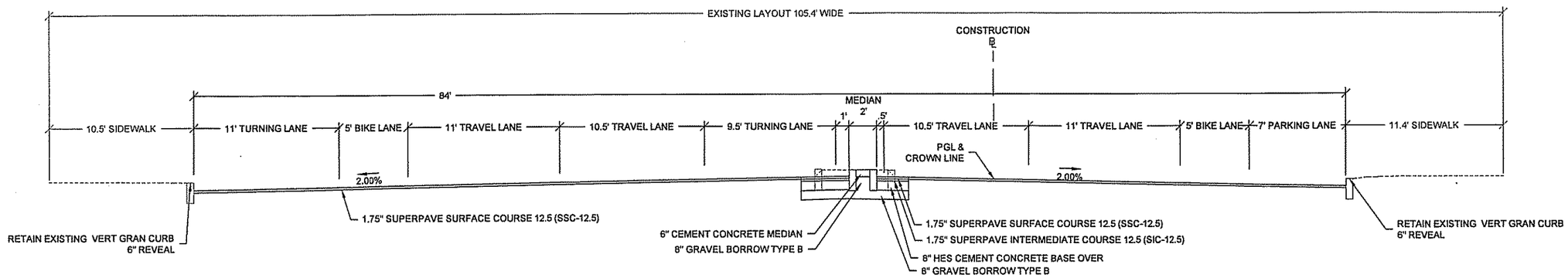
ARLINGTON
BIKEWAY CONNECTION AT INTERSECTION OF MASSACHUSETTS AVENUE & MYSTIC STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.		6	34
PROJECT FILE NO.	606885		

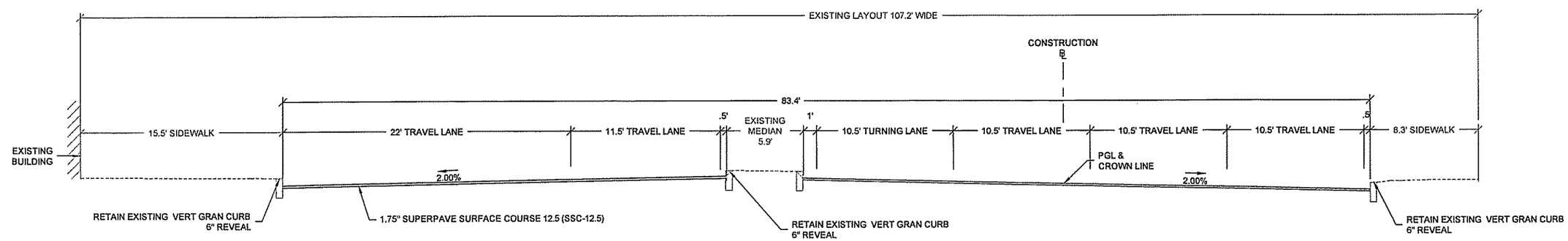
TYPICAL SECTIONS & PAVEMENT NOTES
MASSACHUSETTS AVENUE



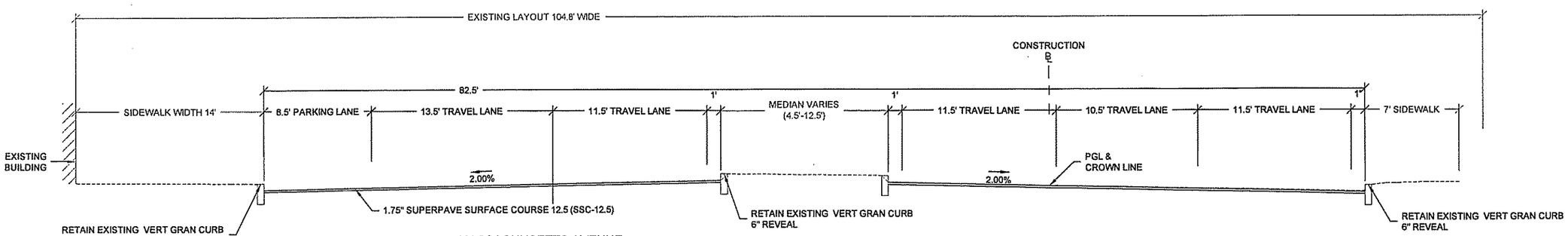
MASSACHUSETTS AVENUE
MILL AND OVERLAY
STA. 109+00 TO STA. 110+75
NOT TO SCALE



MASSACHUSETTS AVENUE
MILL AND OVERLAY
STA. 106+00 TO STA. 108+25
NOT TO SCALE



MASSACHUSETTS AVENUE
MILL AND OVERLAY
STA. 104+00 TO STA. 105+00
NOT TO SCALE



MASSACHUSETTS AVENUE
MILL AND OVERLAY
STA. 102+00 TO STA. 103+50
NOT TO SCALE

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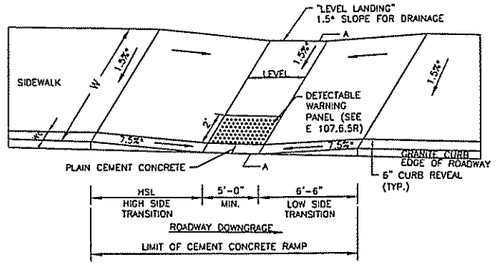


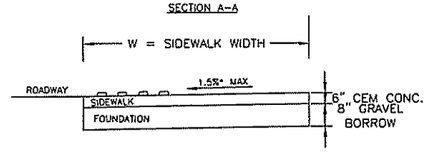
LEGEND:

HSL = HIGH SIDE TRANSITION (SEE E 107.9.0R)
W = SIDEWALK WIDTH
Wc = CURB WIDTH
W1 = PERPENDICULAR RAMP LENGTH
CC = CEMENT CONCRETE
* = TOLERANCE FOR CONSTRUCTION ±0.5%

USEABLE SIDEWALK WIDTH PER AAB = W-WC

RAMP LENGTH = W1 = W - 4'-0" MIN

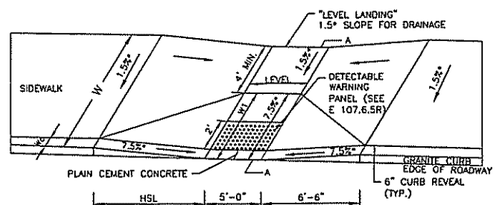
SECTION A-A



WHEELCHAIR RAMPS ON NARROW SIDEWALK WITH DETECTABLE WARNING PANEL (E107.2.1R)
NOT TO SCALE

WHEELCHAIR RAMPS ON NARROW SIDEWALK WITH DETECTABLE WARNING PANEL (E107.2.1R)

WCR #	ROADWAY ELEV. AT RAMP ℄	RAMP REFERENCE POINT			LENGTH OF PRIMARY RAMP	WIDTH OF SIDEWALK	WIDTH OF RAMP ENTRANCE	DEPTH OF LEVEL LANDING	TRANSITION		GUTTER SLOPE
		STREET	STATION	OFFSET					LEFT SIDE	RIGHT SIDE	
4	48.5	MYSTIC STREET	202+09.00	33.35' RT	7.3'	7.3'	5.0'	-	6.5'	11.0'	2.2%±
9	44.8	MASS AVE	108+46.92	33.39' RT	7.0'	7.0'	5.0'	-	7.7'	6.5'	0.7%±



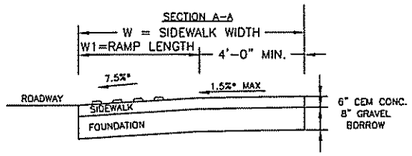
LEGEND:

HSL = HIGH SIDE TRANSITION (SEE E 107.9.0R)
W = SIDEWALK WIDTH
Wc = CURB WIDTH
W1 = PERPENDICULAR RAMP LENGTH
CC = CEMENT CONCRETE
* = TOLERANCE FOR CONSTRUCTION ±0.5%

USEABLE SIDEWALK WIDTH PER AAB = W-WC

RAMP LENGTH = W1 = W - 4'-0" MIN

SECTION A-A



WHEELCHAIR RAMPS LESS THAN 12'-4" SIDEWALK (E107.2.0R)
NOT TO SCALE

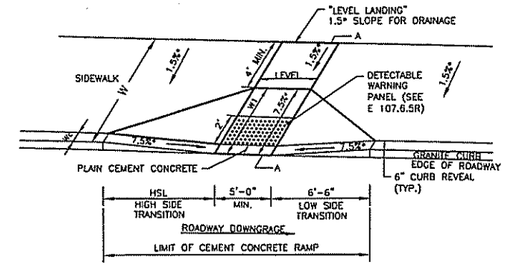
WHEELCHAIR RAMPS LESS THAN 12'-4" SIDEWALK (E107.2.0R)

WCR #	ROADWAY ELEV. AT RAMP ℄	RAMP REFERENCE POINT			LENGTH OF PRIMARY RAMP	WIDTH OF SIDEWALK	WIDTH OF RAMP ENTRANCE	DEPTH OF LEVEL LANDING	TRANSITION		GUTTER SLOPE
		STREET	STATION	OFFSET					LEFT SIDE	RIGHT SIDE	
5	48.5	MASS AVE	105+74.29	23.17' RT	11.4'	11.4'	5.0'	4.0'	14.0'	6.5'	3.5%±
8	43.9	MASS AVE	108+87.49	53.36' LT	10.2'	10.2'	5.0'	4.0'	11.0'	6.5'	2.3%±
10	44.5	MASS AVE	108+77.77	29.22' RT	11.4'	9.9'	5.0'	4.0'	6.5'	7.7'	0.7%±
11	44.1	MASS AVE	108+98.20	23.50' RT	10.9'	10.9'	5.0'	4.0'	6.5'	9.0'	1.90%±

ARLINGTON
BIKEWAY CONNECTION AT INTERSECTION OF MASSACHUSETTS AVENUE & MYSTIC STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.		7	34
PROJECT FILE NO.	606885		

CONSTRUCTION DETAILS



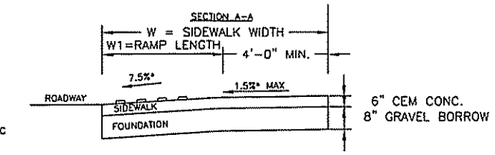
LEGEND:

HSL = HIGH SIDE TRANSITION (SEE E 107.9.0R)
W = SIDEWALK WIDTH
Wc = CURB WIDTH
W1 = PERPENDICULAR RAMP LENGTH
CC = CEMENT CONCRETE
* = TOLERANCE FOR CONSTRUCTION ±0.5%

USEABLE SIDEWALK WIDTH PER AAB = W-WC

RAMP LENGTH = W1 = W - 4'-0" MIN

SECTION A-A



WHEELCHAIR RAMPS GREATER THAN 12'-4" SIDEWALK (E107.3.0R)
NOT TO SCALE

WHEELCHAIR RAMPS GREATER THAN 12'-4" SIDEWALK (E107.3.0R)

WCR #	ROADWAY ELEV. AT RAMP ℄	RAMP REFERENCE POINT			LENGTH OF PRIMARY RAMP	WIDTH OF SIDEWALK	WIDTH OF RAMP ENTRANCE	DEPTH OF LEVEL LANDING	TRANSITION		GUTTER SLOPE
		STREET	STATION	OFFSET					LEFT SIDE	RIGHT SIDE	
1	49.7	MASS AVE	104+98.82	60.13' LT	8.3'	12.3'	10.0'	4.0'	14.0'	7.7'	3.1%±
2	49.2	MYSTIC STREET	203+18.11	25.65' LT	8.3'	12.3'	10.0'	4.0'	7.7'	6.5'	.2%±
3	50.1	MASS AVE	104+76.63	39.45' RT	8.3'	12.3'	10.0'	4.0'	6.5'	9.0'	1.6%±
6	48.5	MYSTIC STREET	203+44.88	45.03' RT	8.3'	12.3'	5.0'	4.0'	9.0'	6.5'	1.7%±
7	48.4	MASS AVE	106+24.21	59.06' LT	8.3'	12.3'	5.0'	4.0'	11.0'	6.5'	2.4%±

WHEELCHAIR RAMP NOTE:

1. DETECTABLE WARNING PANELS ARE REQUIRED ON ALL PROPOSED RAMPS AND SHALL BE INSTALLED IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL REQUIREMENTS AND GUIDELINES INCLUDING E 107.6.5R (MARCH 2012 CONSTRUCTION STANDARD DETAILS).

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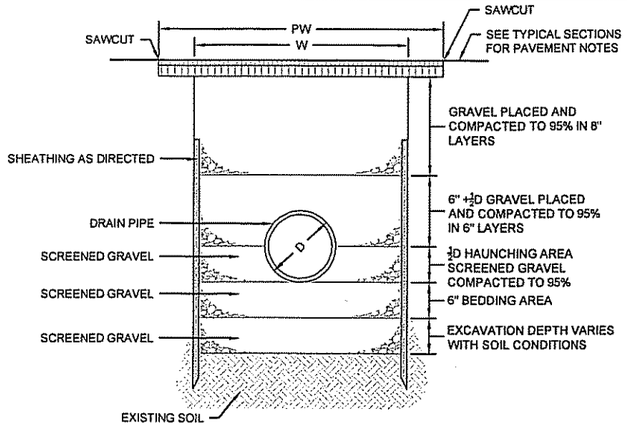
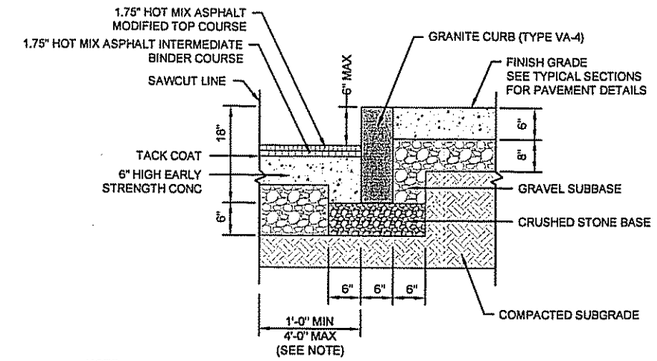


NOTES:

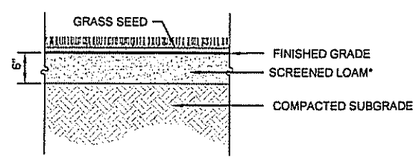
1. W = MAXIMUM WIDTH
2. PW = MAXIMUM PAVING WIDTH (W+1'-0")
3. D = OUTSIDE PIPE DIAMETER
4. UNSHEATHED TRENCH: W = D+2'-0" (3'-0" MIN.)
5. SHEATHED TRENCH: W = D+2'-0"+SHEATHING WIDTH
   - 4'-2" MIN. WITHOUT WALERS
   - 5'-0" MIN WITH WALERS
6. TRENCH BOX OR HYDRAULIC SHORING:
   - W = D+2'-0"+[WALL SHIELD WIDTH ≤ 8"] + 1'-0" FOR TRENCH BOX
7. PER DIRECTION OF THE MASSDOT PAVEMENT ENGINEER, ITEM 451 HMA PATCHING WILL BE USED FOR THE TEMPORARY PAVEMENT PATCHING.

TRENCH DETAIL FOR RCP OR DICL PIPE
NOT TO SCALE



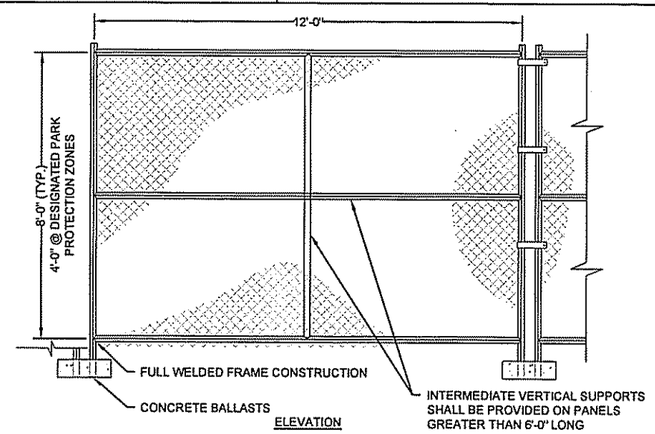
NOTE:
SAWCUT LINE WILL VARY SEE CROSS-SECTIONS

VERTICAL GRANITE CURB REALIGNMENT WITH BITUMINOUS CONCRETE PATCH
NOT TO SCALE

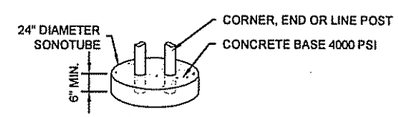


* DEPTH REFLECTS PLACEMENT AND ROLLING PRIOR TO SEEDING OF LOAM.

LOAM AND SEED DETAIL
NOT TO SCALE



ELEVATION

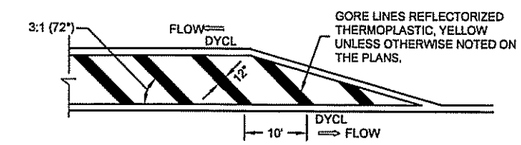


BALLAST BASE

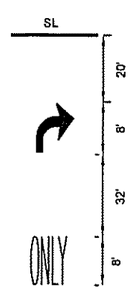
NOTES:

1. FABRIC SHALL BE 11 GAUGE MIN. WIRE, WOVEN INTO APPROXIMATELY 2" DIAMOND MESH AND BE ZINC COATED.
2. ALL POSTS, RAILS, AND INTERMEDIATE SUPPORTS TO BE FULL WELDED CONSTRUCTION USING GALVANIZED PIPE WITH A MINIMUM 2½ IN. O.D. GATE POSTS SHALL BE MINIMUM 4 IN. O.D.
3. THE CONTRACTOR IS RESPONSIBLE FOR SURFACE RESTORATION ONCE THE FENCE IS REMOVED.
4. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF THE TEMPORARY CONSTRUCTION FENCE AT THE CONCLUSION OF THE PROJECT.
5. REFER TO SPEC SECTION 01500-2.11 FOR TEMPORARY FENCING, BARRIERS, AND PARTITIONS.

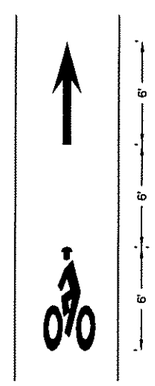
CONSTRUCTION, TREE, & PARK PROTECTION ZONE FENCE PANEL
NOT TO SCALE



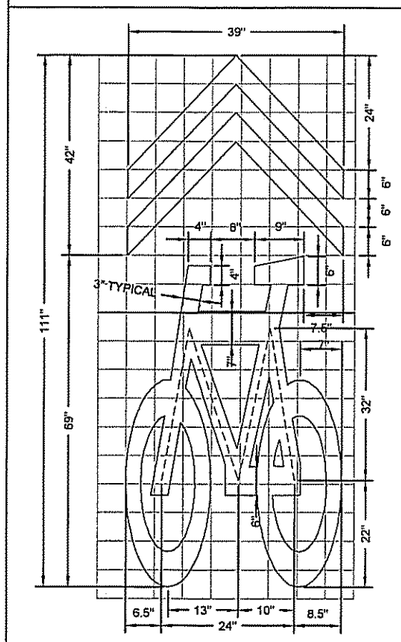
STANDARD CROSS-HATCHING
NOT TO SCALE



TURN LANE PAVEMENT MARKING
NOT TO SCALE



BICYCLE LANE MARKING
NOT TO SCALE



SHARED LANE SYMBOL PLACEMENT NOTES:

1. IN LOCATIONS WITH ON-STREET PARKING, SHARED LANE MARKING SYMBOLS SHALL BE PLACED SO THAT THE CENTER IS A MINIMUM OF 11 FEET FROM THE ADJACENT FACE OF CURB.
2. IN LOCATIONS WITHOUT ON-STREET PARKING, SHARE LANE MARKING SYMBOLS SHALL BE PLACED SO THAT THE CENTER IS 4 FEET FROM THE ADJACENT FACE OF CURB.
3. IF LOCATED IN A TURN LANE, SHARED LANE MARKING SYMBOLS SHALL BE CENTERED IN THE LANE.
4. DO NOT PLACE SYMBOLS ON LANE LINES.
5. SHARED LANE SYMBOLS SHALL BE PLACED A MAXIMUM OF 500 FEET APART.

