MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION

MARLBOROUGH ROUTE 85 (MAPLE ST)			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	1	53
PROJECT FILE NO. 604810			

TITLE SHEET & INDEX

PLAN AND PROFILE OF

ROUTE 85 (MAPLE STREET)

IN THE CITY OF

MARLBOROUGH

MIDDLESEX COUNTY

FEDERAL AID PROJECT NO.

25% RE-SUBMITTAL

THE MASSACHUSETTS HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES DATED 1988, AS AMENDED, THE SUPPLEMENTAL SPECIFICATIONS DATED JULY 1, 2015, THE 2014 CONSTRUCTION STANDARD DETAILS, THE 1996 CONSTRUCTION AND TRAFFIC STANDARD DETAILS, (AS RELATED TO TRAFFIC STANDARD DETAILS ONLY), THE LATEST MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS WITH MASSACHUSETTS AMENDMENTS, THE 1990 STANDARD DRAWINGS FOR SIGNS AND SUPPORTS, THE 1968 STANDARD DRAWINGS FOR TRAFFIC SIGNALS AND HIGHWAY LIGHTING, AND THE LATEST EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK, WILL GOVERN.

INDEX

SHEET NO.	DESCRIPTION
1	TITLE SHEET & INDEX
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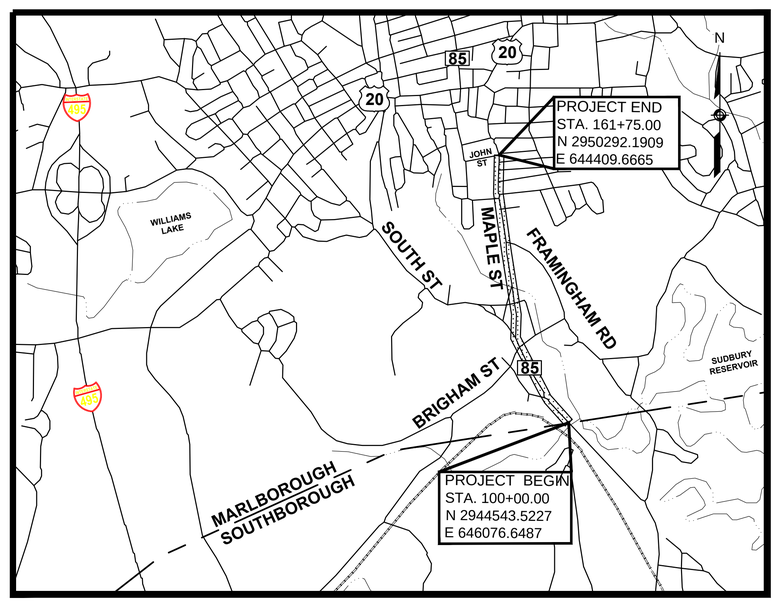

0 1500 3000 4500 6000

SCALE: 1" = 1500'

LENGTH OF PROJECT = 6,175.00 FEET = 1.170 MILES

OCTOBER 2, 2015

DESIGN DESIGNATION ROUTE 85 (MAPLE STREET)

DESIGN SPEED	40 MPH (SOUTH OF FRAMINGHAM ROAD) 35 MPH (NORTH OF FRAMINGHAM ROAD)
ADT (2014)	22,669
ADT (2024)	26,308
K	0.08
D	54.8% SB
T (PEAK HOUR)	1.5%
T (AVERAGE DAY)	2.2%
DHV	2,051
DDHV	1,125
FUNCTIONAL CLASSIFICATION	URBAN ARTERIAL

DATE	DESCRIPTION	REV #
10/02/2015	REVISED 25% RE-SUBMISSION	1
03/15/2015	25% RE-SUBMISSION	0

massDOT Massachusetts Department of Transportation Highway Division

RECOMMENDED FOR APPROVAL

CHIEF ENGINEER **DATE**

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED:

DIVISION ADMINISTRATOR **DATE**

APPROVED

HIGHWAY ADMINISTRATOR **DATE**

604810_HDI(COV).DWG Plotted on 1-Oct-2015 11:34 AM

GENERAL SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
JB	JB	JERSEY BARRIER ON BRIDGE OR JERSEY BARRIER
CB	CB	CATCH BASIN
		CATCH BASIN CURB INLET
FP	FP	FLAG POLE
GP	GP	GAS PUMP
MB	MB	MAIL BOX
		POST SQUARE
		POST CIRCULAR
WELL	WELL	WELL
EHH	EHH	ELECTRIC HANDHOLE
		FENCE GATE POST
GG	GG	GAS GATE
BHL #	BHL #	BORING HOLE
MW #	MW #	MONITORING WELL
TP #	TP #	TEST PIT
		HYDRANT
		LIGHT POLE
CO.BD.		COUNTY BOUND
		GPS POINT
		CABLE MANHOLE
		DRAINAGE MANHOLE
		ELECTRIC MANHOLE
		GAS MANHOLE
		MISC MANHOLE
		SEWER MANHOLE
		TELEPHONE MANHOLE
		WATER MANHOLE
MHB	MHB	MASSACHUSETTS HIGHWAY BOUND
MON		MONUMENT
SB		STONE BOUND
TB		TOWN OR CITY BOUND
		TRAVERSE OR TRIANGULATION STATION
TPL or GUY	TPL or GUY	TROLLEY POLE OR GUY POLE
HTP		TRANSMISSION POLE
UFB	UFB	UTILITY POLE W/ FIREBOX
UPDL	UPDL	UTILITY POLE WITH DOUBLE LIGHT
ULT	UPL	UTILITY POLE W / 1 LIGHT
UPL	UP	UTILITY POLE
		BUSH
SIZE & TYPE		TREE
		STUMP
		SWAMP / MARSH
WG	WG	WATER GATE
PM	PM	PARKING METER
		OVERHEAD CABLE/WIRE
		CURBING
100 99		CONTOURS
		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)
		BALANCE STONE WALL
		GUARD RAIL - STEEL POSTS
		GUARD RAIL - WOOD POSTS
		CHAIN LINK OR METAL FENCE
		WOOD FENCE
		HAY BALES/SILT FENCE
		TREE LINE OR LIMIT OF CLEARING AND GRUBBING
		SAWCUT LINE
		TOP OR BOTTOM OF SLOPE
		LIMIT OF EDGE OF PAVEMENT OR COLD PLANE AND OVERLAY
		BANK OF RIVER OR STREAM
		BORDER OF WETLAND
		100 FT WETLAND BUFFER
		200 FT RIVERFRONT BUFFER
		STATE HIGHWAY LAYOUT
		TOWN OR CITY LAYOUT
		COUNTY LAYOUT
		RAILROAD SIDELINE
		TOWN OR CITY BOUNDARY LINE
		PROPERTY LINE OR APPROXIMATE PROPERTY LINE
		EASEMENT
		TREE PROTECTION