SHARED LANE SYMBOL DETAIL
NOT TO SCALE

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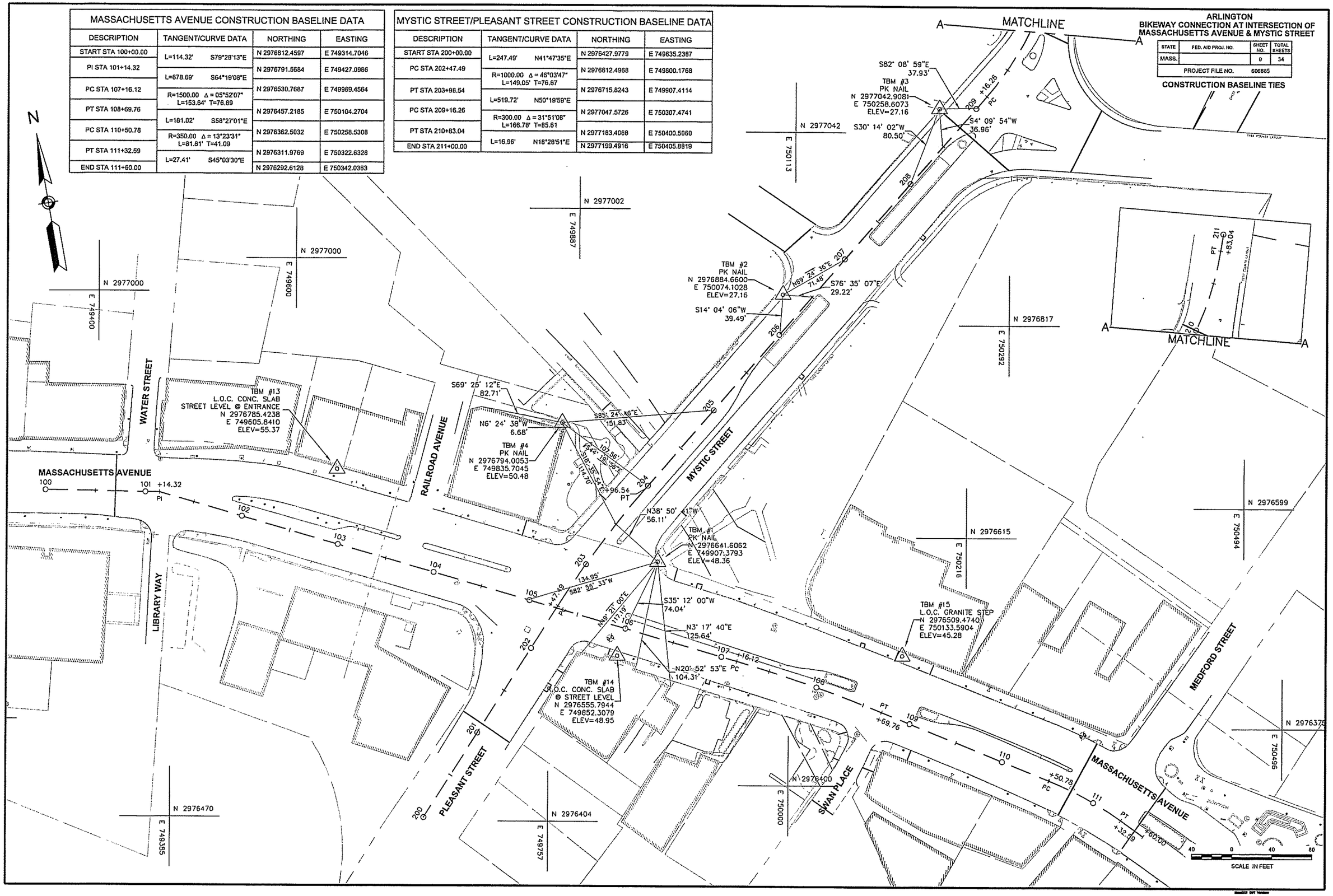
MASSACHUSETTS AVENUE CONSTRUCTION BASELINE DATA			
DESCRIPTION	TANGENT/CURVE DATA	NORTHING	EASTING
START STA 100+00.00	L=114.32' S79°28'13"E	N 2976812.4597	E 749314.7046
PI STA 101+14.32	L=678.69' S64°19'08"E	N 2976791.5684	E 749427.0986
PC STA 107+16.12	R=1500.00 Δ = 05°52'07" L=153.64' T=76.89	N 2976530.7687	E 749969.4564
PT STA 108+69.76	L=181.02' S58°27'01"E	N 2976457.2185	E 750104.2704
PC STA 110+50.78	R=350.00 Δ = 13°23'31" L=81.81' T=41.09	N 2976362.5032	E 750258.5308
PT STA 111+32.59	L=27.41' S45°03'30"E	N 2976311.9769	E 750322.6328
END STA 111+60.00		N 2976292.6128	E 750342.0363

MYSTIC STREET/PLEASANT STREET CONSTRUCTION BASELINE DATA			
DESCRIPTION	TANGENT/CURVE DATA	NORTHING	EASTING
START STA 200+00.00	L=247.49' N41°47'35"E	N 2976427.9779	E 749635.2387
PC STA 202+47.49	R=1000.00 Δ = 46°03'47" L=149.05' T=76.67	N 2976612.4968	E 749800.1768
PT STA 203+96.54	L=519.72' N50°19'59"E	N 2976715.8243	E 749907.4114
PC STA 209+16.26	R=300.00 Δ = 31°51'08" L=166.78' T=85.61	N 2977047.5726	E 750307.4741
PT STA 210+83.04	L=16.96' N18°28'51"E	N 2977183.4068	E 750400.5060
END STA 211+00.00		N 2977199.4916	E 750405.8819

ARLINGTON
BIKEWAY CONNECTION AT INTERSECTION OF MASSACHUSETTS AVENUE & MYSTIC STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.		9	34
PROJECT FILE NO.	606885		

CONSTRUCTION BASELINE TIES



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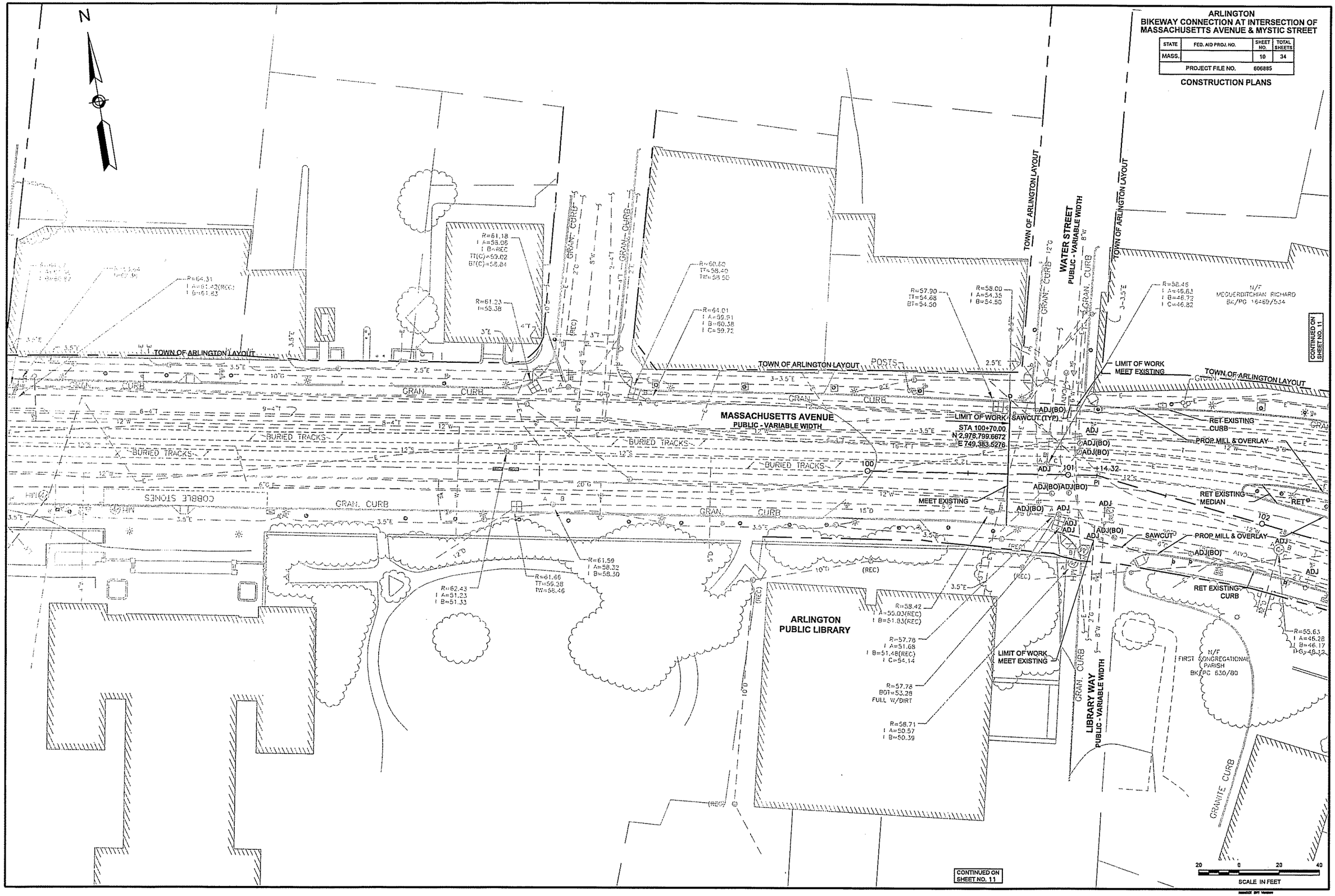

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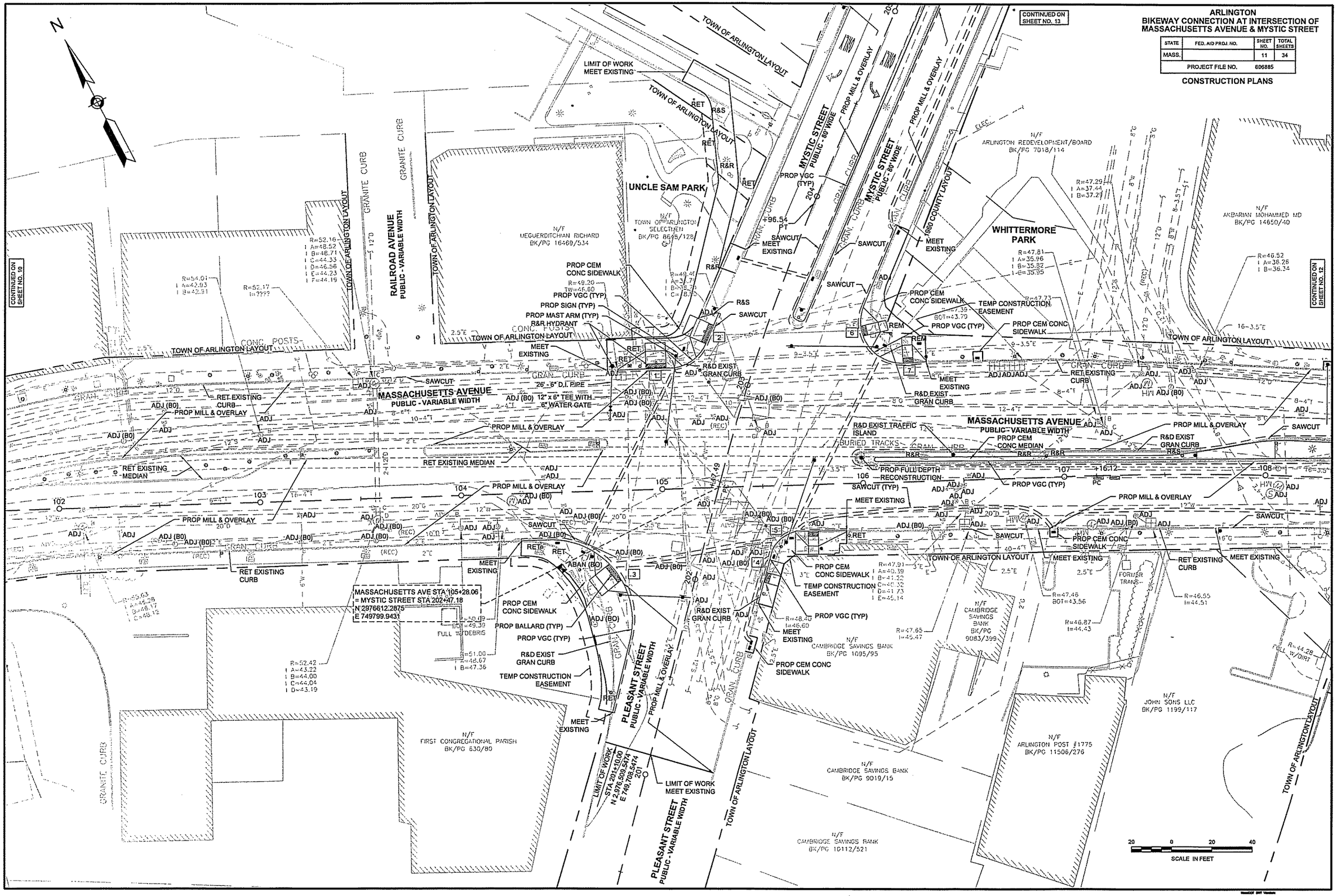
ARLINGTON
BIKEWAY CONNECTION AT INTERSECTION OF MASSACHUSETTS AVENUE & MYSTIC STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.		11	34
PROJECT FILE NO.	606885		

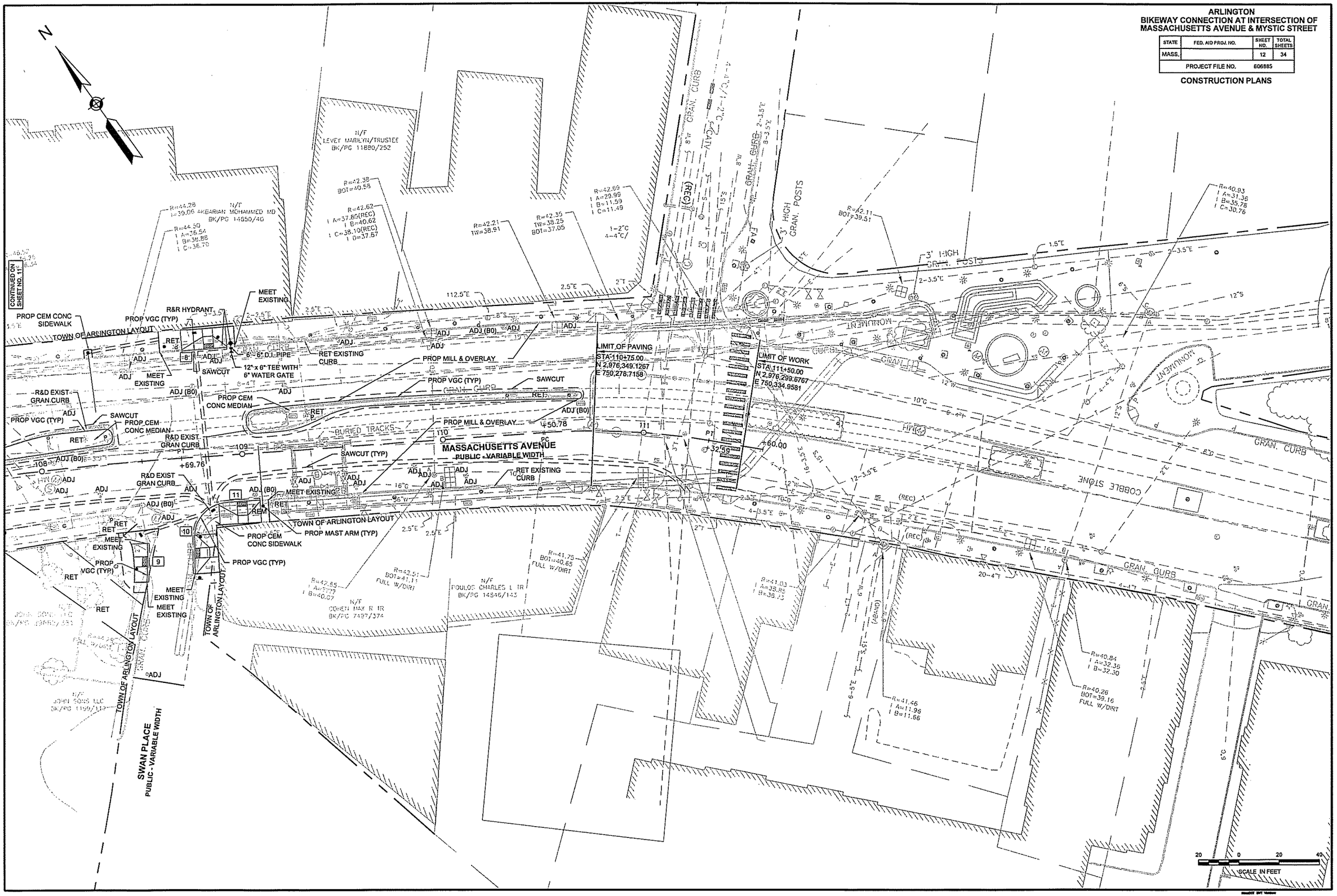
CONSTRUCTION PLANS



ARLINGTON
BIKEWAY CONNECTION AT INTERSECTION OF MASSACHUSETTS AVENUE & MYSTIC STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.		12	34
PROJECT FILE NO.	606885		

CONSTRUCTION PLANS



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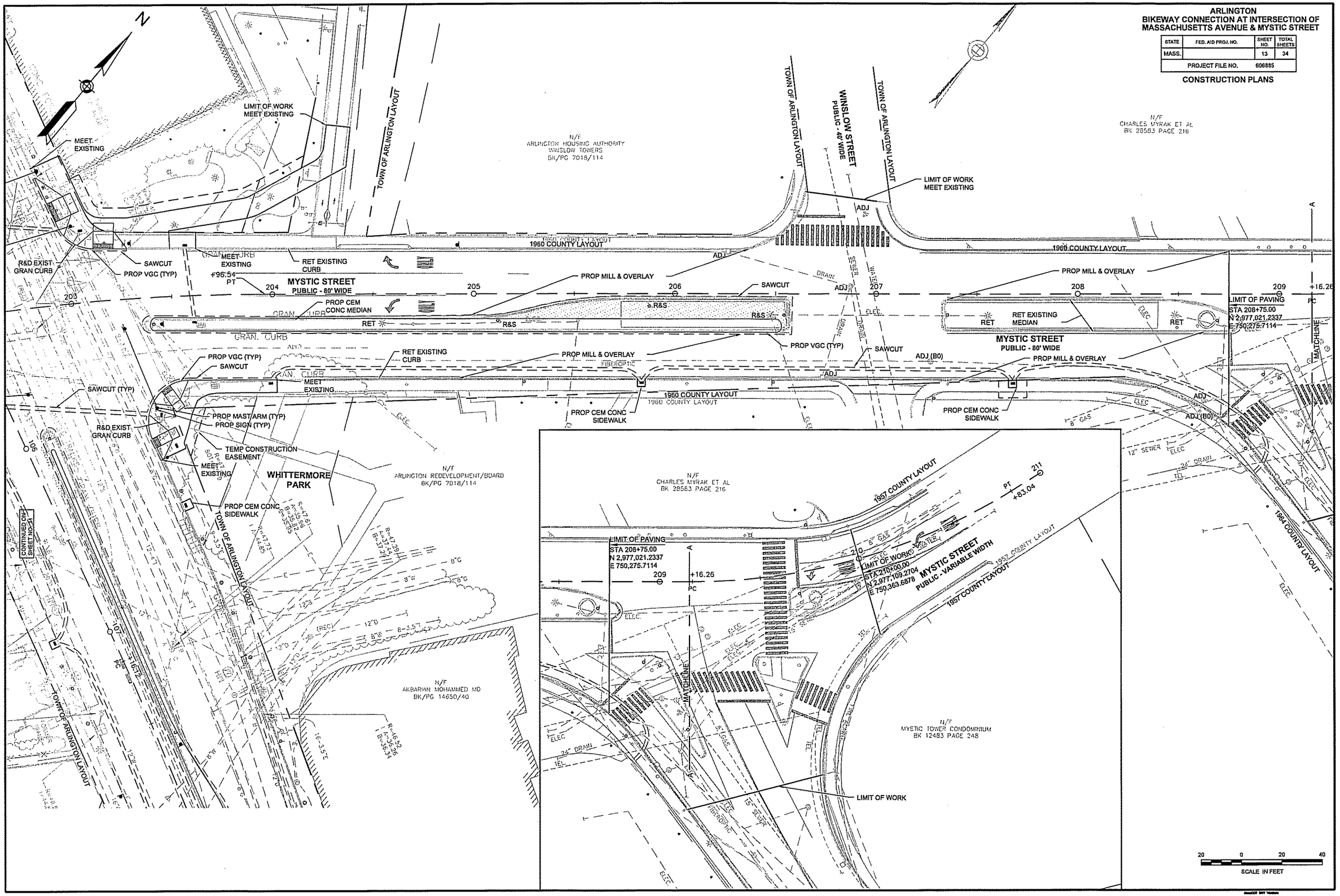
ARLINGTON
BIKEWAY CONNECTION AT INTERSECTION OF MASSACHUSETTS AVENUE & MYSTIC STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.		13	34
PROJECT FILE NO.	606885		