TRAFFIC SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
1	1	CONTROLLER PHASE ACTUATED
		TRAFFIC SIGNAL HEAD (SIZE AS NOTED)
		WIRE LOOP DETECTOR (6' x 6' TYP UNLESS OTHERWISE SPECIFIED)
		VIDEO DETECTION CAMERA
		MICROWAVE DETECTOR
		PEDESTRIAN PUSH BUTTON, SIGN (DIRECTIONAL ARROW AS SHOWN) AND SADDLE
		EMERGENCY PREEMPTION CONFIRMATION STROBE LIGHT
		VEHICULAR SIGNAL HEAD
		VEHICULAR SIGNAL HEAD, OPTICALLY PROGRAMMED
		FLASHING BEACON
		PEDESTRIAN SIGNAL HEAD, (TYPE AS NOTED OR AS SPECIFIED)
RRSG	RRSG	RAILROAD SIGNAL
OR		SIGNAL POST AND BASE (ALPHA-NUMERIC DESIGNATION NOTED)
	20'	MAST ARM, SHAFT AND BASE (ARM LENGTH AS NOTED)
		HIGH MAST POLE OR TOWER
		SIGN AND POST
		SIGN AND POST (2 POSTS)
	20'	MAST ARM WITH LUMINAIRE
		OPTICAL PRE-EMPTION DETECTOR
		CONTROL CABINET, GROUND MOUNTED
		CONTROL CABINET, POLE MOUNTED
		FLASHING BEACON CONTROL AND METER PEDESTAL
		LOAD CENTER ASSEMBLY
		PULL BOX 12"x12" (OR AS NOTED)
		ELECTRIC HANDHOLE 12"x24" (OR AS NOTED)
		TRAFFIC SIGNAL CONDUIT

PAVEMENT MARKINGS SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
		PAVEMENT ARROW - WHITE
ONLY	ONLY	LEGEND "ONLY" - WHITE
	SL	STOP LINE
	CW	CROSSWALK
	SWL	SOLID WHITE LINE
	SYL	SOLID YELLOW LINE
	BWL	BROKEN WHITE LINE
	BYL	BROKEN YELLOW LINE
	DWL	DOTTED WHITE LINE
	DYL	DOTTED YELLOW LINE
	DWLEx	DOTTED WHITE LINE EXTENSION
	DYLEx	DOTTED YELLOW LINE EXTENSION
	DBWL	DOUBLE WHITE LINE
	DBYL	DOUBLE YELLOW LINE

ABBREVIATIONS

GENERAL

AADT	ANNUAL AVERAGE DAILY TRAFFIC
ABAN	ABANDON
ADJ	ADJUST
APPROX.	APPROXIMATE
A.C.	ASPHALT CONCRETE
ACCM PIPE	ASPHALT COATED CORRUGATED METAL PIPE
BIT.	BITUMINOUS
BC	BOTTOM OF CURB
BD.	BOUND
BL	BASELINE
BLDG	BUILDING
BM	BENCHMARK
BO	BY OTHERS
BOS	BOTTOM OF SLOPE
BR.	BRIDGE
CB	CATCH BASIN
CBCI	CATCH BASIN WITH CURB INLET
CC	CEMENT CONCRETE
CCM	CEMENT CONCRETE MASONRY
CEM	CEMENT
CI	CURB INLET
CIP	CAST IRON PIPE
CLF	CHAIN LINK FENCE
CL	CENTERLINE
CMP	CORRUGATED METAL PIPE
CSP	CORRUGATED STEEL PIPE
CO.	COUNTY
CONC	CONCRETE
CONT	CONTINUOUS
CONST	CONSTRUCTION
CR GR	CROWN GRADE
DHV	DESIGN HOURLY VOLUME
DI	DROP INLET
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DW	STEADY DON'T WALK - PORTLAND ORANGE
DWY	DRIVEWAY
ELEV (or EL.)	ELEVATION
EMB	EMBANKMENT
EOP	EDGE OF PAVEMENT
EXIST (or EX)	EXISTING
EXC	EXCAVATION
F&C	FRAME AND COVER
F&G	FRAME AND GRATE
FDN.	FOUNDATION
FLDSTN	FIELDSTONE
GAR	GARAGE
GD	GROUND
GG	GAS GATE
GI	GUTTER INLET
GIP	GALVANIZED IRON PIPE
GRAN	GRANITE
GRAV	GRAVEL
GRD	GUARD
HDW	HEADWALL
HMA	HOT MIX ASPHALT
HOR	HORIZONTAL
HYD	HYDRANT
INV	INVERT
JCT	JUNCTION
L	LENGTH OF CURVE
LB	LEACH BASIN
LP	LIGHT POLE
LT	LEFT
MAX	MAXIMUM
MB	MAILBOX
MH	MANHOLE
MHB	MASSACHUSETTS HIGHWAY BOUND
MIN	MINIMUM
NIC	NOT IN CONTRACT
NO.	NUMBER
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVATURE
P.G.L.	PROFILE GRADE LINE
PI	POINT OF INTERSECTION
POC	POINT ON CURVE
POT	POINT ON TANGENT
PRC	POINT OF REVERSE CURVATURE
PROJ	PROJECT
PROP	PROPOSED
PSB	PLANTABLE SOIL BORROW
PT	POINT OF TANGENCY
PVC	POINT OF VERTICAL CURVATURE
PVI	POINT OF VERTICAL INTERSECTION
PVT	POINT OF VERTICAL TANGENCY
PVMT	PAVEMENT
PWW	PAVED WATER WAY

MARLBOROUGH
ROUTE 85 (MAPLE ST)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
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LEGEND & ABBREVIATIONS

ABBREVIATIONS (cont.)

GENERAL

R	RADIUS OF CURVATURE
R&D	REMOVE AND DISPOSE
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
RDWY	ROADWAY
REM	REMOVE
RET	RETAIN
RET WALL	RETAINING WALL
ROW	RIGHT OF WAY
RR	RAILROAD
R&R	REMOVE AND RESET
R&S	REMOVE AND STACK
RT	RIGHT
SB	STONE BOUND
SHLD	SHOULDER
SMH	SEWER MANHOLE
ST	STREET
STA	STATION
SSD	STOPPING SIGHT DISTANCE
SHLO	STATE HIGHWAY LAYOUT LINE
SW	SIDEWALK
T	TANGENT DISTANCE OF CURVE/TRUCK %
TAN	TANGENT
TEMP	TEMPORARY
TC	TOP OF CURB
TOS	TOP OF SLOPE
TYP	TYPICAL
UP	UTILITY POLE
VAR	VARIES
VERT	VERTICAL
VC	VERTICAL CURVE
WCR	WHEEL CHAIR RAMP
WG	WATER GATE
WIP	WROUGHT IRON PIPE
WM	WATER METER/WATER MAIN
X-SECT	CROSS SECTION

TRAFFIC SIGNAL

CAB.	CABINET
CCVE	CLOSED CIRCUIT VIDEO EQUIPMENT
DW	STEADY DON'T WALK
FDW	FLASHING DON'T WALK
FR	FLASHING CIRCULAR RED
FRL	FLASHING RED LEFT ARROW
FRR	FLASHING RED RIGHT ARROW
FY	FLASHING CIRCULAR 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
OL	OVERLAP
PED	PEDESTRIAN
PTZ	PAN, TILE, ZOOM
R	STEADY CIRCULAR RED
RL	STEADY RED LEFT ARROW
RR	STEADY RED RIGHT ARROW
TR SIG	TRAFFIC SIGNAL
TSC	TRAFFIC SIGNAL CONDUIT
W	STEADY WALK
Y	STEADY CIRCULAR AMBER
YL	STEADY AMBER LEFT ARROW

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MARLBOROUGH
ROUTE 85 (MAPLE ST)

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MA	TBD	3	53
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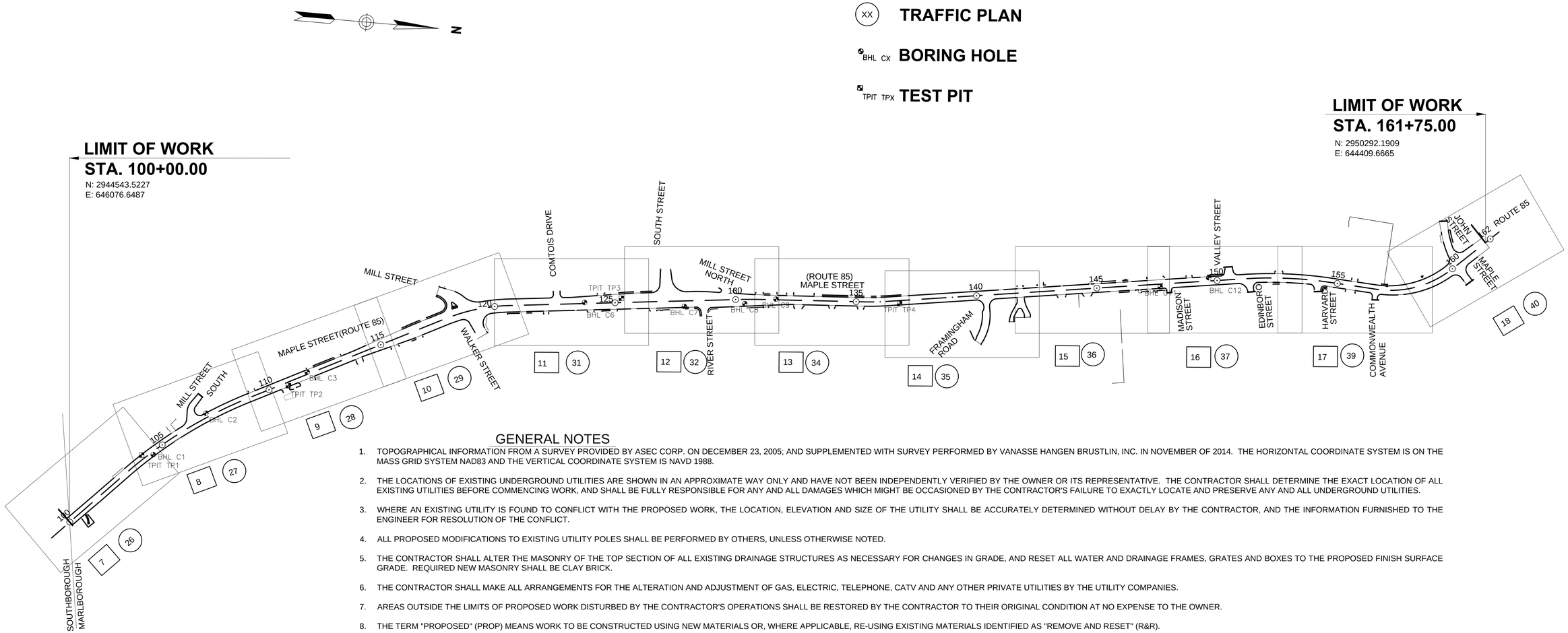
KEY PLAN

KEY:

- XX — **CONSTRUCTION PLAN**
- XX — **TRAFFIC PLAN**
- BHL CX — **BORING HOLE**
- TPIT TPX — **TEST PIT**



GENERAL NOTES

1. TOPOGRAPHICAL INFORMATION FROM A SURVEY PROVIDED BY ASEC CORP. ON DECEMBER 23, 2005; AND SUPPLEMENTED WITH SURVEY PERFORMED BY VANASSE HANGEN BRUSTLIN, INC. IN NOVEMBER OF 2014. THE HORIZONTAL COORDINATE SYSTEM IS ON THE MASS GRID SYSTEM NAD83 AND THE VERTICAL COORDINATE SYSTEM IS NAVD 1988.
2. 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.
3. 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.
4. ALL PROPOSED MODIFICATIONS TO EXISTING UTILITY POLES SHALL BE PERFORMED BY OTHERS, UNLESS OTHERWISE NOTED.
5. THE CONTRACTOR SHALL ALTER THE MASONRY OF THE TOP SECTION OF ALL EXISTING DRAINAGE STRUCTURES AS NECESSARY FOR CHANGES IN GRADE, AND RESET ALL WATER AND DRAINAGE FRAMES, GRATES AND BOXES TO THE PROPOSED FINISH SURFACE GRADE. REQUIRED NEW MASONRY SHALL BE CLAY BRICK.
6. THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE, CATV AND ANY OTHER PRIVATE UTILITIES BY THE UTILITY COMPANIES.
7. 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.
8. 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).
9. SAWCUT SURFACES ABUTTING THE PAVEMENT TOP COURSE SHALL BE COATED WITH HMA JOINT SEALANT.
10. EXISTING SIGNS WITHIN THE PROJECT LIMITS SHALL BE REMOVED AND RESET UNLESS INDICATED OTHERWISE ON THE PLANS.
11. LATERAL DRAIN PIPES SHALL BE INSTALLED WITH A PITCH OF 0.01 FOOT PER FOOT (MINIMUM) UNLESS NOTED OTHERWISE ON THE DRAWINGS.
12. CAUTION SHOULD BE EXERCISED WHEN COMPACTING WITH A HEAVY VIBRATORY ROLLER IN AREAS WHERE SHALLOW DEPTHS OF COVER (LESS THAN 2 FEET) EXIST ABOVE THE TOP OF PROPOSED PIPE. THESE AREAS SHOULD BE CLEARLY MARKED WITH STAKING. STAKING SHALL BE PLACED A MINIMUM OF SIX FEET AROUND THE AREA WHERE THE CONDITION EXISTS. THESE AREAS SHALL BE COMPACTED UTILIZING A LIGHTWEIGHT VIBRATORY PLATE COMPACTOR UNTIL THE REQUIRED COMPACTION IS REACHED.
13. EXISTING UTILITY POLES SHALL BE RELOCATED BY OTHERS.
14. TREES AND SHRUBS WITHIN THE LIMITS OF GRADING SHALL BE REMOVED ONLY UPON APPROVAL OF THE ENGINEER.
15. AFTER PAVEMENT MILLING OPERATIONS AND PRIOR TO PAVING OF THE INTERMEDIATE (BINDER) COURSE THE ENGINEER SHALL EVALUATE THE MILLED SURFACE AND SHALL APPLY THE APPROPRIATE REPAIR METHOD; IF REQUIRED.

200 0 200 400 600

SCALE: 1" = 200'