CONSTRUCTION PLANS



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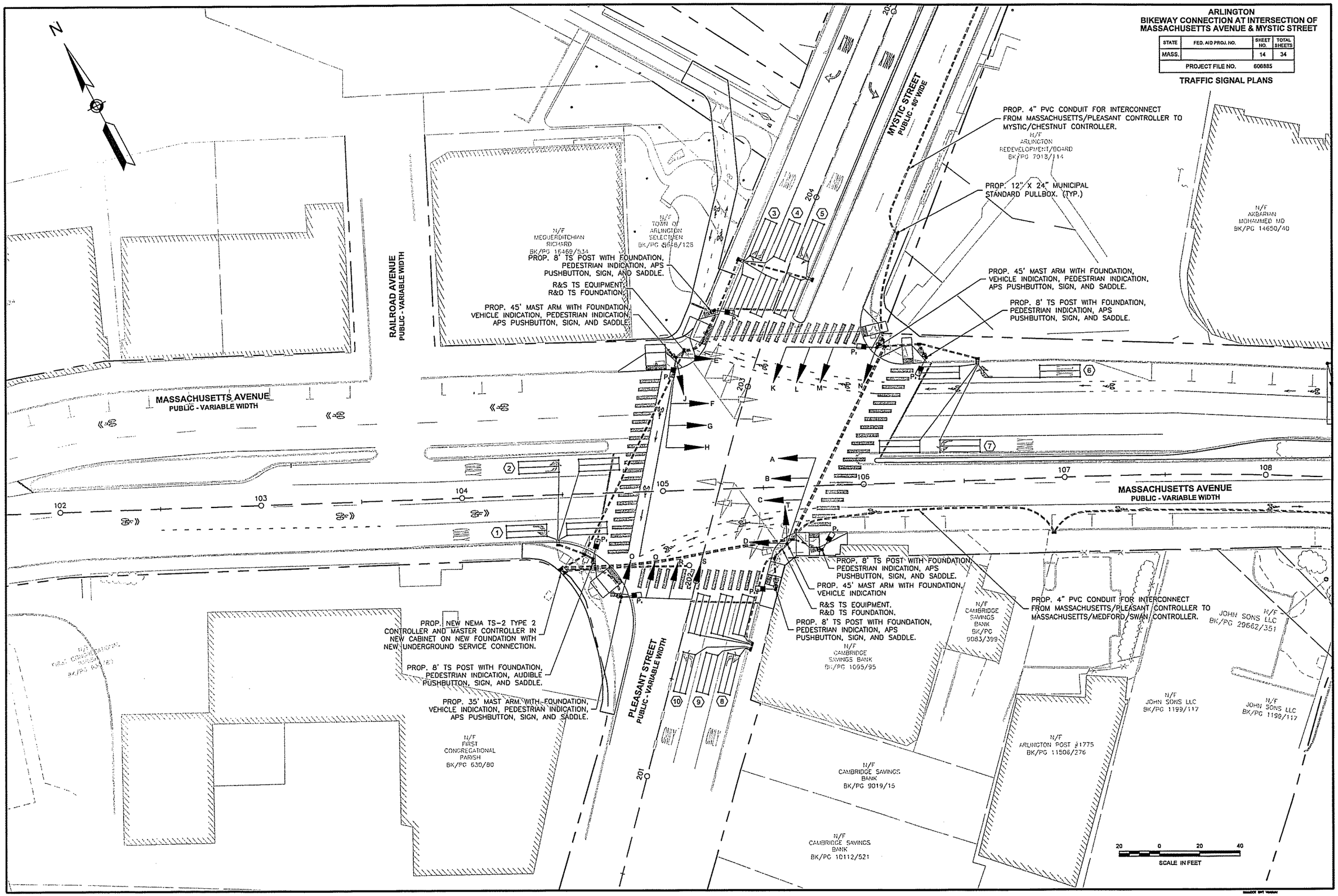
ARLINGTON
BIKEWAY CONNECTION AT INTERSECTION OF MASSACHUSETTS AVENUE & MYSTIC STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.		14	34
PROJECT FILE NO.	606885		

TRAFFIC SIGNAL PLANS



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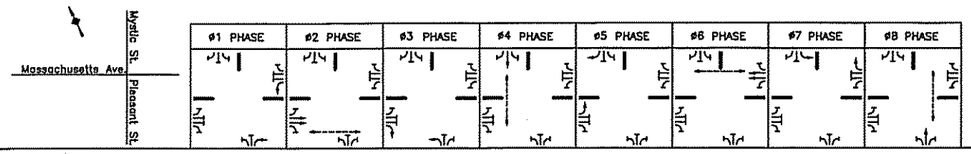
ARLINGTON
BIKEWAY CONNECTION AT INTERSECTION OF MASSACHUSETTS AVENUE & MYSTIC STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.		15	34
PROJECT FILE NO.	606885		

TRAFFIC SIGNAL DATA



SEQUENCE AND TIMING FOR FULL ACTUATED CONTROL (ISOLATED)

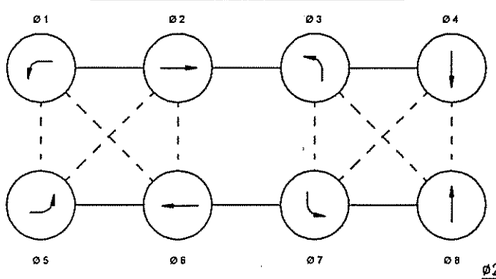
STREET	DIRECTION	HOUSINGS	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	FLASH OPER.
MASSACHUSETTS AVENUE	EB LT	A	RL	RL	RL	RL	RL	RL	RL	RL	RL	RL	RL	RL	GL	YL	RL	RL	RL	RL	RL	RL	RL	RL	RL	RL	
MASSACHUSETTS AVENUE	EB	B,C	R	R	R	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
MASSACHUSETTS AVENUE	EB RT	D	R	R	R	R	R	R	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
MASSACHUSETTS AVENUE	WB LT	H	GL	YL	RL	RL	RL	RL	RL	RL	RL	RL	RL	RL	RL	RL	RL	RL	RL	RL	RL	RL	RL	RL	RL	RL	
MASSACHUSETTS AVENUE	WB	F,G	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	G	Y	R	R	R	R	R	R	R	
MASSACHUSETTS AVENUE	WB RT	E	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	G	Y	R	R	R	R	
PLEASANT STREET	NB LT	J,K	RL	RL	RL	RL	RL	RL	GL	YL	RL	RL	RL	RL	RL	RL	RL	RL	RL	RL	RL	RL	RL	RL	RL	RL	
PLEASANT STREET	NB	L,M	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	G	Y	R	
PLEASANT STREET	NB RT	N	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
MYSTIC STREET	SB LT	S,T	RL	RL	RL	RL	RL	RL	RL	RL	RL	RL	RL	RL	RL	RL	RL	RL	RL	RL	GL	YL	RL	RL	RL	RL	
MYSTIC STREET	SB	Q,R	R	R	R	R	R	R	R	R	R	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	
MYSTIC STREET	SB RT	O	R	R	R	R	R	R	R	R	R	R	R	R	G	Y	R	R	R	R	R	R	R	R	R	R	
PEDESTRIAN	E–W	P_1–P_4	DW	DW	DW	W/FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	
PEDESTRIAN	N–S	P_2–P_8	DW	DW	DW	DW	DW	DW	DW	DW	DW	W/FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	
PEDESTRIAN	E–W	P_3–P_6	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	W/FDW	DW	DW	DW	DW	DW	DW	DW	DW	
PEDESTRIAN	PB	P_7–P_8	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	W/FDW	DW	DW	

TIMING IN SECONDS

MINIMUM GREEN (INITIAL)																										EMERGENCY ONLY
PASSAGE TIME (VEHICLE)																										
MAXIMUM 1																										
MAXIMUM 2																										
YELLOW CLEARANCE																										
RED CLEARANCE																										
WALK (W)																										
PEDESTRIAN CLEARANCE																										
RECALL	NONE			ON			NONE			NONE			NONE			ON			NONE			NONE				
MEMORY																										

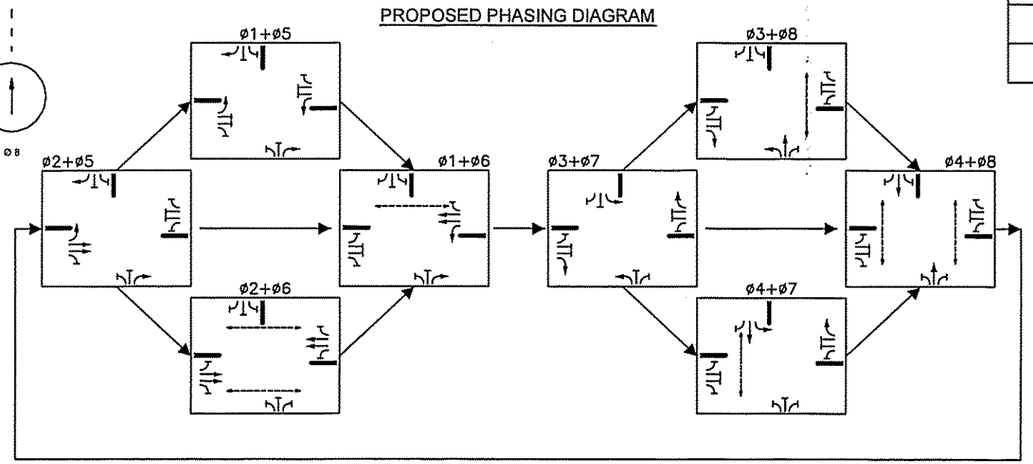
COORDINATION DATA			COORDINATION PHASE TIMING							
TIMING PLAN	CYCLE LENGTH	REF/OFFSET	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.
TP1 M – F (6AM – 9AM)										
TP2 M – F (3PM – 7PM)										
TP3 SAT (11AM – 6PM)										

NEMA DUAL RING PHASING NOTES:



1. PHASES ASSOCIATED BY A SOLID LINE SHALL NOT OPERATE CONCURRENTLY.
2. PHASES ASSOCIATED BY A DASHED LINE MAY OPERATE CONCURRENTLY.
3. THROUGH MOVEMENTS MAY INCLUDE RIGHT TURNS.
4. IF THE ASSIGNED RIGHT OF WAY FOR ANY TRAFFIC MOVEMENT IS TO REMAIN IN EFFECT DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATIONS FOR THAT TRAFFIC MOVEMENT SHALL NOT CHANGE DURING THE CHANGE INTERVAL(S) UNLESS OTHERWISE NOTED.

PROPOSED PHASING DIAGRAM



CLEARANCES

FROM	TO G	GL	GR	R	RL	RR	W	DW
G	G	–	–	Y	–	–	–	–
GL	–	GL	–	–	YL	–	–	–
GR	–	–	GR	–	–	YR	–	–
R	–	–	–	R	–	–	–	–
RL	–	–	–	–	RL	–	–	–
RR	–	–	–	–	–	RR	–	–
W	–	–	–	–	–	–	W	FDW
DW	–	–	–	–	–	–	–	DW

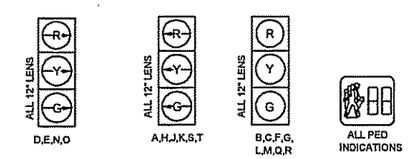
PAY ITEM	QUANTITY	MAJOR ITEMS REQUIRED ITEM
		Plus all necessary duct, cable, labor, miscellaneous
		material and equipment to complete the installation.

LOOP DETECTOR DATA

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

DETECTOR NUMBER	AMPLIFIER NUMBER	CHANNEL NUMBER	LOOP SIZE	NUM. OF TURNS	Ø CALLED	Ø EXT.	MODE A=PULSE B=PRES.	DELAY TIME	EXT. TIME
1	1	1	2@6'X6'	2-4-2	3	3	B	-	-
2	1	2	2@6'X6'	2-4-2	5	5	B	-	-
3	2	1	2@6'X6'	2-4-2	5	5	B	-	-
4	2	2	2@6'X6'	2-4-2	4	4	B	-	-
5	3	1	2@6'X6'	2-4-2	7	7	B	-	-
6	3	2	2@6'X6'	2-4-2	7	7	B	-	-
7	4	1	2@6'X6'	2-4-2	1	1	B	-	-
8	4	2	2@6'X6'	2-4-2	1	1	B	-	-
9	5	1	2@6'X6'	2-4-2	8	8	B	-	-
10	5	2	2@6'X6'	2-4-2	3	3	B	-	-

SIGNAL IDENTIFICATION



NOTES:

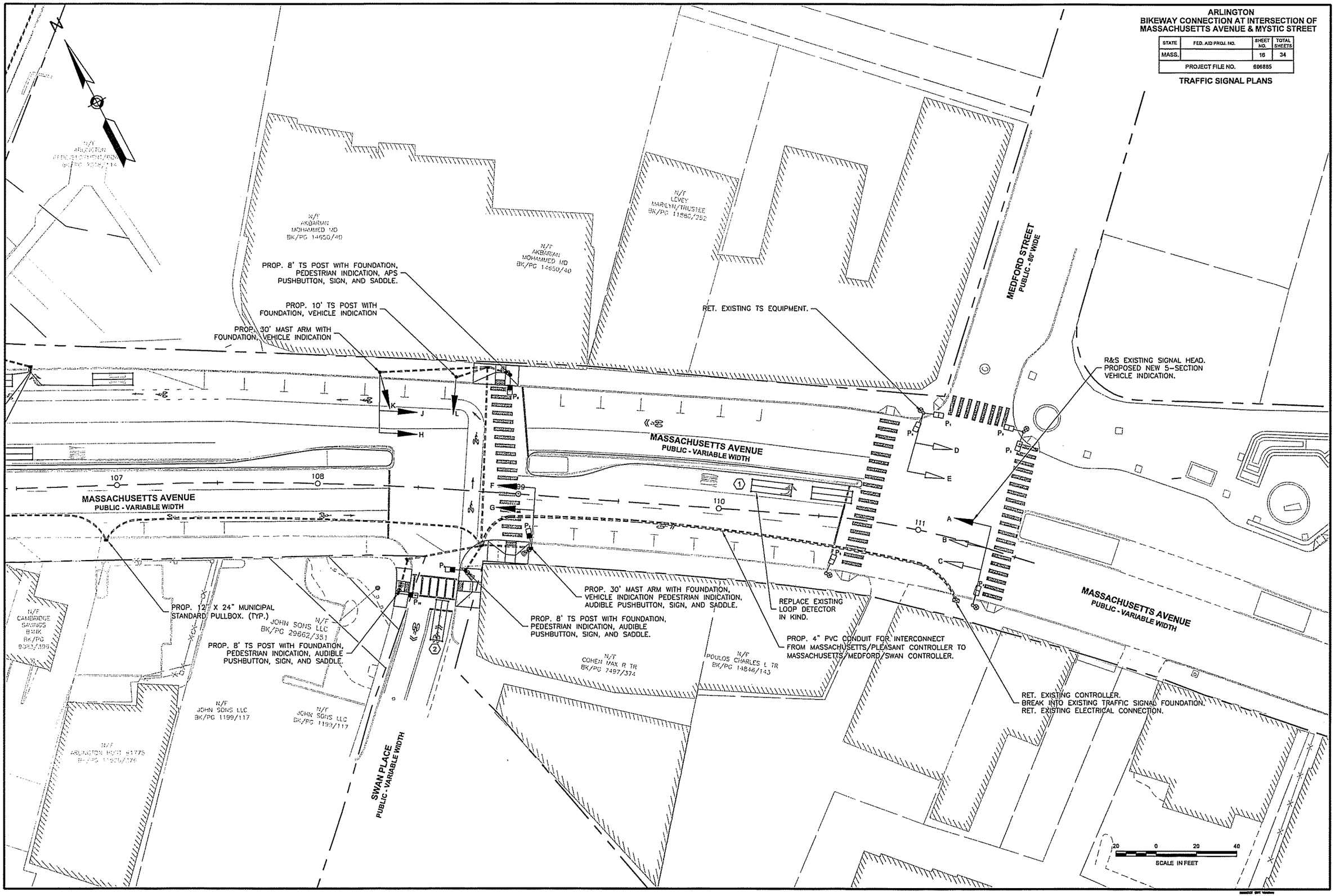
1. ALL SIGNALS SHALL HAVE CUT AWAY VISORS.
2. ALL SIGNALS SHALL HAVE 12" LED WITH 5" LOUVERED BACK PLATES.

...\10191\CURRENT\CUTSHEETS\606885[25%]TR(TRAFFIC SIGNAL).dwg, 11/30/2012 12:23:51 PM

ARLINGTON
BIKEWAY CONNECTION AT INTERSECTION OF
MASSACHUSETTS AVENUE & MYSTIC STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.		16	34
PROJECT FILE NO.	606885		

TRAFFIC SIGNAL PLANS



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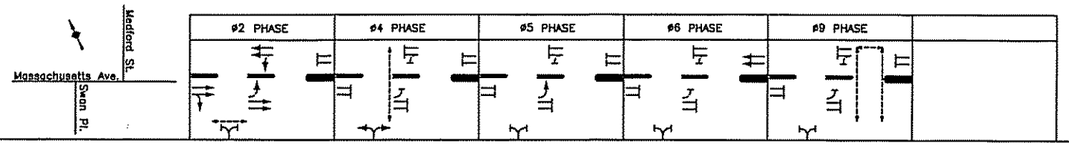


SEQUENCE AND TIMING FOR FULL ACTUATED CONTROL (ISOLATED)

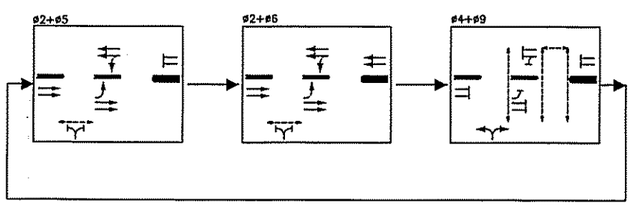
STREET	DIRECTION	HOUSINGS	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL		FLASH OPER.
MASSACHUSETTS AVENUE	EB LT	A	G	Y	R	R	R	R	GL	YL	R	R	R	R	R	R	R		
MASSACHUSETTS AVENUE	EB	B,C	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R		
MASSACHUSETTS AVENUE	EB	F,G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R		
MASSACHUSETTS AVENUE	WB	D,E	R	R	R	R	R	R	R	R	R	G	Y	R	R	R	R		
MASSACHUSETTS AVENUE	WB	H,J	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R		
SWAN PLACE	NB	K,L	R	R	R	G	Y	R	R	R	R	R	R	R	R	R	R		
PEDESTRIAN	E-W	P_8-P_{10}	W/FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW		
PEDESTRIAN	N-S	P_7-P_9	DW	DW	DW	W/FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW		
PEDESTRIAN	E-W/N-S	P_1-P_4,P_5-P_4,P_6-P_9	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	W/FDW	DW	DW		

TIMING IN SECONDS

MINIMUM GREEN (INITIAL)																	EMERGENCY ONLY
PASSAGE TIME (VEHICLE)																	
MAXIMUM 1																	
MAXIMUM 2																	
YELLOW CLEARANCE																	
RED CLEARANCE																	
WALK (W)																	
PEDESTRIAN CLEARANCE																	
RECALL			ON			NONE			NONE			ON			NONE		
MEMORY																	

COORDINATION DATA			COORDINATION PHASE TIMING								
TIMING PLAN	CYCLE LENGTH	REF/OFFSET	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.
TP1 M - F (6AM - 9AM)											
TP2 M - F (3PM - 7PM)											
TP3 SAT (11AM - 6PM)											

PROPOSED PHASING DIAGRAM



ARLINGTON
BIKEWAY CONNECTION AT INTERSECTION OF MASSACHUSETTS AVENUE & MYSTIC STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.		17	34
PROJECT FILE NO.	606885		

TRAFFIC SIGNAL DATA

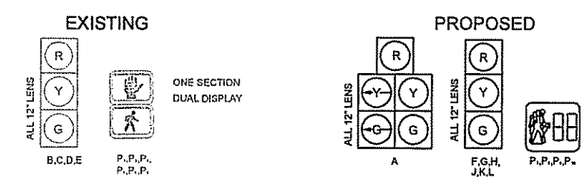
MAJOR ITEMS REQUIRED		
PAY ITEM	QUANTITY	ITEM
		Plus all necessary duct, cable, labor, miscellaneous
		material and equipment to complete the installation.

LOOP DETECTOR DATA

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

DETECTOR NUMBER	AMPLIFIER NUMBER	CHANNEL NUMBER	LOOP SIZE	NUM. OF TURNS	Ø CALLED	Ø EXT.	MODE A=PULSE B=PRES.	DELAY TIME	EXT. TIME
1	1	1	2@6'X6'	2-4-2	5	5	B	-	-
2	1	2	1@6'X6'	2-4-2	4	4	B	-	-

SIGNAL IDENTIFICATION



NOTES:

1. ALL PROP. SIGNALS SHALL HAVE CUT AWAY VISORS.
2. ALL PROP. SIGNALS SHALL HAVE 12" LED WITH 5" LOUVERED BACK PLATES.

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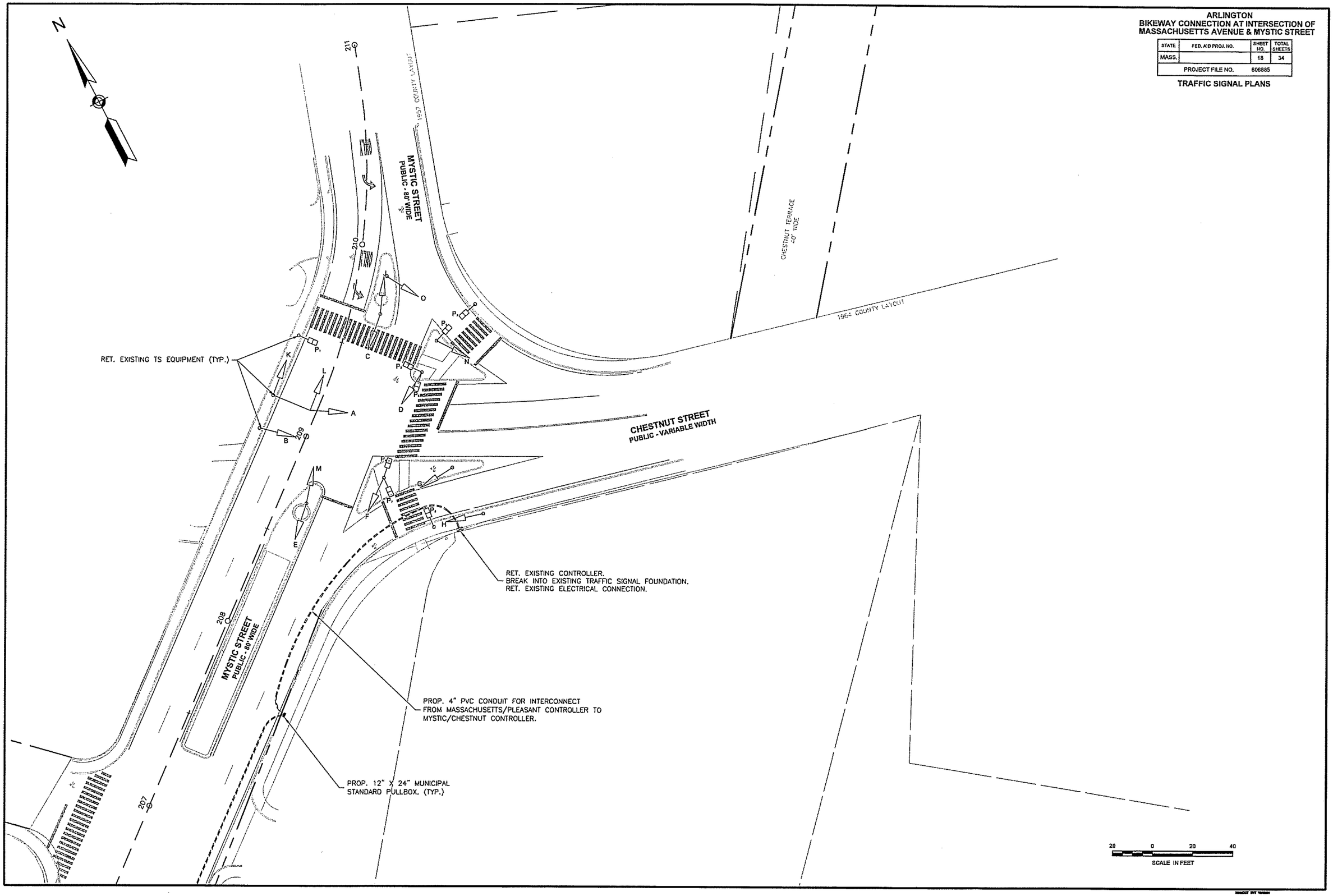
ARLINGTON
BIKEWAY CONNECTION AT INTERSECTION OF
MASSACHUSETTS AVENUE & MYSTIC STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.		18	34
PROJECT FILE NO.	606885		

TRAFFIC SIGNAL PLANS



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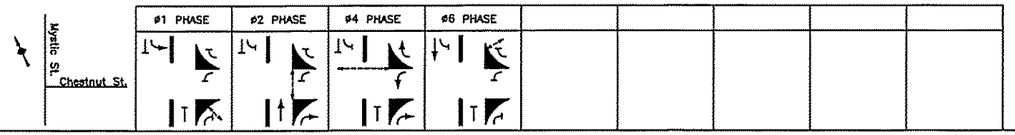
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.		19	34
PROJECT FILE NO.	606885		

TRAFFIC SIGNAL DATA



SEQUENCE AND TIMING FOR FULL ACTUATED CONTROL (ISOLATED)

STREET	DIRECTION	HOUSINGS	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	FLASH OPER.
CHESTNUT STREET	WB	A,B	R	R	R	R	R	R	G	Y	R	R	R	R	
CHESTNUT STREET	WB	N,O	R	R	R	R	R	R	GR	Y	R	R	R	R	
MYSTIC STREET	NB	C,E	R	R	R	GT	Y	R	R	R	R	R	R	R	
MYSTIC STREET	NB	D	R	R	R	G	Y	R	R	R	R	R	R	R	
MYSTIC STREET	NB	F	R	R	R	GR	Y	R	R	R	R	R	R	R	
MYSTIC STREET	NB	G,H	R	R	R	G	Y	R	G	Y	R	R	R	R	
MYSTIC STREET	SB	J,M	GL	Y	R	R	R	R	R	R	R	R	R	R	
MYSTIC STREET	SB	K,L	R	R	R	R	R	R	R	R	R	G	Y	R	
PEDESTRIAN	N–S	P_1–P_5	W/FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	
PEDESTRIAN	N–S	P_2–P_6	DW	DW	DW	W/FDW	DW	DW	DW	DW	DW	DW	DW	DW	
PEDESTRIAN	E–W	P_3–P_4	DW	DW	DW	DW	DW	DW	W/FDW	DW	DW	DW	DW	DW	
PEDESTRIAN	N–S	P_1–P_5	DW	DW	DW	DW	DW	DW	DW	DW	DW	W/FDW	DW	DW	

TIMING IN SECONDS

MINIMUM GREEN (INITIAL)	
PASSAGE TIME (VEHICLE)	
MAXIMUM 1	
MAXIMUM 2	
YELLOW CLEARANCE	
RED CLEARANCE	
WALK (W)	
PEDESTRIAN CLEARANCE	
RECALL	NONE / ON / NONE / ON
MEMORY	

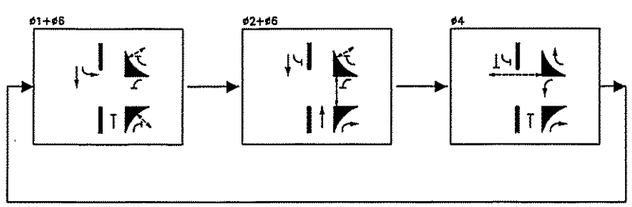
EMERGENCY ONLY

COORDINATION DATA			COORDINATION PHASE TIMING			
TIMING PLAN	CYCLE LENGTH	REF/OFFSET	SEC.	SEC.	SEC.	SEC.
TP1 M – F (6AM – 9AM)						
TP2 M – F (3PM – 7PM)						
TP3 SAT (11AM – 6PM)						

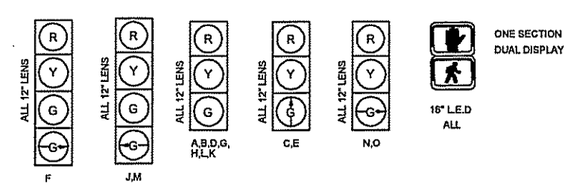
PAY ITEM	QUANTITY	ITEM
		Plus all necessary duct, cable, labor, miscellaneous
		material and equipment to complete the installation.

MAJOR ITEMS REQUIRED

PROPOSED PHASING DIAGRAM



SIGNAL IDENTIFICATION
EXISTING

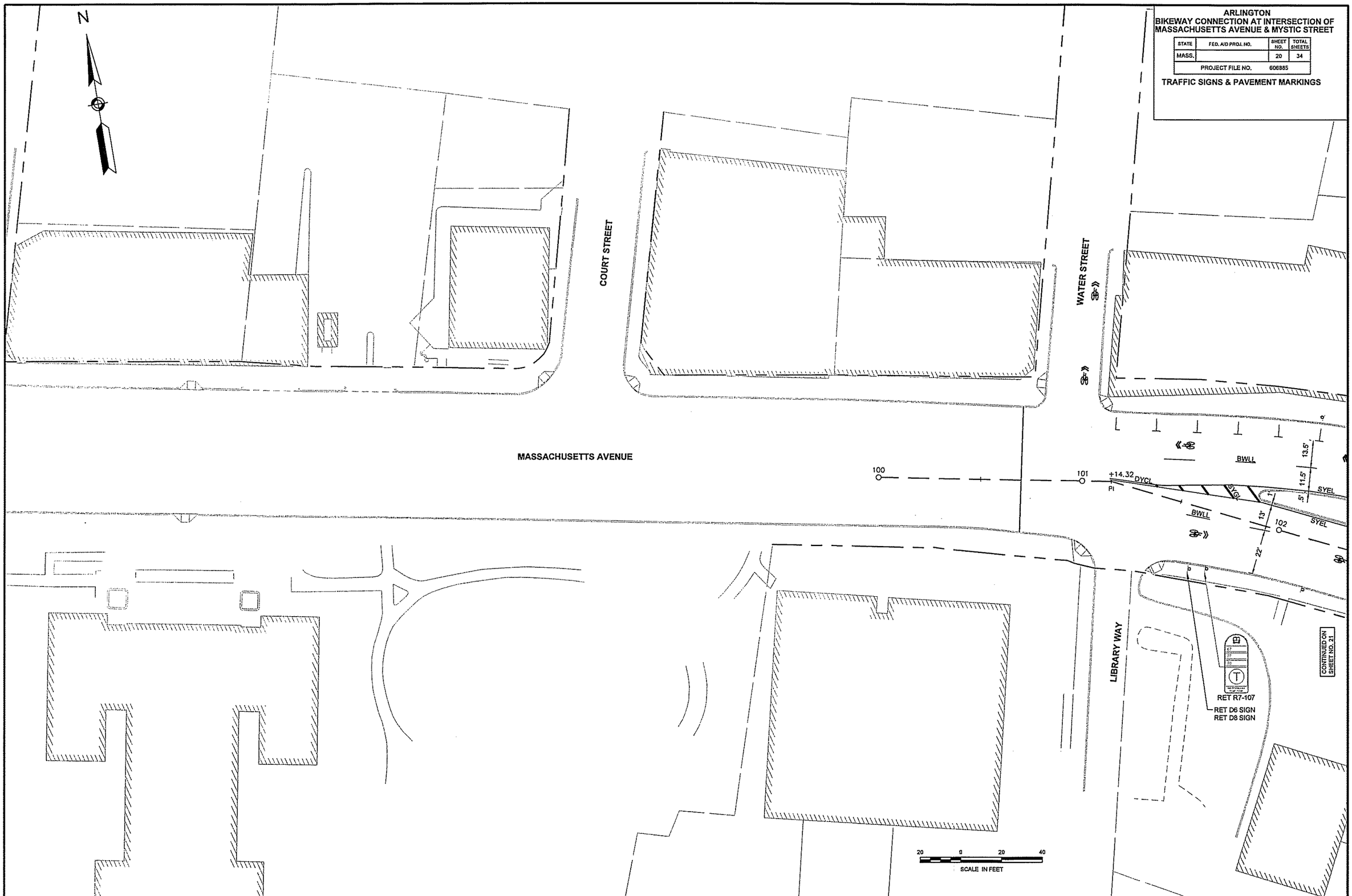


..\10191\CURRENT\CUTSHEETS\606885[25%]TR(TRAFFIC SIGNAL).dwg, 11/30/2012 12:25:41 PM

ARLINGTON
BIKEWAY CONNECTION AT INTERSECTION OF MASSACHUSETTS AVENUE & MYSTIC STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.		20	34
PROJECT FILE NO.	606885		

TRAFFIC SIGNS & PAVEMENT MARKINGS



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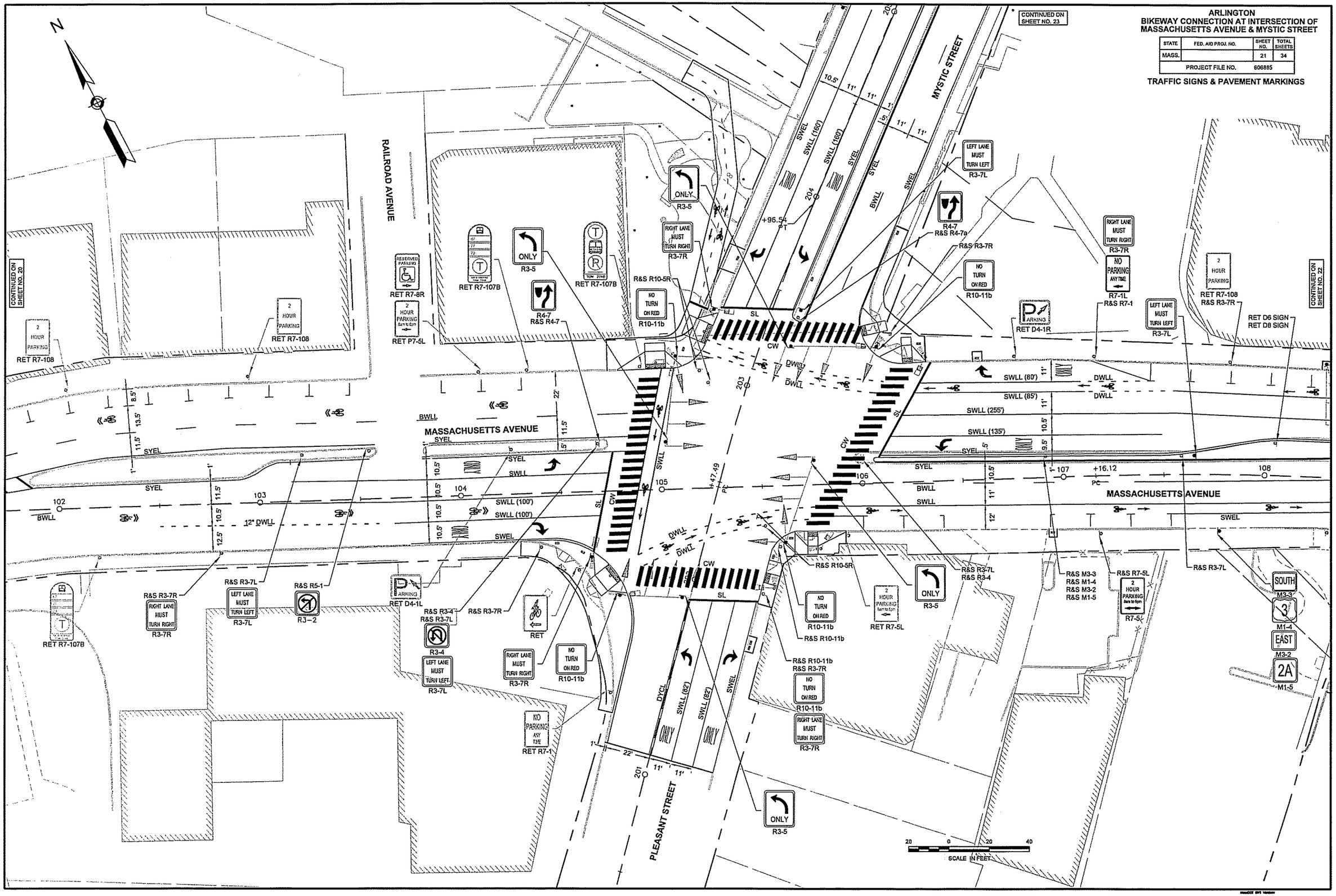
ARLINGTON
BIKEWAY CONNECTION AT INTERSECTION OF MASSACHUSETTS AVENUE & MYSTIC STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.		21	34
PROJECT FILE NO. 606885			

TRAFFIC SIGNS & PAVEMENT MARKINGS



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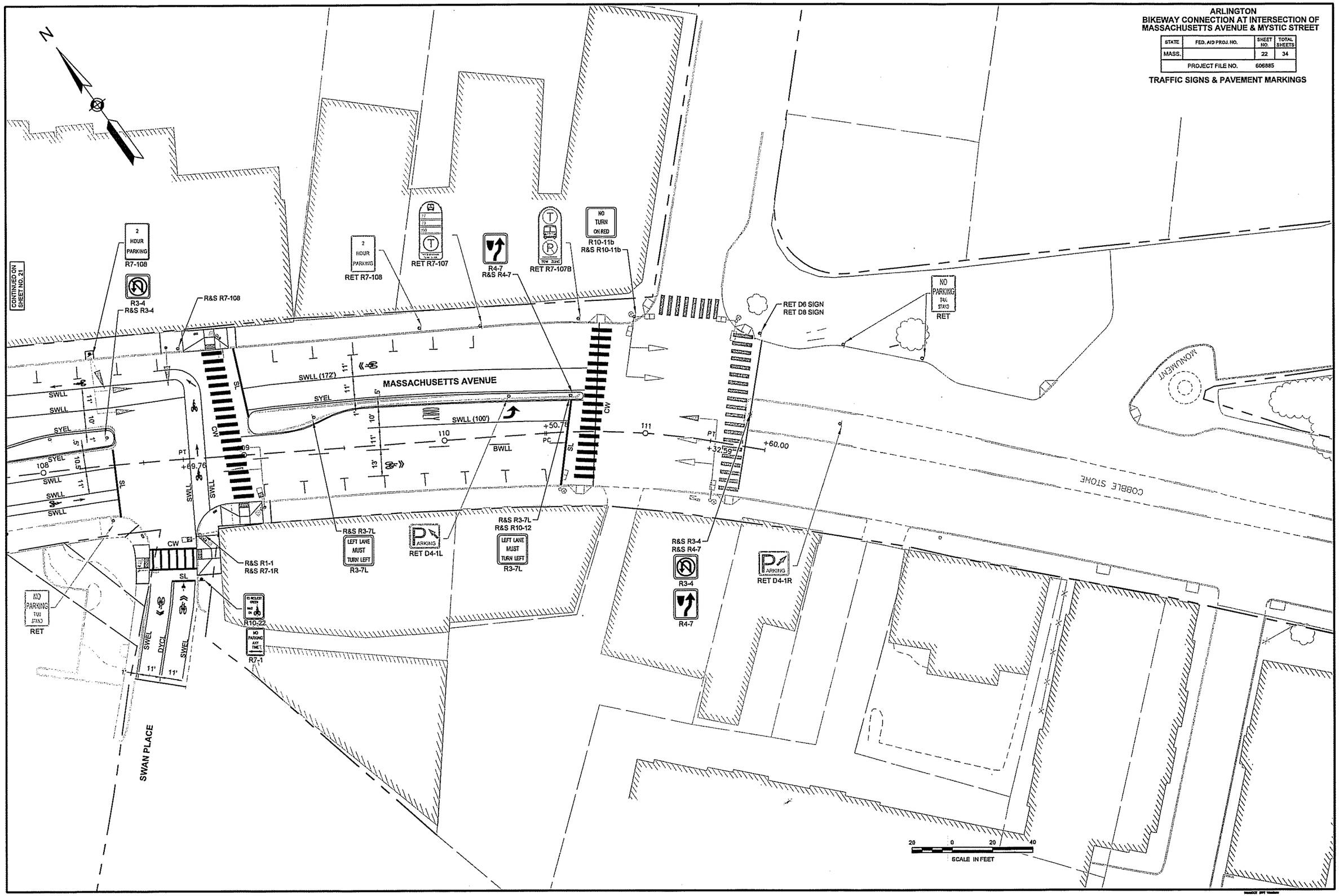
ARLINGTON
BIKEWAY CONNECTION AT INTERSECTION OF
MASSACHUSETTS AVENUE & MYSTIC STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.		22	34
PROJECT FILE NO.	606885		