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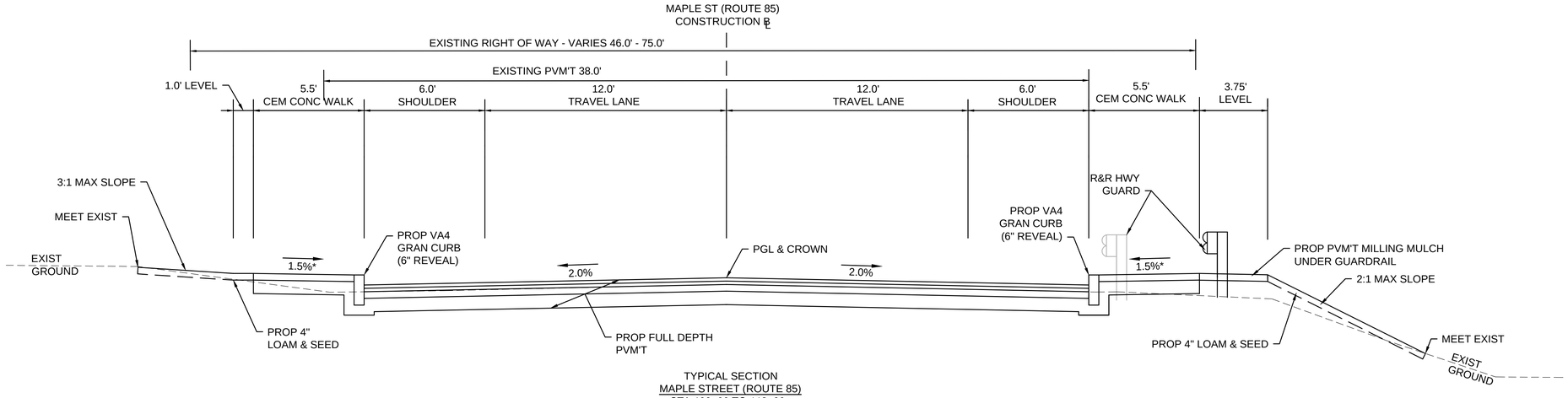
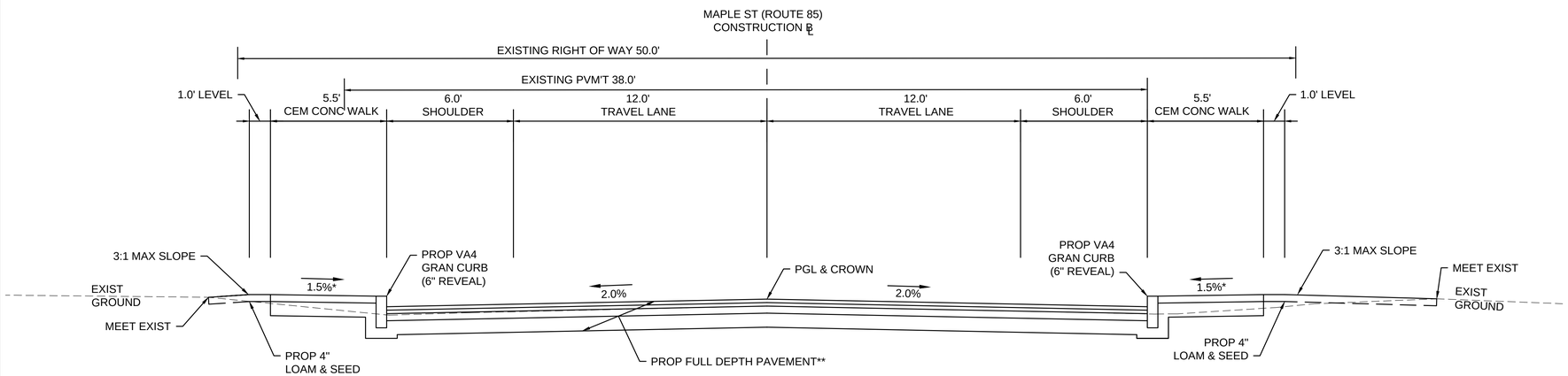
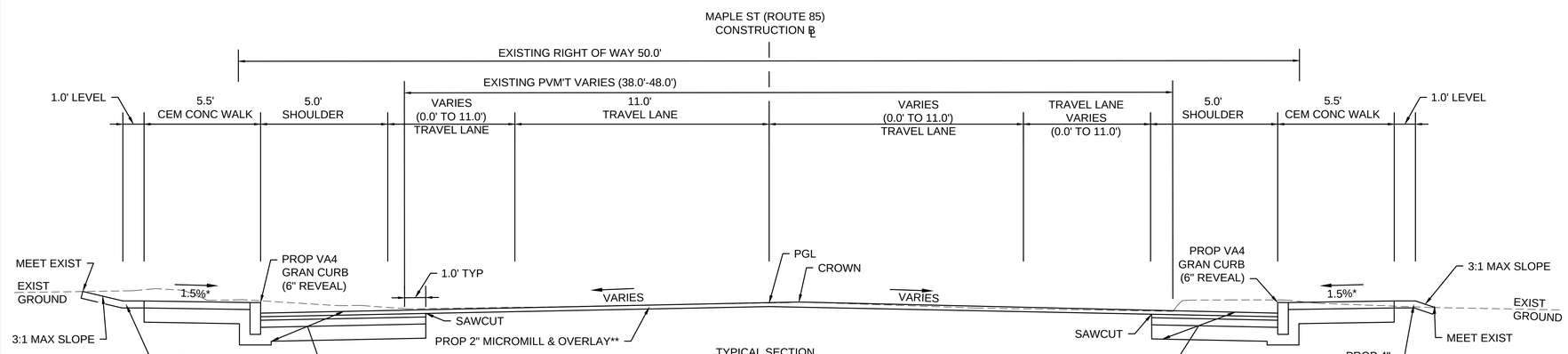


TYPICAL SECTION
MAPLE STREET (ROUTE 85)
STA 100+00 TO 112+00±
NTS
*TOLERANCE FOR CONSTRUCTION ±0.5%



TYPICAL SECTION
MAPLE STREET (ROUTE 85)
STA 112+00 TO 114+00±
STA 132+25 TO 147+50±
NTS
*TOLERANCE FOR CONSTRUCTION ±0.5%
** PAVEMENT DESIGN VARIES, REFER TO PAVEMENT NOTES



TYPICAL SECTION
MAPLE STREET (ROUTE 85)
STA 114+00 TO 117+50±
STA 128+50 TO 132+25±
NTS
*TOLERANCE FOR CONSTRUCTION ±0.5%
**PAVEMENT DESIGN VARIES, REFER TO PAVEMENT NOTES

MARLBOROUGH
ROUTE 85 (MAPLE ST)

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TYPICAL SECTIONS & PAVEMENT NOTES

PAVEMENT NOTES

PROPOSED FULL DEPTH PAVEMENT (STA 100+00 TO 114+00)

SURFACE: 3 3/4" HOT MIX ASPHALT
(2" SUPERPAVE SURFACE COURSE - 12.5 (SSC-12.5)
1 3/4" SUPERPAVE INTERMEDIATE COURSE - 19.0 (SIC-19.0))

BASE: 3 1/2" SUPERPAVE INTERMEDIATE COURSE - 19.0 (SIC-19.0) AS BASE COURSE

SUBBASE: 12" GRAVEL BORROW, TYPE b

ASPHALT EMULSION FOR TACK COAT (RS-1) AT 0.05 GAL/SY OVER EXISTING SURFACE

PROPOSED 2" MICROMILL & OVERLAY (STA 114+00 TO 130+00)

SURFACE: 2" HOT MIX ASPHALT
(2" SUPERPAVE SURFACE COURSE - 12.5 (SSC-12.5))

2" MICROMILLING DEPTH

ASPHALT EMULSION FOR TACK COAT (RS-1) AT 0.07 GAL/SY OVER EXISTING PAVEMENT OR MILLING SURFACE

PROPOSED 3.5" MICROMILL & 2"OVERLAY (STA 130+00 TO 161+75)

SURFACE: 4" HOT MIX ASPHALT
(2" SUPERPAVE SURFACE COURSE - 12.5 (SSC-12.5)
2" SUPERPAVE INTERMEDIATE COURSE - 12.5 (SIC-12.5))

3 1/2" MICROMILLING DEPTH

ASPHALT EMULSION FOR TACK COAT (RS-1) AT 0.07 GAL/SY OVER EXISTING PAVEMENT OR MILLING SURFACE

PROPOSED FULL DEPTH PAVEMENT (GREATER THAN 4.00' WIDE)
(STA 114+00 TO 130+00)

SURFACE: 4 1/2" HOT MIX ASPHALT
(2" SUPERPAVE SURFACE COURSE - 12.5 (SSC-12.5)
2 1/2" SUPERPAVE INTERMEDIATE COURSE - 19.0 (SIC-19.0))

BASE: 2 1/2" SUPERPAVE INTERMEDIATE COURSE - 19.0 (SIC-19.0) AS BASE COURSE

SUBBASE: 12" GRAVEL BORROW, TYPE b.