TRAFFIC SIGNS & PAVEMENT MARKINGS



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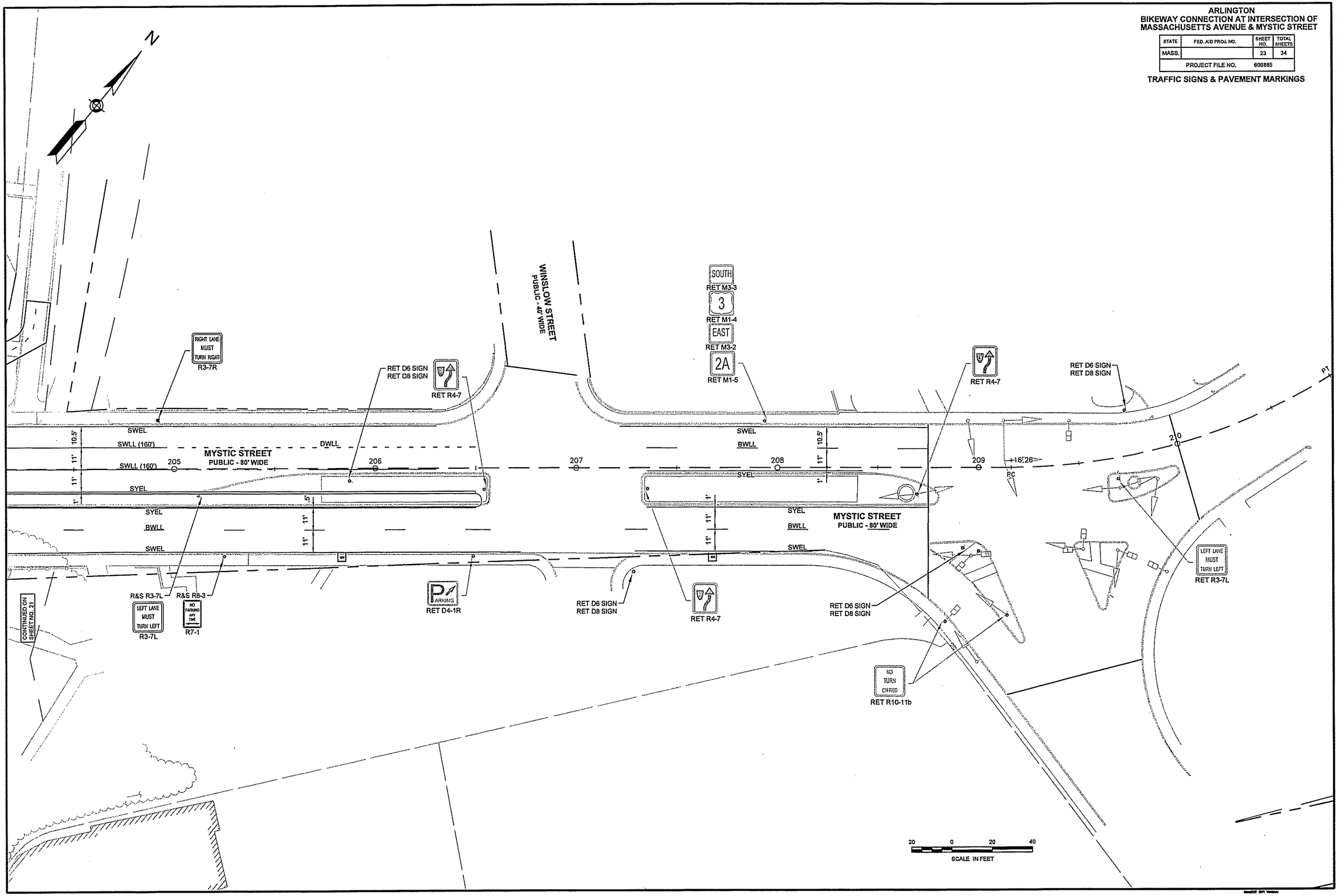
ARLINGTON
BIKEWAY CONNECTION AT INTERSECTION OF
MASSACHUSETTS AVENUE & MYSTIC STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.		23	34
PROJECT FILE NO.	606885		

TRAFFIC SIGNS & PAVEMENT MARKINGS



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ARLINGTON
BIKEWAY CONNECTION AT INTERSECTION OF
MASSACHUSETTS AVENUE & MYSTIC STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.		24	34
PROJECT FILE NO.	606885		

TRAFFIC SIGN SUMMARY SHEET

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			
R3-2	36	36		①	①	①	1	①	①	①	0	9.00	9.00
R3-4	36	36					3				P5 (2)	9.00	27.00
R3-5	30	36	ONLY				4				0	7.50	30.00
R3-7L	30	30	LEFT LANE MUST TURN LEFT				7				P5 (4)	6.25	43.75
R3-7R	30	30	RIGHT LANE MUST TURN RIGHT				6				P5 (3)	6.25	37.50
R4-7	24	30					4				0	5.00	20.00
R7-1	12	18	NO PARKING ANY TIME				2				P5 (1)	1.50	3.00
R7-1L	12	18	NO PARKING ANY TIME				1				0	1.50	1.50
R7-5	12	18	2 HOUR PARKING 8am to 6pm				1				0	1.50	1.50
R7-108	12	30	2 HOUR PARKING				1				0	2.50	2.50
R10-11B	36	36	NO TURN ON RED				6				P5 (5)	9.00	54.00
R10-22	12	18					1				0	1.50	1.50
M1-4	36	36	3				1				P5 (1)	9.00	9.00
M1-5	36	36	2A				1				0	9.00	9.00
M3-2	12	6	EAST				1				0	0.50	0.50
M3-3	12	6	SOUTH	↓	↓	↓	1	↓	↓	↓	0	0.50	0.50

① SEE MUTCD 2009 EDITION, 1979 STD. HWY. SIGNS AND SECTION M9.30.0. TYPE III OF THE MHD STANDARD SPECIFICATION FOR TEXT DIMENSIONS AND COLOR.
② SEE MBTA STANDARD SPECIFICATIONS FOR TEXT DIMENSIONS AND COLOR.
*THE BACKGROUND COLOR FOR THE W11-2, W16-9P, AND W16-7P SIGNS SHALL BE FLUORESCENT YELLOW-GREEN.

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MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION

ARLINGTON
BIKEWAY CONNECTION AT INTERSECTION OF
MASSACHUSETTS AVENUE & MYSTIC STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.		25	34
PROJECT FILE NO.	606885		

MASSDOT STANDARD DRAWINGS

INDEX

SHEET NO.	DESCRIPTION
1	Title Sheet
2	Light, Medium & Short Span Load Diagrams
3	Heavy Load Diagrams
4	Details
5	Cored Pier Foundations

THE MASSACHUSETTS DEPARTMENT OF TRANSPORTATION, HIGHWAY DIVISION 1988 STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, THE ENGLISH EDITION OF SUPPLEMENTAL SPECIFICATIONS DATED JUNE 6, 2006, THE AMENDMENTS TO THE STANDARD AND SUPPLEMENTAL SPECIFICATIONS, THE 1977 CONSTRUCTION STANDARDS, THE ENGLISH EDITION OF SUPPLEMENTAL DRAWINGS DATED APRIL 2003, THE 2001 "STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS" WITH LATEST REVISIONS, THE 2003 "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS" WITH LATEST REVISIONS, THE 1990 "STANDARD DRAWINGS FOR SIGNS AND SUPPORTS," AND THE 2004 EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK, WILL GOVERN.

MAST ARM & FOUNDATION

Details Standard Drawings

NOTES

1. For these standard drawings the Design Wind Speed for all Mast Arm Structures shall be **130 MPH**.

2. For these standard drawings the Design Wind Speed for mast arm foundations located in the following counties: Plymouth, Bristol, Barnstable, Dukes, and Nantucket counties in District 5 and Berkshire county in District 1 shall be **130 MPH**. The design wind speed for mast arm foundations for the remainder of the state shall be **110 MPH.**

3. For these standard drawings the mast arm structure design life shall be 25 years.

4. For these standard drawings the Fatigue Category no. 2 was used and truck induced gusts were excluded in the design.

5. These standard drawings do not apply for mast arm structures at intersections with an ADT greater than 40,000 vehicles and a truck percentage of greater than 10%. The responsibility for the design of mast structures and foundations will rest with the design engineer. The structure design life will be 50 years and the fatigue category shall be no. 1. The design wind speed criteria shall be as shown in Notes Nos. 1 & 2. The design will be submitted to MassDOT for review and comment.

6. For strain pole, dual mast arm designs, or mast arms longer than 45 feet, notes 1, 2, 3 and 4 will apply, if ADT (>40,000 vehicles) and truck percentage (10%) criterion is met, note 5 design criteria (50 year design life, fatigue category no. 1, wind design speed notes 1 and 2) will apply. The responsibility for the design of these structures and foundations will rest with the design engineer. The design will be submitted to MassDOT for review and comment.

NO.	REVISION	DATE

Moving Massachusetts Forward.
massDOT Highway

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISON

RECOMMENDED FOR APPROVAL

Neil E. Boudreau 2/11/11
TRAFFIC ENGINEER DATE

2/17/11
BRIDGE ENGINEER DATE

2/24/2011
CHIEF ENGINEER DATE

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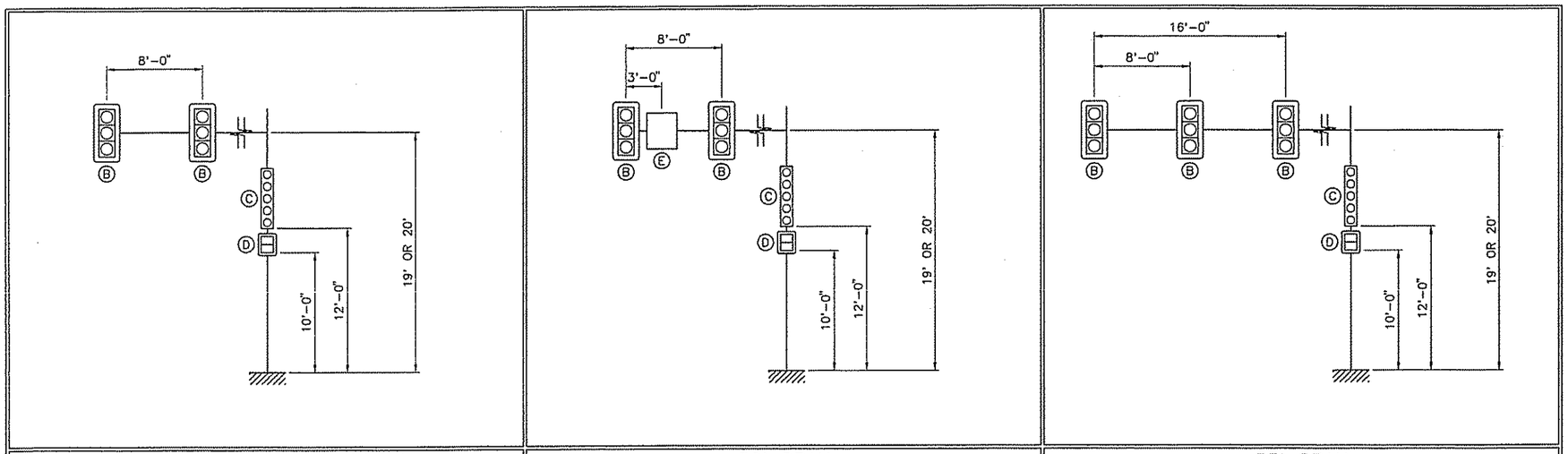
ARLINGTON
BIKEWAY CONNECTION AT INTERSECTION OF
MASSACHUSETTS AVENUE & MYSTIC STREET

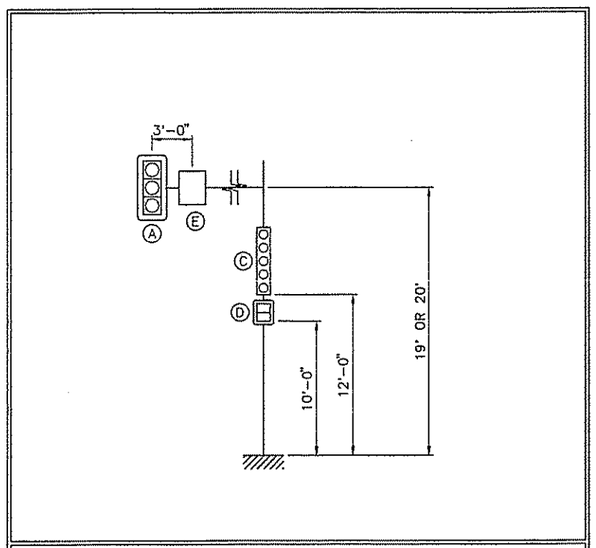
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.		26	34
PROJECT FILE NO.	606885		

STANDARD DRAWINGS
TYPE II MAST ARMS



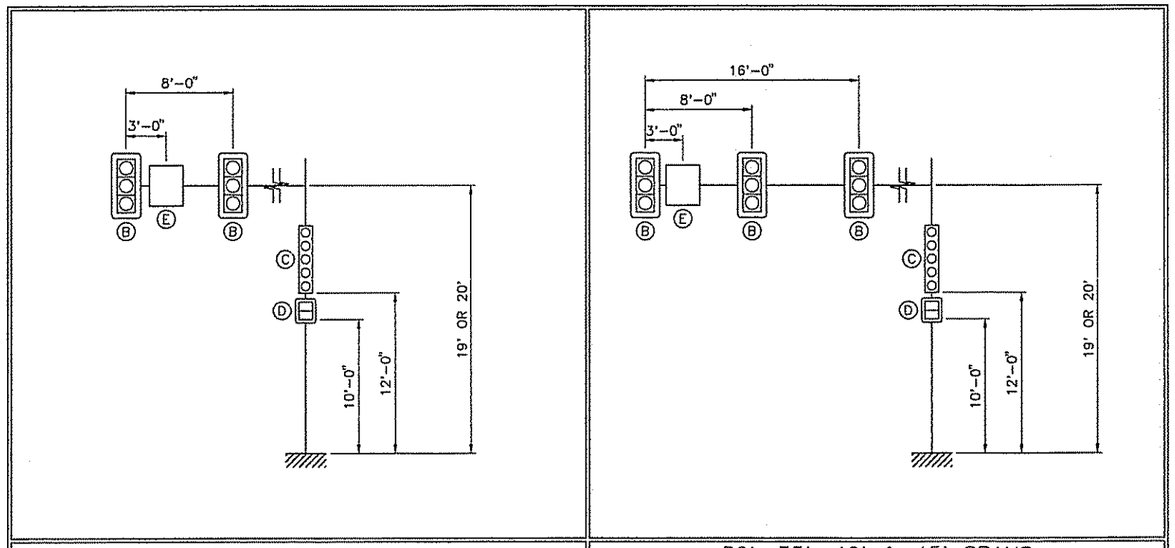
20', 25', 40' & 45' SPANS | 30' SPAN | 35' SPAN

LOAD DEFINITIONS – LIGHT LOADS



15' SPAN

SHORT SPAN LOADING



20' & 25' SPANS | 30', 35', 40' & 45' SPANS

LOAD DEFINITIONS – MEDIUM LOADS

DEVICE	DESCRIPTION	PROJ. AREA (FT~2)	WEIGHT (LBS)
A	3 SECTION, 3 WAY SIGNAL	13.50	202
B	3 SECTION, 1 WAY SIGNAL	8.67	74
C	5 SECTION, 1 WAY SIGNAL	13.33	110
D	DUAL PEDESTRIAN SIGNAL	8.00	80
E	30" X 36" REGULATORY SIGN	7.50	23

NOTE: ALL SIGNALS HAVE 5.0" BACKPLATES

MONTH_DD,_YYYY | ISSUED FOR CONSTRUCTION

massDOT Highway

STANDARD DRAWINGS

TYPE II MAST ARMS
LIGHT, MEDIUM & SHORT SPAN
LOAD DIAGRAMS

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION
10 PARK PLAZA BOSTON, MASS

2/24/2011
CHIEF ENGINEER
BRIDGE ENGINEER
TRAFFIC ENGINEER

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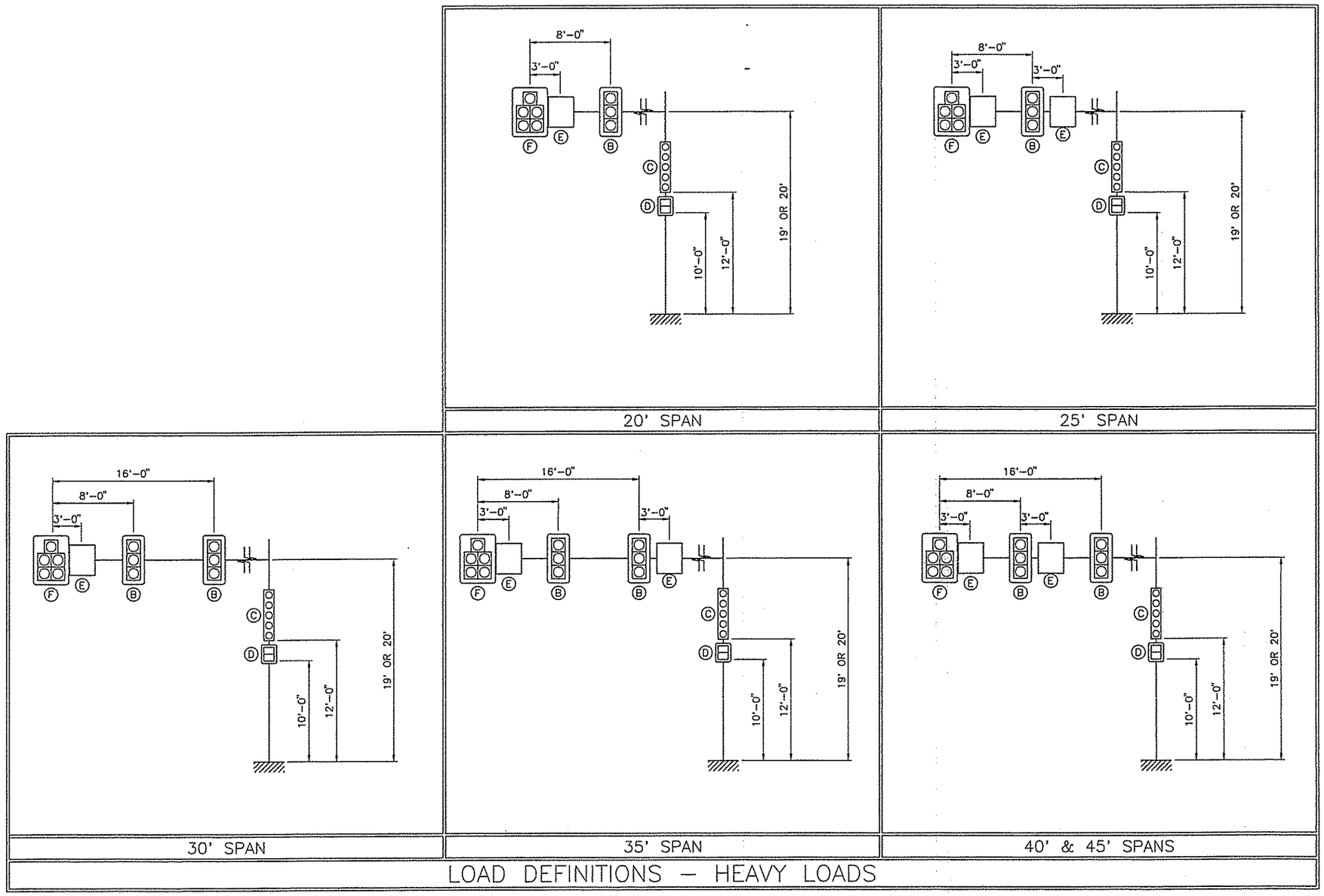
ARLINGTON
BIKEWAY CONNECTION AT INTERSECTION OF
MASSACHUSETTS AVENUE & MYSTIC STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.		27	34
PROJECT FILE NO.	606885		

STANDARD DRAWINGS
TYPE II MAST ARMS



DEVICE	DESCRIPTION	PROJ. AREA (FT^2)	WEIGHT (LBS)
A	3 SECTION, 3 WAY SIGNAL	18.29	202
B	3 SECTION, 1 WAY SIGNAL	8.67	74
C	5 SECTION, 1 WAY SIGNAL	13.33	110
D	DUAL PEDESTRIAN SIGNAL	8.00	80
E	30" X 36" REGULATORY SIGN	7.50	23
F	5 SECTION, 2 WAY SIGNAL	21.95	215

NOTE: ALL SIGNALS HAVE 5.0" BACKPLATES

MONTH_DD_YYYY	ISSUED FOR CONSTRUCTION

massDOT Highway

STANDARD DRAWINGS

TYPE II MAST ARMS
HEAVY LOAD DIAGRAMS

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION
10 PARK PLAZA BOSTON, MASS

2/24/2011
CHIEF ENGINEER

BRIDGE ENGINEER

TRAFFIC ENGINEER

SHEET 3 OF 5 SHEETS

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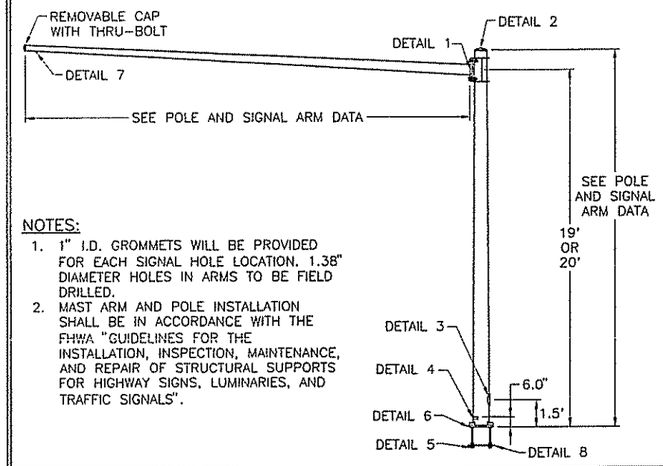
ARLINGTON
BIKEWAY CONNECTION AT INTERSECTION OF MASSACHUSETTS AVENUE & MYSTIC STREET

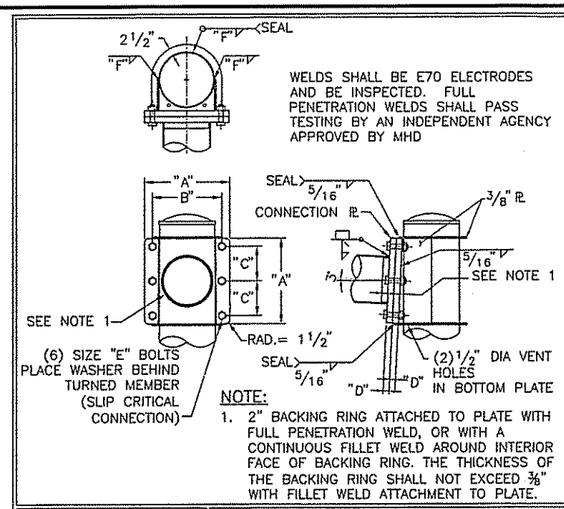
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.		28	34
PROJECT FILE NO.	606885		

STANDARD DRAWINGS
TYPE II MAST ARMS



NOTES:
1. 1" I.D. GROMMETS WILL BE PROVIDED FOR EACH SIGNAL HOLE LOCATION. 1.38" DIAMETER HOLES IN ARMS TO BE FIELD DRILLED.
2. MAST ARM AND POLE INSTALLATION SHALL BE IN ACCORDANCE WITH THE FHWA "GUIDELINES FOR THE INSTALLATION, INSPECTION, MAINTENANCE, AND REPAIR OF STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINARIES, AND TRAFFIC SIGNALS".

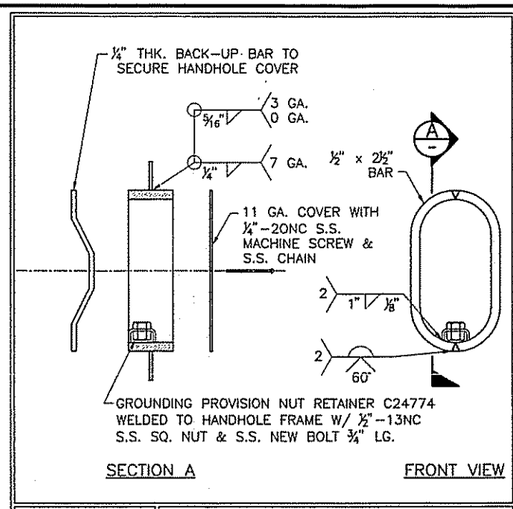
MAST ARM ELEVATION



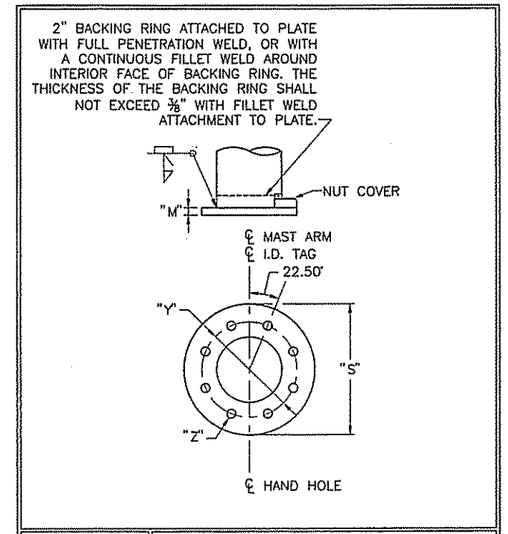
WELDS SHALL BE E70 ELECTRODES AND BE INSPECTED. FULL PENETRATION WELDS SHALL PASS TESTING BY AN INDEPENDENT AGENCY APPROVED BY MHD

NOTE:
1. 2" BACKING RING ATTACHED TO PLATE WITH FULL PENETRATION WELD, OR WITH A CONTINUOUS FILLET WELD AROUND INTERIOR FACE OF BACKING RING. THE THICKNESS OF THE BACKING RING SHALL NOT EXCEED 3/8" WITH FILLET WELD ATTACHMENT TO PLATE.

DETAIL 1 | SIGNAL ARM ATTACHMENT



DETAIL 3 | 4"x8" HANDHOLE

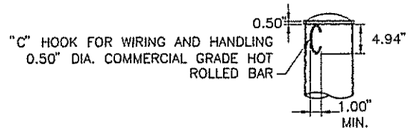


DETAIL 6 | POLE BASE

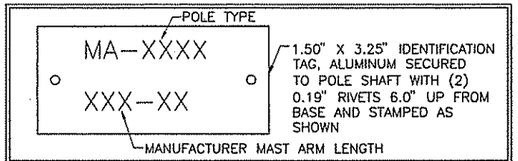
MATERIAL DATA

COMPONENT	DESIGNATION	YIELD (KSI)	COMPONENT	DESIGNATION	YIELD (KSI)
POLE TUBE	ASTM A595 GR. A	55	ARM TUBE	ASTM A595 GR. A	55
POLE BASE PLATE	AASHTO M270	50	ARM CONNECTION PLATE	AASHTO M270	50
ANCHOR BOLTS	AASHTO M314	55	ARM CONNECTING BOLTS	AASHTO M164 **	
GALVANIZING	AASHTO M111 OR M232				

** BOLTS WHICH ACCUMULATE RUST OR DIRT SHALL BE DISCARDED.



DETAIL 2 | POLE TOP



DETAIL 4 | I.D. TAG

POLE AND SIGNAL ARM DATA – LIGHT LOADS

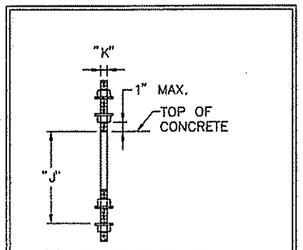
LOCATIONS	SIGNAL ARM TUBE				POLE TUBE				POLE BASE				ANCHOR BOLT		SIGNAL ARM ATTACHMENT DATA					
	SPAN (FT)	FIXED END DIA. (IN)	FREE END DIA. (IN)	WALL THK.	BASE DIA. (IN)	TOP DIA. (IN)	LENGTH (FT)	WALL THK.	PLATE CIRCLE "S" (IN)	BOLT CIRCLE "Y" (IN)	THK. "M" (IN)	HOLE "Z" (IN)	DIA. "K" (IN)	EMBED. LENGTH "J" (IN)	"A" (IN)	"B" (IN)	"C" (IN)	"D" (IN)	"E" (IN)	"F" (IN)
	15.00	9.00	6.90	7 GA.	12.00	9.06	21.00	7 GA.	29.50	24.00	1.50	1.813	1.50	36.00	19.00	15.00	7.50	1.00	1.00	0.188
	20.00	9.00	6.20	7 GA.	12.00	9.06	21.00	7 GA.	29.50	24.00	1.50	1.813	1.50	36.00	19.00	15.00	7.50	1.00	1.00	0.188
	25.00	10.00	6.50	7 GA.	13.00	10.06	21.00	7 GA.	29.50	24.00	1.50	1.813	1.50	36.00	20.00	16.00	8.00	1.00	1.00	0.188
	30.00	12.50	8.30	3 GA.	15.50	12.56	21.00	3 GA.	29.50	24.00	1.50	1.813	1.50	36.00	23.50	19.00	9.50	1.25	1.25	0.250
	35.00	13.00	8.10	3 GA.	16.00	13.06	21.00	3 GA.	29.50	24.00	1.50	1.813	1.50	36.00	24.50	20.00	10.00	1.25	1.25	0.250
	40.00	13.00	7.40	3 GA.	16.00	13.06	21.00	3 GA.	29.50	24.00	1.50	1.813	1.50	36.00	24.50	20.00	10.00	1.25	1.25	0.250
	45.00	13.50	7.20	3 GA.	16.50	13.56	21.00	3 GA.	29.50	24.00	1.50	1.813	1.50	36.00	27.50	22.00	11.00	1.50	1.50	0.313

POLE AND SIGNAL ARM DATA – MEDIUM LOADS

LOCATIONS	SIGNAL ARM TUBE				POLE TUBE				POLE BASE				ANCHOR BOLT		SIGNAL ARM ATTACHMENT DATA					
	SPAN (FT)	FIXED END DIA. (IN)	FREE END DIA. (IN)	WALL THK.	BASE DIA. (IN)	TOP DIA. (IN)	LENGTH (FT)	WALL THK.	PLATE CIRCLE "S" (IN)	BOLT CIRCLE "Y" (IN)	THK. "M" (IN)	HOLE "Z" (IN)	DIA. "K" (IN)	EMBED. LENGTH "J" (IN)	"A" (IN)	"B" (IN)	"C" (IN)	"D" (IN)	"E" (IN)	"F" (IN)
	15.00	9.00	6.90	7 GA.	12.00	9.06	21.00	7 GA.	29.50	24.00	1.50	1.813	1.50	36.00	19.00	15.00	7.50	1.00	1.00	0.188
	20.00	10.00	7.20	3 GA.	13.00	10.06	21.00	3 GA.	29.50	24.00	1.50	1.813	1.50	36.00	20.00	16.00	8.00	1.00	1.00	0.250
	25.00	11.00	7.50	3 GA.	14.00	11.06	21.00	3 GA.	29.50	24.00	1.50	1.813	1.50	36.00	23.50	19.00	9.50	1.25	1.25	0.250
	30.00	13.00	8.80	3 GA.	16.00	13.06	21.00	3 GA.	29.50	24.00	1.50	1.813	1.50	36.00	23.50	19.00	9.50	1.25	1.25	0.250
	35.00	14.00	9.10	3 GA.	17.00	14.06	21.00	3 GA.	29.50	24.00	1.50	1.813	1.50	36.00	27.50	22.00	11.00	1.50	1.50	0.250
	40.00	15.00	9.40	3 GA.	18.00	15.06	21.00	3 GA.	29.50	24.00	1.50	1.813	1.50	36.00	27.50	22.00	11.00	1.50	1.50	0.250
	45.00	16.00	9.70	0 GA.	19.00	16.06	21.00	0 GA.	29.50	24.00	1.50	1.813	1.50	36.00	29.50	24.00	12.00	1.75	1.50	0.313

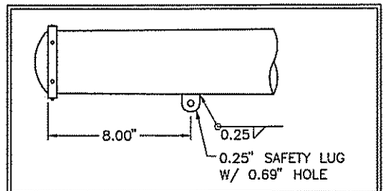
POLE AND SIGNAL ARM DATA – HEAVY LOADS

LOCATIONS	SIGNAL ARM TUBE				POLE TUBE				POLE BASE				ANCHOR BOLT		SIGNAL ARM ATTACHMENT DATA					
	SPAN (FT)	FIXED END DIA. (IN)	FREE END DIA. (IN)	WALL THK.	BASE DIA. (IN)	TOP DIA. (IN)	LENGTH (FT)	WALL THK.	PLATE CIRCLE "S" (IN)	BOLT CIRCLE "Y" (IN)	THK. "M" (IN)	HOLE "Z" (IN)	DIA. "K" (IN)	EMBED. LENGTH "J" (IN)	"A" (IN)	"B" (IN)	"C" (IN)	"D" (IN)	"E" (IN)	"F" (IN)
	15.00	9.00	6.90	7 GA.	12.00	9.06	21.00	7 GA.	29.50	24.00	1.50	1.813	1.50	36.00	19.00	15.00	7.50	1.00	1.00	0.188
	20.00	12.50	9.70	3 GA.	15.50	12.56	21.00	3 GA.	29.50	24.00	1.50	1.813	1.50	36.00	24.00	19.00	9.50	1.25	1.25	0.250
	25.00	14.00	10.50	3 GA.	17.00	14.06	21.00	3 GA.	29.50	24.00	1.50	1.813	1.50	36.00	27.50	22.00	11.00	1.50	1.50	0.250
	30.00	15.50	11.30	3 GA.	18.50	15.56	21.00	3 GA.	29.50	24.00	1.50	1.813	1.50	36.00	27.50	22.00	11.00	1.50	1.50	0.250
	35.00	16.50	11.60	0 GA.	19.50	16.56	21.00	0 GA.	34.50	28.00	1.75	2.063	1.75	36.00	29.50	24.00	12.00	1.75	1.50	0.313
	40.00	17.50	11.90	0 GA.	20.50	17.56	21.00	0 GA.	34.50	28.00	1.75	2.063	1.75	36.00	29.50	24.00	12.00	1.75	1.50	0.313
	45.00	18.50	12.20	0 GA.	21.50	18.56	21.00	0 GA.	34.50	28.00	1.75	2.063	1.75	36.00	31.50	26.00	13.00	2.00	1.50	0.313

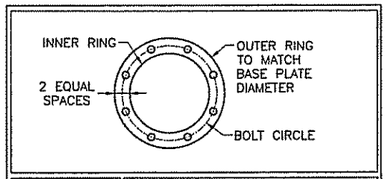


(8) ANCHOR BOLTS WITH (4) HEX NUTS, (4) FLAT WASHERS, AND (1) LOCK-WASHER PER BOLT.

DETAIL 5 | ANCHOR BOLT



DETAIL 7 | SAFETY HANGER LUG



DETAIL 8 | ANCHOR PLATE

MONTH_DD,_YYYY	ISSUED FOR CONSTRUCTION

massDOT Highway
STANDARD DRAWINGS
TYPE II MAST ARMS
DETAILS

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION
10 PARK PLAZA BOSTON, MASS

2/24/2011
CHIEF ENGINEER
BRIDGE ENGINEER
TRAFFIC ENGINEER

SHEET 4 OF 5 SHEETS

.\10191\CURRENT\CUTSHEETS\606885[25%]TR(SIGNAL DETAILS).dwg, 11/30/2012 12:32:28 PM

ARLINGTON
BIKEWAY CONNECTION AT INTERSECTION OF MASSACHUSETTS AVENUE & MYSTIC STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.		29	34
PROJECT FILE NO.	606885		

STANDARD DRAWINGS
TYPE II MAST ARMS

PIER FOUNDATIONS FOR 110 MPH WIND SPEED ZONE

LIGHT LOADING CONDITIONS

SOIL TYPE	15' & 20' MAST ARMS			25' & 30' MAST ARMS			35' & 40' MAST ARMS			45' MAST ARMS		
	DIAMETER	DEPTH	VERTICAL BARS	DIAMETER	DEPTH	VERTICAL BARS	DIAMETER	DEPTH	VERTICAL BARS	DIAMETER	DEPTH	VERTICAL BARS
DRY SAND	3'-6"	6'-0"	18-#8	3'-6"	8'-0"	18-#8	3'-6"	8'-0"	18-#8	3'-6"	9'-0"	18-#8
WET SAND	3'-6"	7'-0"	18-#8	3'-6"	9'-0"	18-#8	3'-6"	9'-0"	18-#8	3'-6"	9'-0"	18-#8
CLAY (MEDIUM STIFF)	3'-6"	11'-0"	18-#8	3'-6"	12'-0"	18-#8	3'-6"	12'-0"	18-#8	3'-6"	12'-0"	18-#8
ALLUVIAL	3'-6"	8'-0"	18-#8	3'-6"	10'-0"	18-#8	3'-6"	10'-0"	18-#8	3'-6"	11'-0"	18-#8

MEDIUM LOADING CONDITIONS

SOIL TYPE	15' & 20' MAST ARMS			25' & 30' MAST ARMS			35' & 40' MAST ARMS			45' MAST ARMS		
	DIAMETER	DEPTH	VERTICAL BARS	DIAMETER	DEPTH	VERTICAL BARS	DIAMETER	DEPTH	VERTICAL BARS	DIAMETER	DEPTH	VERTICAL BARS
DRY SAND	3'-6"	7'-0"	18-#8	3'-6"	9-0"	18-#8	4'-0"	9-0"	18-#9	4'-6"	8'-0"	18-#10
WET SAND	3'-6"	8'-0"	18-#8	3'-6"	9'-0"	18-#8	4'-0"	10'-0"	18-#9	4'-6"	9'-0"	18-#10
CLAY (MEDIUM STIFF)	3'-6"	11'-0"	18-#8	3'-6"	12'-0"	18-#8	4'-0"	13'-0"	18-#9	4'-6"	14'-0"	18-#10
ALLUVIAL	3'-6"	9'-0"	18-#8	3'-6"	10'-0"	18-#8	4'-0"	11'-0"	18-#9	4'-6"	10'-0"	18-#10

HEAVY LOADING CONDITIONS

SOIL TYPE	15' & 20' MAST ARMS			25' & 30' MAST ARMS			35' & 40' MAST ARMS			45' MAST ARMS		
	DIAMETER	DEPTH	VERTICAL BARS	DIAMETER	DEPTH	VERTICAL BARS	DIAMETER	DEPTH	VERTICAL BARS	DIAMETER	DEPTH	VERTICAL BARS
DRY SAND	3'-6"	8'-0"	18-#8	4'-0"	9'-0"	18-#9	4'-6"	10'-0"	18-#10	5'-0"	9'-0"	23-#10
WET SAND	3'-6"	8'-0"	18-#8	4'-0"	10'-0"	18-#9	4'-6"	11'-0"	18-#10	5'-0"	10'-0"	23-#10
CLAY (MEDIUM STIFF)	3'-6"	12'-0"	18-#8	4'-0"	14'-0"	18-#9	4'-6"	15'-0"	18-#10	5'-0"	16'-0"	23-#10
ALLUVIAL	3'-6"	10'-0"	18-#8	4'-0"	11'-0"	18-#9	4'-6"	12'-0"	18-#10	5'-0"	12'-0"	23-#10