ASPHALT EMULSION FOR TACK COAT (RS-1) AT 0.05 GAL/SY OVER EXISTING SURFACE

PROPOSED FULL DEPTH PAVEMENT - WIDENING (LESS THAN 4.00' WIDE)
(STA 114+00 TO 130+00)

SURFACE: 2" HOT MIX ASPHALT
(2" SUPERPAVE SURFACE COURSE - 12.5 (SSC-12.5))

BASE: 6" HIGH EARLY STRENGTH CEMENT CONCRETE BASE COURSE

SUBBASE: 12" GRAVEL BORROW, TYPE b.

PROPOSED HMA DRIVEWAY

SURFACE: 3 1/2" HOT MIX ASPHALT
(1 1/2" SUPERPAVE SURFACE COURSE - 9.5 (SSC-9.5)
2" SUPERPAVE INTERMEDIATE COURSE - 12.5 (SIC-12.5))

SUBBASE: 8" GRAVEL BORROW TYPE b

PROPOSED CEMENT CONCRETE WALK/ WHEELCHAIR RAMP/ISLAND

SURFACE: 4" CEMENT CONCRETE
AIR ENTRAINED 4000 PSI, 3/4", 610

FOUNDATION: 8" GRAVEL BORROW, TYPE b

PROPOSED CEMENT CONCRETE DRIVEWAY

SURFACE: 6" CEMENT CONCRETE
AIR ENTRAINED 4000 PSI, 3/4", 610

FOUNDATION: 8" GRAVEL BORROW, TYPE b

NOTE: ALL SURFACE COURSE PAVEMENTS SHALL CONTAIN ITEM 456. - WARM MIX ASPHALT.

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MARLBOROUGH
ROUTE 85 (MAPLE ST)

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MA	TBD	5	53
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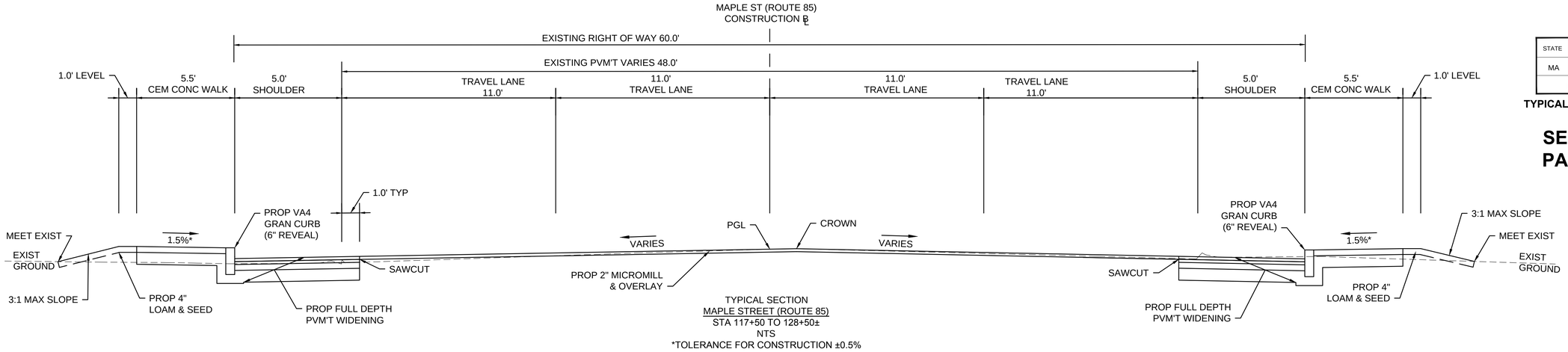
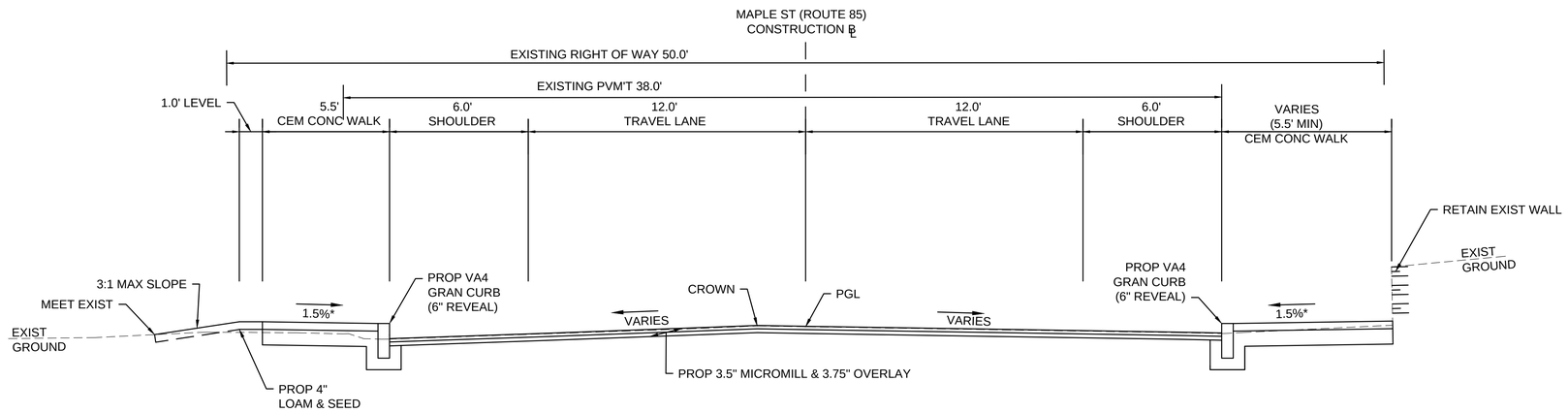
TYPICAL SECTIONS & PAVEMENT NOTES