PIER FOUNDATIONS FOR 130 MPH WIND SPEED ZONE

LIGHT LOADING CONDITIONS

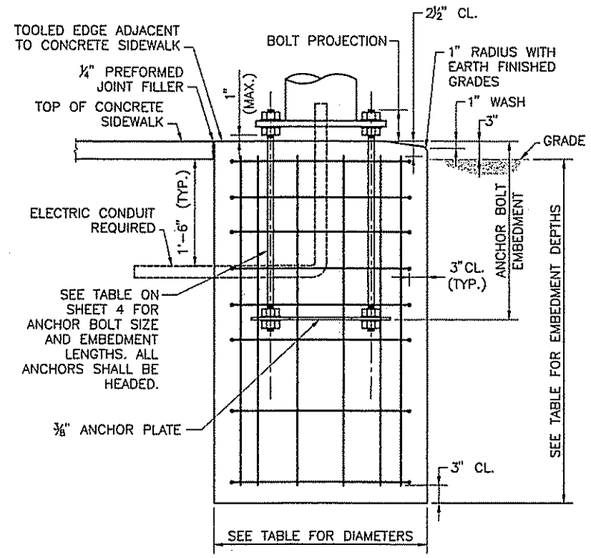
SOIL TYPE	15' & 20' MAST ARMS			25' & 30' MAST ARMS			35' & 40' MAST ARMS			45' MAST ARMS		
	DIAMETER	DEPTH	VERTICAL BARS	DIAMETER	DEPTH	VERTICAL BARS	DIAMETER	DEPTH	VERTICAL BARS	DIAMETER	DEPTH	VERTICAL BARS
DRY SAND	3'-6"	7'-0"	18-#8	3'-6"	9'-0"	18-#8	3'-6"	10'-0"	18-#8	3'-6"	10'-0"	18-#8
WET SAND	3'-6"	8'-0"	18-#8	3'-6"	10'-0"	18-#8	3'-6"	11'-0"	18-#8	3'-6"	11'-0"	18-#8
CLAY (MEDIUM STIFF)	3'-6"	12'-0"	18-#8	3'-6"	13'-0"	18-#8	3'-6"	13'-0"	18-#8	3'-6"	13'-0"	18-#8
ALLUVIAL	3'-6"	9'-0"	18-#8	3'-6"	12'-0"	18-#8	3'-6"	12'-0"	18-#8	3'-6"	13'-0"	18-#8

MEDIUM LOADING CONDITIONS

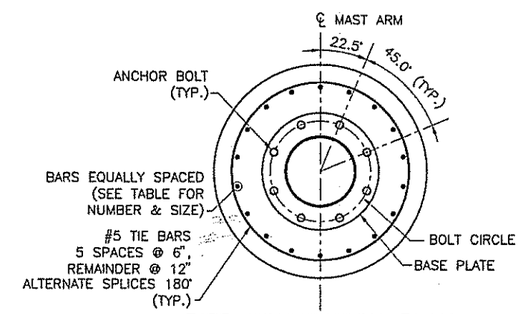
SOIL TYPE	15' & 20' MAST ARMS			25' & 30' MAST ARMS			35' & 40' MAST ARMS			45' MAST ARMS		
	DIAMETER	DEPTH	VERTICAL BARS	DIAMETER	DEPTH	VERTICAL BARS	DIAMETER	DEPTH	VERTICAL BARS	DIAMETER	DEPTH	VERTICAL BARS
DRY SAND	3'-6"	8'-0"	18-#8	3'-6"	10'-0"	18-#8	4'-0"	11'-0"	18-#9	4'-6"	10'-0"	18-#10
WET SAND	3'-6"	8'-0"	18-#8	3'-6"	11'-0"	18-#8	4'-0"	12'-0"	18-#9	4'-6"	11'-0"	18-#10
CLAY (MEDIUM STIFF)	3'-6"	12'-0"	18-#8	3'-6"	14'-0"	18-#8	4'-0"	15'-0"	18-#9	4'-6"	15'-0"	18-#10
ALLUVIAL	3'-6"	10'-0"	18-#8	3'-6"	13'-0"	18-#8	4'-0"	13'-0"	18-#9	4'-6"	12'-0"	18-#10

HEAVY LOADING CONDITIONS

SOIL TYPE	15' & 20' MAST ARMS			25' & 30' MAST ARMS			35' & 40' MAST ARMS			45' MAST ARMS		
	DIAMETER	DEPTH	VERTICAL BARS	DIAMETER	DEPTH	VERTICAL BARS	DIAMETER	DEPTH	VERTICAL BARS	DIAMETER	DEPTH	VERTICAL BARS
DRY SAND	3'-6"	9'-0"	18-#8	4'-0"	11'-0"	18-#9	4'-6"	12'-0"	18-#10	5'-0"	11'-0"	23-#10
WET SAND	3'-6"	10'-0"	18-#8	4'-0"	12'-0"	18-#9	4'-6"	13'-0"	18-#10	5'-0"	12'-0"	23-#10
CLAY (MEDIUM STIFF)	3'-6"	14'-0"	18-#8	4'-0"	15'-0"	18-#9	4'-6"	16'-0"	18-#10	5'-0"	17'-0"	23-#10
ALLUVIAL	3'-6"	11'-0"	18-#8	4'-0"	13'-0"	18-#9	4'-6"	15'-0"	18-#10	5'-0"	14'-0"	23-#10



PIER FOUNDATION DETAIL
NO SCALE



PIER FOUNDATION PLAN
NO SCALE

NOTES:

1. FOUNDATIONS SHALL BE 4000 PSI, 1½", 565 CEMENT CONCRETE.
2. REINFORCEMENT SHALL BE ASTM A615 GRADE 60.
3. ANCHOR BOLTS SHALL BE SET BY TEMPLATE.
4. PROVIDE FOR ELECTRICAL CONDUIT.
5. EXCAVATION SHALL BE BY THE AUGER METHOD TO THE NEAT LINES OF THE OUTSIDE DIMENSION OF THE FOUNDATIONS WITHOUT DISTURBING THE SOIL AROUND AND BELOW THE PROPOSED FOUNDATION BOTTOM. ALTERNATE METHODS OF EXCAVATION MAY BE SUBMITTED TO MASSHIGHWAY FOR APPROVAL IF THEY MEET THE REQUIREMENTS LISTED IN NOTES 6, 7, AND 8.
6. THE EARTH WALLS OF THE FOUNDATION SHALL BE ADEQUATELY AND SECURELY PROTECTED AT ALL TIMES AGAINST CAVE-INS, DISPLACEMENT OF THE SURROUNDING EARTH AND FOR THE EXCLUSION OF GROUND WATER. THIS MAY BE DONE BY THE USE OF STEEL CYLINDER LINERS OR CASINGS THAT ARE APPROVED BY MASSHIGHWAY. IF LINERS ARE USED THEY MAY BE RECLAIMED PROVIDED THAT THEY ARE WITHDRAWN AS THE CONCRETE IS BEING PLACED, MAINTAINING A SUFFICIENT HEAD OF CONCRETE WITHIN THE LINER TO PREVENT REDUCTION IN THE FOUNDATION DIAMETER AND TO PREVENT EXTRANEOUS MATERIAL FROM FALLING IN FROM THE SIDES AND MIXING WITH THE CONCRETE.
7. IF THE SOIL IS DISTURBED OR REMOVED BEYOND THE NEAT LINES OF THE OUTSIDE DIMENSION OF THE FOUNDATION, IT SHALL BE REPLACED WITH CONCRETE. ANY ADDITIONAL COST FOR THE CONCRETE SHALL BE PAID FOR BY THE CONTRACTOR.
8. SPECIAL CARE SHOULD BE GIVEN TO AREAS WHERE WET SOIL IS ENCOUNTERED, TO INSURE THAT THE PREAUGERED HOLE DOES NOT COLLAPSE. THIS MAY REQUIRE THE USE OF STEEL CYLINDER LINERS OR CASINGS TO HOLD THE SOIL IN PLACE UNTIL READY FOR CONCRETE PLACEMENT. THE STEEL CYLINDERS OR CASINGS SHALL BE WITHDRAWN AS THE FOUNDATION CONCRETE IS PLACED.
9. DETERMINATION OF EXISTING SOIL CONDITIONS SHALL BE MADE BY THE DESIGN ENGINEER.
10. IF LEDGE OR POOR SOIL IS ENCOUNTERED (i.e. ONE WHICH DOES NOT APPLY TO THE DESIGN TABLES SHOWN ON THIS SHEET), AN ALTERNATIVE DESIGN SHALL BE PROVIDED BY THE DESIGN ENGINEER. DECISIONS MADE IN NOTES 8 AND 9 SHALL BE SUBMITTED TO MASSHIGHWAY FOR APPROVAL. IF UTILITIES OR OTHER UNDERGROUND OBSTRUCTIONS ARE ENCOUNTERED, THE CONTRACTOR SHALL BACKFILL THE AREA TO ITS ORIGINAL CONDITION UNTIL AN ALTERNATE DESIGN HAS BEEN PROVIDED BY THE ENGINEER.

MONTH_DD,_YYYY	ISSUED FOR CONSTRUCTION

massDOT Highway

STANDARD DRAWINGS

TYPE II MAST ARMS
CORED PIER FOUNDATIONS

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION
10 PARK PLAZA BOSTON, MASS

CHIEF ENGINEER 2/24/2011
BRIDGE ENGINEER
TRAFFIC ENGINEER

SHEET 5 OF 5 SHEETS

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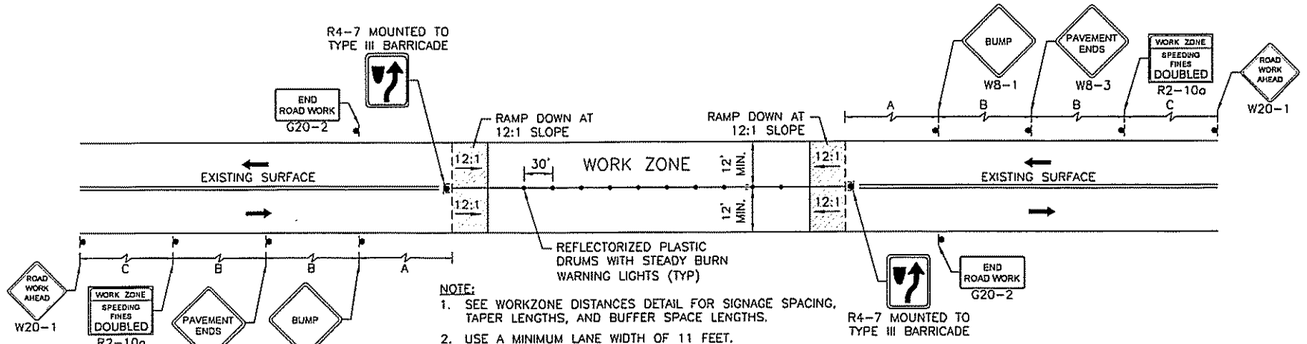
ARLINGTON
BIKEWAY CONNECTION AT INTERSECTION OF
MASSACHUSETTS AVENUE & MYSTIC STREET

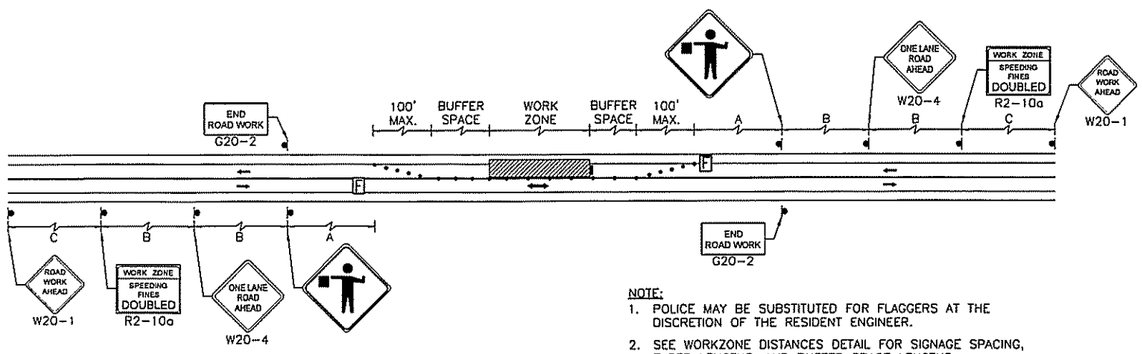
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.		30	34
PROJECT FILE NO.	606885		

TEMPORARY TRAFFIC CONTROL PLAN DETAILS



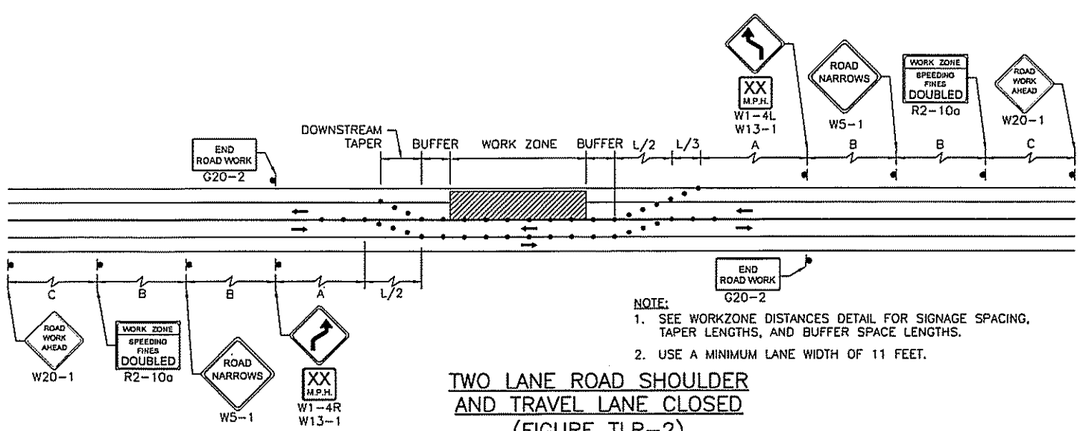
NOTE:
1. SEE WORKZONE DISTANCES DETAIL FOR SIGNAGE SPACING, TAPER LENGTHS, AND BUFFER SPACE LENGTHS.
2. USE A MINIMUM LANE WIDTH OF 11 FEET.

FULL DEPTH CONSTRUCTION
CONSTRUCTION NOT IN PROGRESS
NOT TO SCALE



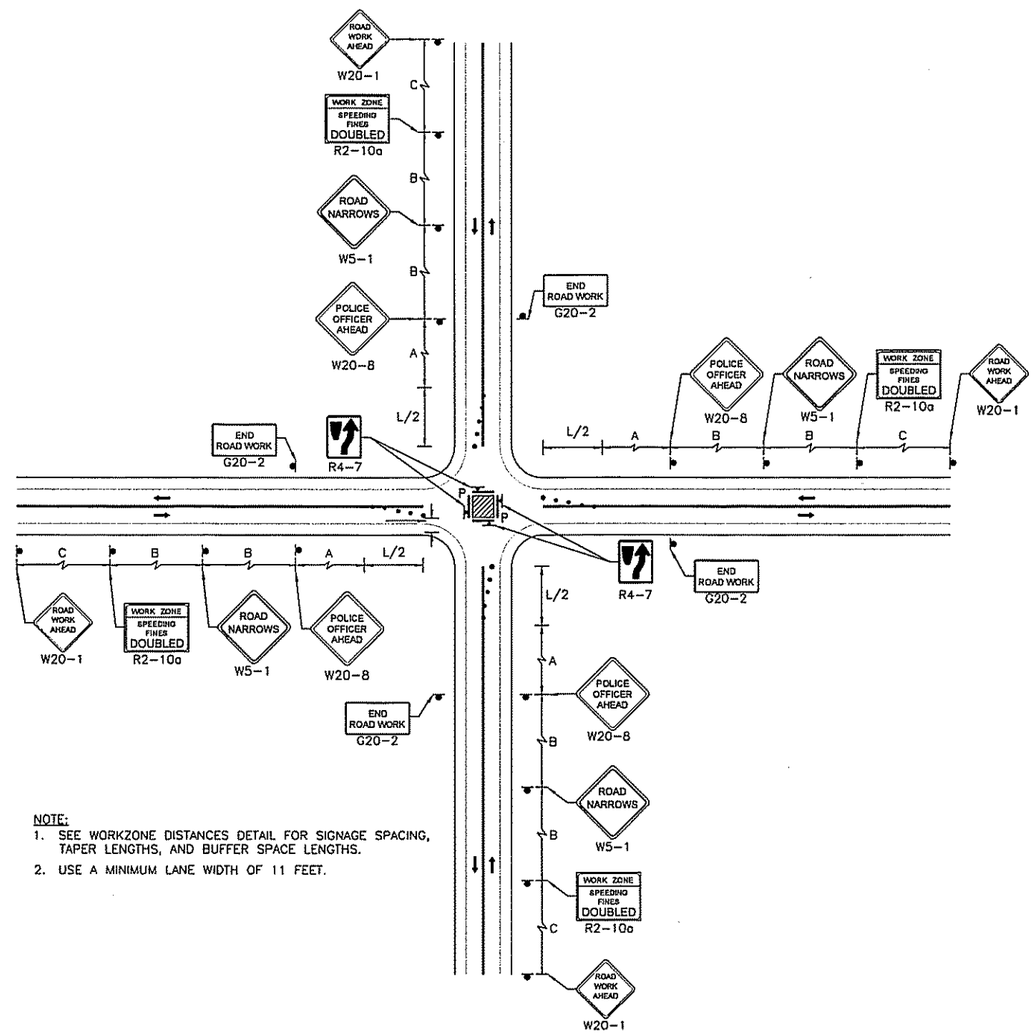
NOTE:
1. POLICE MAY BE SUBSTITUTED FOR FLAGGERS AT THE DISCRETION OF THE RESIDENT ENGINEER.
2. SEE WORKZONE DISTANCES DETAIL FOR SIGNAGE SPACING, TAPER LENGTHS, AND BUFFER SPACE LENGTHS.
3. USE A MINIMUM LANE WIDTH OF 11 FEET.

TWO LANE ROAD ONE LANE ALTERNATING
TRAFFIC WITH FLAGGERS DETAIL
(FIGURE TLR-5)
NOT TO SCALE



NOTE:
1. SEE WORKZONE DISTANCES DETAIL FOR SIGNAGE SPACING, TAPER LENGTHS, AND BUFFER SPACE LENGTHS.
2. USE A MINIMUM LANE WIDTH OF 11 FEET.

TWO LANE ROAD SHOULDER
AND TRAVEL LANE CLOSED
(FIGURE TLR-2)
NOT TO SCALE



NOTE:
1. SEE WORKZONE DISTANCES DETAIL FOR SIGNAGE SPACING, TAPER LENGTHS, AND BUFFER SPACE LENGTHS.
2. USE A MINIMUM LANE WIDTH OF 11 FEET.