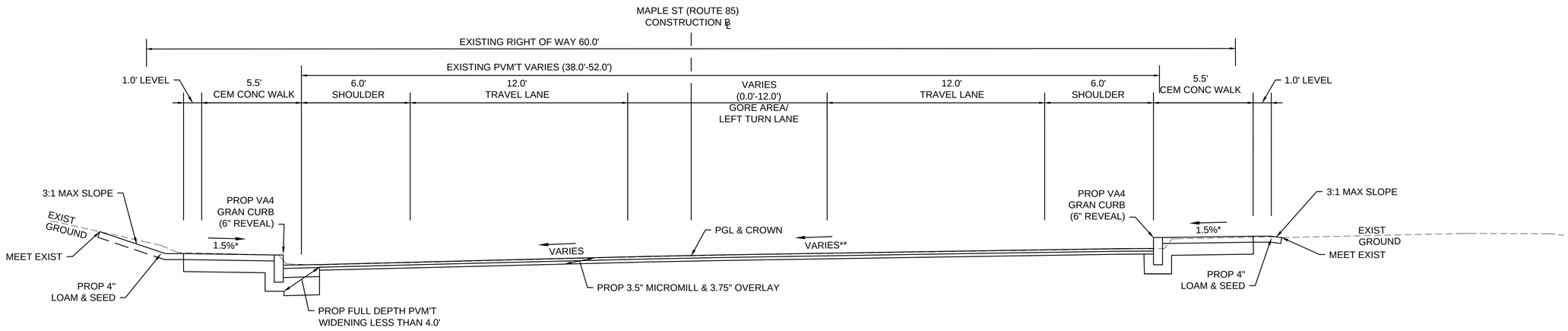
SEE SHEET 4 FOR PAVEMENT NOTES



TYPICAL SECTION
MAPLE STREET (ROUTE 85)
STA 117+50 TO 128+50±
NTS
*TOLERANCE FOR CONSTRUCTION ±0.5%



TYPICAL SECTION
MAPLE STREET (ROUTE 85)
STA 147+50 TO 156+75±
NTS
*TOLERANCE FOR CONSTRUCTION ±0.5%



TYPICAL SECTION
MAPLE STREET (ROUTE 85)
STA 156+75 TO 161+75
NTS
*TOLERANCE FOR CONSTRUCTION ±0.5%
**2.0% MAX SUPERELEVATED CURVE STA 156+75 TO 160+62±

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MARLBOROUGH
ROUTE 85 (MAPLE ST)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	6	53
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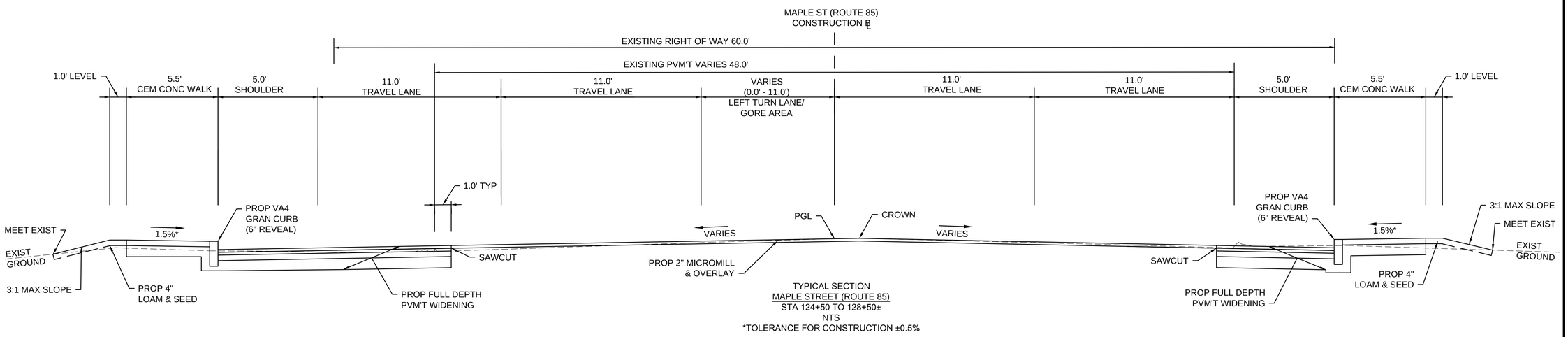
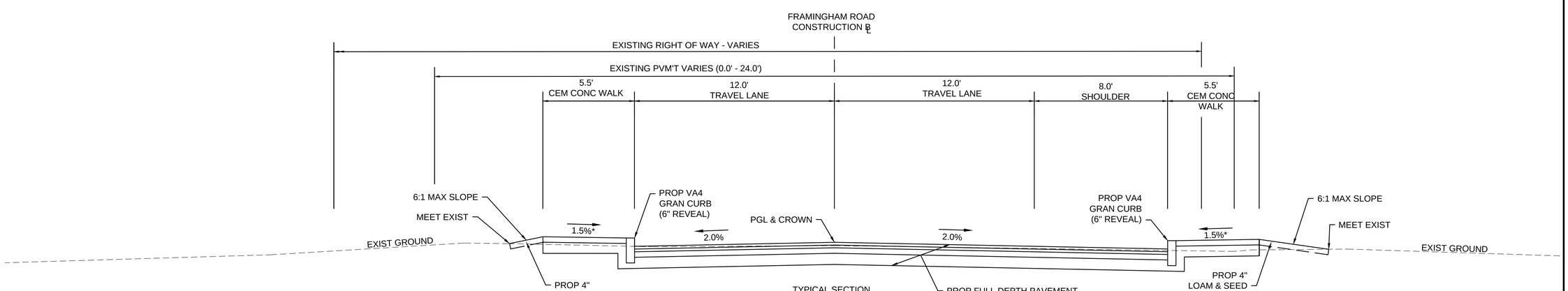
TYPICAL SECTIONS & PAVEMENT NOTES