SINGLE LANE APPROACH CENTER CLOSURE
(FIGURE INT-1)
NOT TO SCALE

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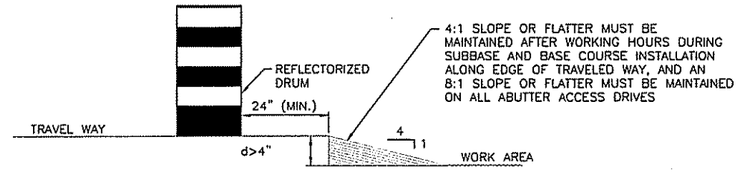
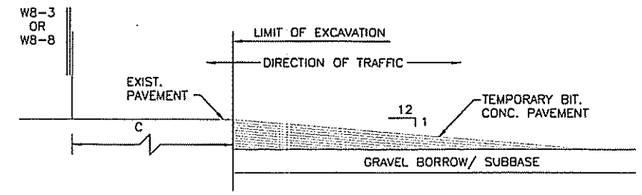
ARLINGTON
BIKEWAY CONNECTION AT INTERSECTION OF MASSACHUSETTS AVENUE & MYSTIC STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.		31	34
PROJECT FILE NO.	606885		

TEMPORARY TRAFFIC CONTROL PLAN DETAILS



LATERAL DROP-OFF DETAIL
(FIGURE GEN-5)
NOT TO SCALE



LONGITUDINAL DROP-OFF DETAIL
(FIGURE GEN-5)
NOT TO SCALE

RECOMMENDED ADVANCE WARNING SIGN MINIMUM SPACING

ROAD TYPE	DISTANCE BETWEEN SIGNS**		
	A	B	C
URBAN (LOW SPEED)*	100 FEET	100 FEET	100 FEET
URBAN (HIGH SPEED)*	350 FEET	350 FEET	350 FEET
RURAL	500 FEET	500 FEET	500 FEET
EXPRESSWAY/FREEWAY	1,000 FEET	1,500 FEET	2,640 FEET

SOURCE: TABLE 6C-1 2009 MUTCD

BUFFER SPACE TABLE

POSTED SPEED (MPH)	LENGTH (FT)
20	115
25	155
30	200
35	250
40	305
45	250
50	250
55	495
60	570
65	645
70	730
75	820

SOURCE: TABLE 6C-2 2009 MUTCD

TAPER LENGTH CRITERIA FOR TEMPORARY TRAFFIC CONTROL ZONES

TYPE OF TAPER	TAPER LENGTH
MERGING TAPER	AT LEAST L
SHIFTING TAPER	AT LEAST 0.5L
SHOULDER TAPER	AT LEAST 0.33L
ONE-LANE, TWO-WAY TRAFFIC TAPER	50 FEET MINIMUM, 100 FEET MAXIMUM
DOWNSTREAM TAPER	50 FEET MINIMUM, 100 FEET MAXIMUM

NOTE: USE TABLE 6C-4 SHOWN BELOW TO CALCULATE L
SOURCE: TABLE 6C-3 2009 MUTCD

FORMULAS FOR DETERMINING TAPER LENGTHS

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

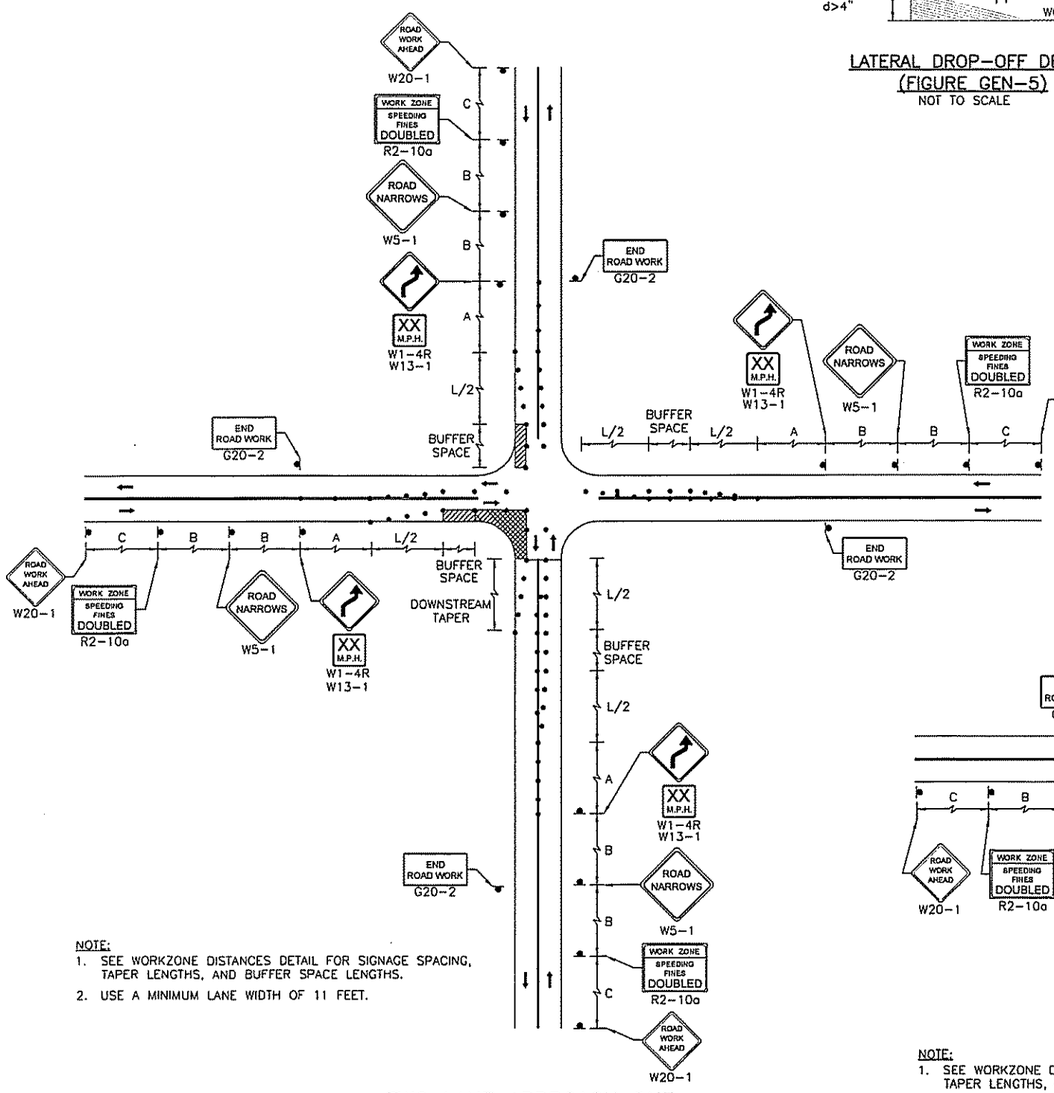
SOURCE: TABLE 6C-4 2009 MUTCD

WHERE: L = TAPER LENGTH IN FEET

W = WIDTH OF OFFSET IN FEET

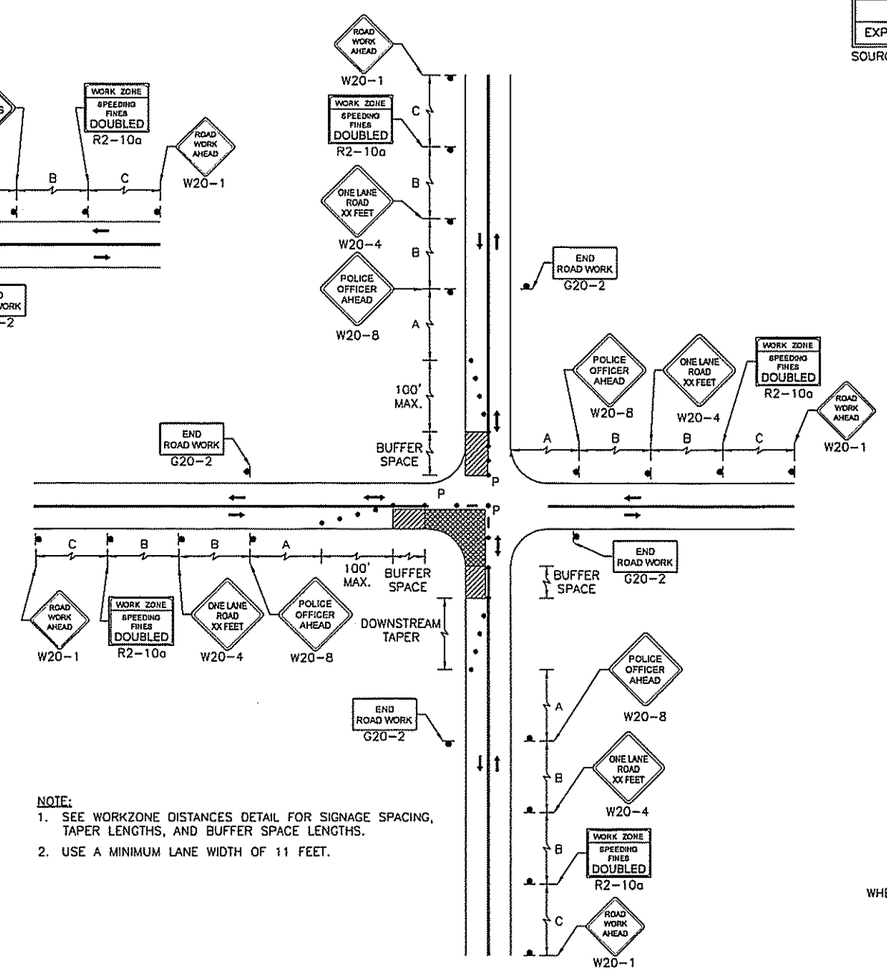
S = POSTED SPEED LIMIT, OR OFF-PEAK 85TH-PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICAPATED OPERATING SPEED IN MPH

WORK ZONE DISTANCES (GEN-2)



NOTE:
1. SEE WORKZONE DISTANCES DETAIL FOR SIGNAGE SPACING, TAPER LENGTHS, AND BUFFER SPACE LENGTHS.
2. USE A MINIMUM LANE WIDTH OF 11 FEET.

TWO LANE APPROACH ONE QUADRANT CLOSURE (INT-2)
NOT TO SCALE



NOTE:
1. SEE WORKZONE DISTANCES DETAIL FOR SIGNAGE SPACING, TAPER LENGTHS, AND BUFFER SPACE LENGTHS.
2. USE A MINIMUM LANE WIDTH OF 11 FEET.

SINGLE LANE APPROACH ONE QUADRANT CLOSURE
(FIGURE INT-2)
NOT TO SCALE

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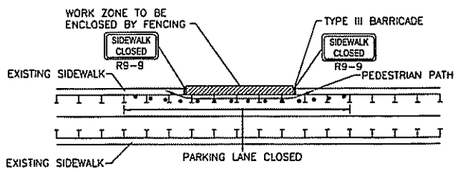
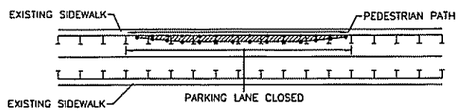
ARLINGTON
BIKEWAY CONNECTION AT INTERSECTION OF
MASSACHUSETTS AVENUE & MYSTIC STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.		32	34
PROJECT FILE NO.	606885		

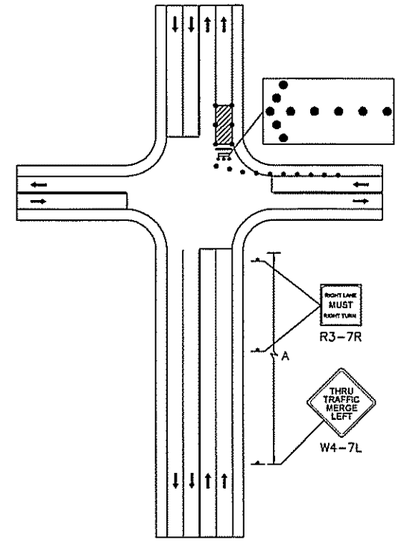
TEMPORARY TRAFFIC CONTROL PLAN
DETAILS



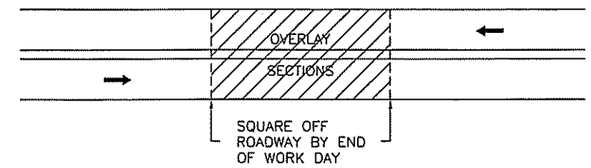


NOTES
1. ADDITIONAL ADVANCE WARNING MAY BE NECESSARY.
2. CONTROLS ONLY FOR PEDESTRIAN TRAFFIC ARE SHOWN. VEHICULAR TRAFFIC SHOULD BE HANDLED AS SHOWN ELSEWHERE.
3. STREET LIGHTING SHOULD BE CONSIDERED WHEN LOCATING CONTROL DEVICES.
4. BYPASS IS TO BE USED IN CONJUNCTION WITH THE PROPOSED LANE CLOSURE DETAILS AND DURING CONSTRUCTION STAGING, AS DIRECTED BY THE ENGINEER.
5. THE TEMPORARY PEDESTRIAN PATHS SHALL BE ADA COMPLIANT.

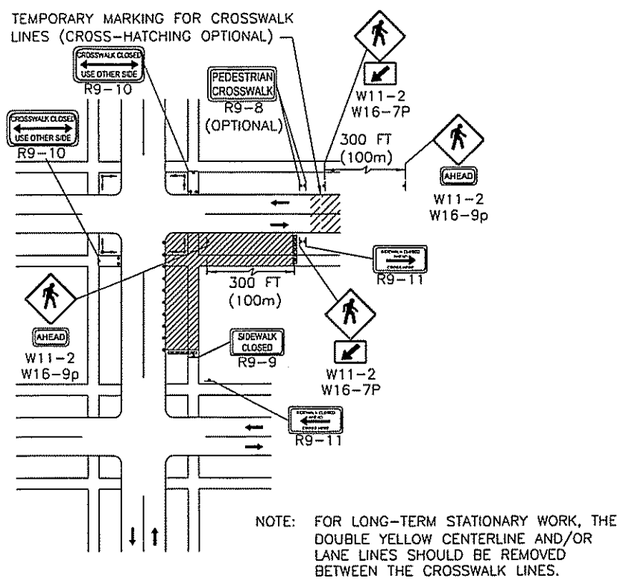
PEDESTRIAN BYPASS (PED-3)
NOT TO SCALE



DOUBLE LANE APPROACH FAR
SIDE CLOSURE RIGHT LANE (INT-4)
NOT TO SCALE

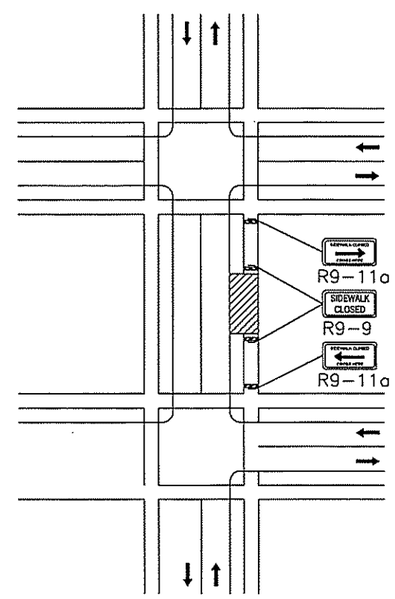


AFTER HOURS TREATMENT FOR AREAS
RECEIVING OVERLAY
NOT TO SCALE

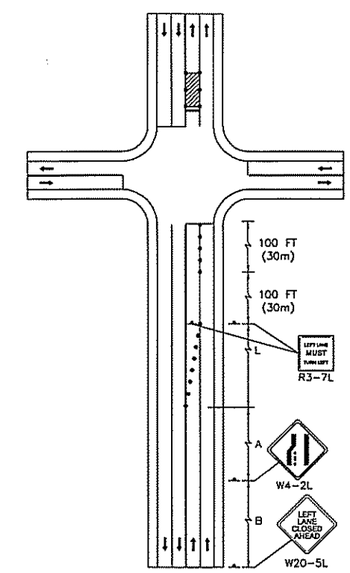


NOTE: FOR LONG-TERM STATIONARY WORK, THE DOUBLE YELLOW CENTERLINE AND/OR LANE LINES SHOULD BE REMOVED BETWEEN THE CROSSWALK LINES.

PEDESTRIAN DETOUR (PED-2)
NOT TO SCALE



SIDEWALK CLOSED WITH DETOUR (PED-1)
NOT TO SCALE



DOUBLE LANE APPROACH FAR
SIDE CLOSURE INSIDE LANE (INT-3)
NOT TO SCALE

...\110191\CURRENT\CUTSHEETS\606885[25%]TR(TTCP).dwg, 11/30/2012 12:35:59 PM

TRAFFIC SIGN SUMMARY

SEE CURRENT EDITION OF MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND AMENDMENTS FOR SPECIFICATION ON TEXT, DIMENSIONS AND COLOR. ALSO REFER TO 1995 MHD STANDARD SPECIFICATIONS SECTION M 9.30.0

SIGN ID NO.	QUANTITY	LOCATION NO.	LOCATION	TEXT	SIZE OF SIGN WIDTH (in)	SIZE OF SIGN HEIGHT (in)	TEXT DIMENSION (in) LETTER HEIGHT	TEXT DIMENSION (in) VERTICAL SPACING	TEXT DIMENSION (in) EDGE SPACING	TEXT DIMENSION (in) SHIELD	COLOR ARROW RTE MKR	COLOR BACK-GROUND	COLOR LEGEND	COLOR BORDER	POST SIZE AND No. REQUIRED	AREA (SQ ft)	TOTAL AREA (SQ ft)
M4-9b-L	TO BE COMPLETED AT 75% SUBMISSION	SEE TEMPORARY TRAFFIC CONTROL PLANS		DETOUR	30	24				SEE MUTCD STANDARD DETAIL					MUTCD SPEC. MOUNT ON POST	5.0	TO BE COMPLETED AT 75% SUBMISSION
M4-9b-R				DETOUR	30	24										5.0	
M4-9b-V				DETOUR	30	24										5.0	
M6-3					21	15										2.2	
R1-1				STOP	36	36										9.0	
R2-10a				WORK ZONE SPEEDING FINES DOUBLED	36	24										6.0	
R4-7					24	30										5.0	
R9-9				SIDEWALK CLOSED	24	12										2.0	
R9-10L				SIDEWALK CLOSED USE OTHER SIDE	24	12										2.0	
R9-10R				SIDEWALK CLOSED USE OTHER SIDE	24	12										2.0	
R9-11aR				SIDEWALK CLOSED CROSS HERE	24	12										2.0	
R9-11aL				SIDEWALK CLOSED CROSS HERE	24	12										2.0	
R10-6				STOP HERE ON RED	24	36										6.0	
R3-7L				LEFT LANE MUST TURN LEFT	36	36										9.0	
R3-7R				RIGHT LANE MUST TURN LEFT	36	36										9.0	
W1-4L					36	36										9.0	
W1-4R					36	36										9.0	
W1-4bR					36	36										9.0	
W4-2L					36	36										9.0	
W4-2R					36	36										9.0	
W4-7L				THRU TRAFFIC MERGE LEFT	36	36										9.0	
W5-1				ROAD NARROWS	36	36										9.0	
W8-1				BUMP	36	36										9.0	
W8-3				PAVEMENT ENDS	36	36										9.0	
W11-2					36	36										9.0	
W12-1					36	36										9.0	

ARLINGTON
BIKEWAY CONNECTION AT INTERSECTION OF MASSACHUSETTS AVENUE & MYSTIC STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.		33	34
PROJECT FILE NO.	606885		

TEMPORARY TRAFFIC CONTROL PLANS
SIGN SUMMARY

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TRAFFIC SIGN SUMMARY

SEE LATEST EDITION OF MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND AMENDMENTS FOR SPECIFICATION ON TEXT, DIMENSIONS AND COLOR. ALSO REFER TO 1995 MHD STANDARD SPECIFICATIONS SECTION M 9.30.0

ARLINGTON
BIKEWAY CONNECTION AT INTERSECTION OF MASSACHUSETTS AVENUE & MYSTIC STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.		34	34
PROJECT FILE NO.	606885		

TEMPORARY TRAFFIC CONTROL PLANS
SIGN SUMMARY

SIGN ID NO.	QUANTITY	LOCATION NO.	LOCATION	TEXT	SIZE OF SIGN WIDTH (in)	SIZE OF SIGN HEIGHT (in)	TEXT DIMENSION (in) LETTER HEIGHT	TEXT DIMENSION (in) VERTICAL SPACING	TEXT DIMENSION (in) EDGE SPACING	TEXT DIMENSION (in) SHIELD	COLOR ARROW RTE MKR	COLOR BACK-GROUND	COLOR LEGEND	COLOR BORDER	POST SIZE AND No. REQUIRED	AREA (SQ ft)	TOTAL AREA (SQ ft)
W13-1	TO BE COMPLETED AT 75% SUBMISSION	SEE TEMPORARY TRAFFIC CONTROL PLANS		XX M.P.H.	18	18				SEE MUTCD STANDARD DETAIL					MUTCD SPEC. MOUNT ON POST	3.0	TO BE COMPLETED AT 75% SUBMISSION
W16-7p					24	12										2.0	
W16-9p				AHEAD	24	12										2.0	
W20-1				ROAD WORK AHEAD	36	36										9.0	
W20-4				ONE LANE ROAD AHEAD	36	36										9.0	
W20-5L				LEFT LANE CLOSED AHEAD	36	36										9.0	
W20-5R				RIGHT LANE CLOSED AHEAD	36	36										9.0	
W20-7					36	36										9.0	
W20-8				POLICE OFFICER AHEAD	36	36										9.0	
W21-5a				RIGHT SHOULDER CLOSED	36	36										9.0	
G20-2				END ROAD WORK	36	18										4.5	

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