SEE SHEET 4 FOR PAVEMENT NOTES



TYPICAL SECTION
MAPLE STREET (ROUTE 85)
STA 124+50 TO 128+50±
NTS
*TOLERANCE FOR CONSTRUCTION ±0.5%



TYPICAL SECTION
FRAMINGHAM ROAD
STA 30+22 TO 32+05±
NTS
*TOLERANCE FOR CONSTRUCTION ±0.5%

604810_HD(TYP).DWG Plotted on 1-Oct-2015 11:34 AM

MARLBOROUGH
ROUTE 85 (MAPLE ST)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	7	53
PROJECT FILE NO. 604810			

CONSTRUCTION PLANS

604810_HD(GEN).DWG Plotted on 1-Oct-2015 11:35 AM

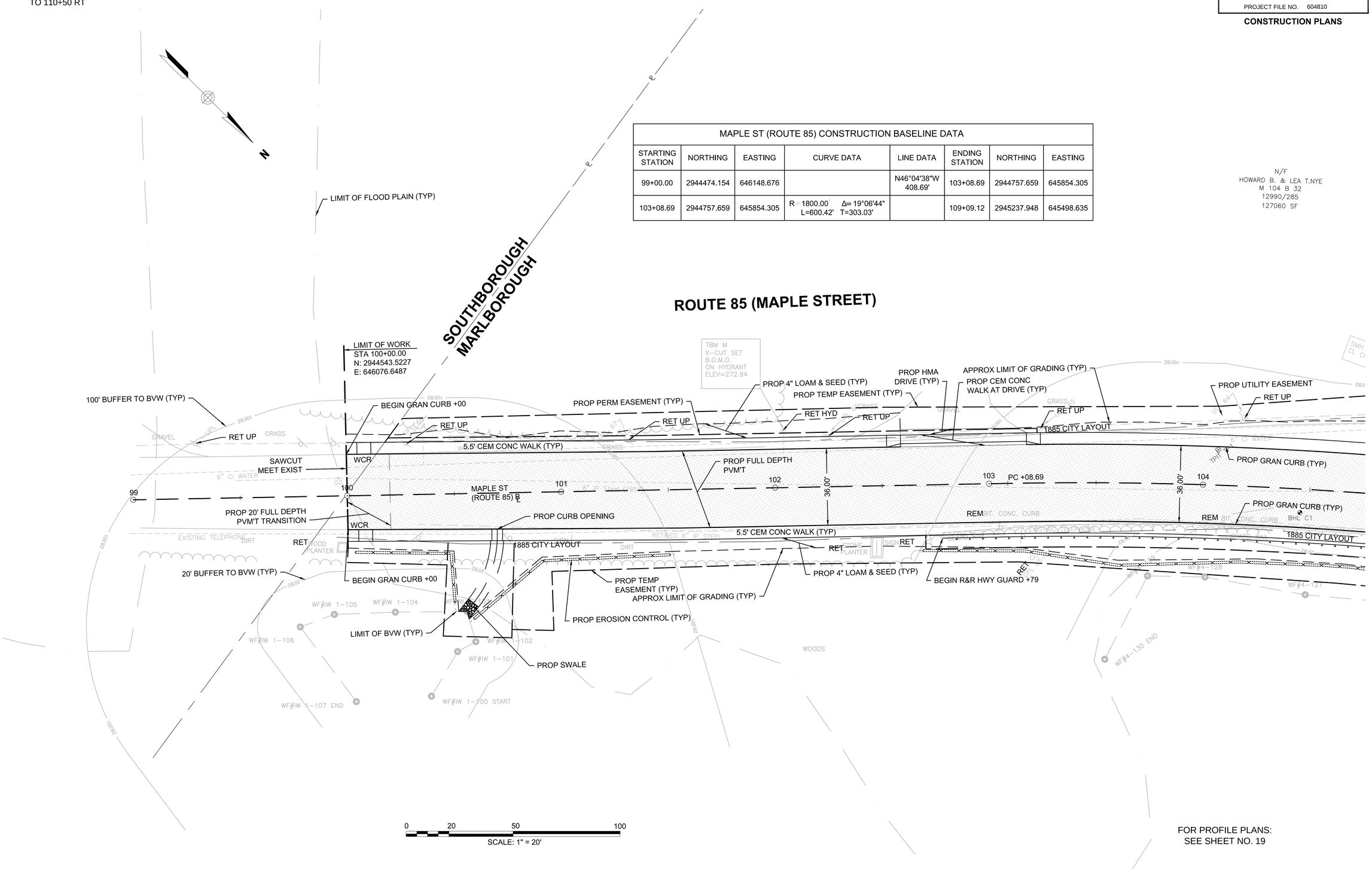
HIGHWAY GUARD DETAILS
TANGENT END 102+79 RT
REMOVE AND RESET HWY GUARD 102+79
TO 110+50 RT

TRAFFIC SIGNAL CONDUIT
NONE

WATER SUPPLY ALTERATIONS
SEE BELOW

DRAINAGE DETAILS
SEE BELOW

MAPLE ST (ROUTE 85) CONSTRUCTION BASELINE DATA							
STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
99+00.00	2944474.154	646148.676		N46°04'38"W 408.69'	103+08.69	2944757.659	645854.305
103+08.69	2944757.659	645854.305	R=1800.00' Δ=19°06'44" L=600.42' T=303.03'		109+09.12	2945237.948	645498.635



FOR PROFILE PLANS:
SEE SHEET NO. 19

MARLBOROUGH
ROUTE 85 (MAPLE ST)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	8	53
PROJECT FILE NO. 604810			

CONSTRUCTION PLANS

HIGHWAY GUARD DETAILS
REMOVE AND RESET 102+79 TO 110+50 RT

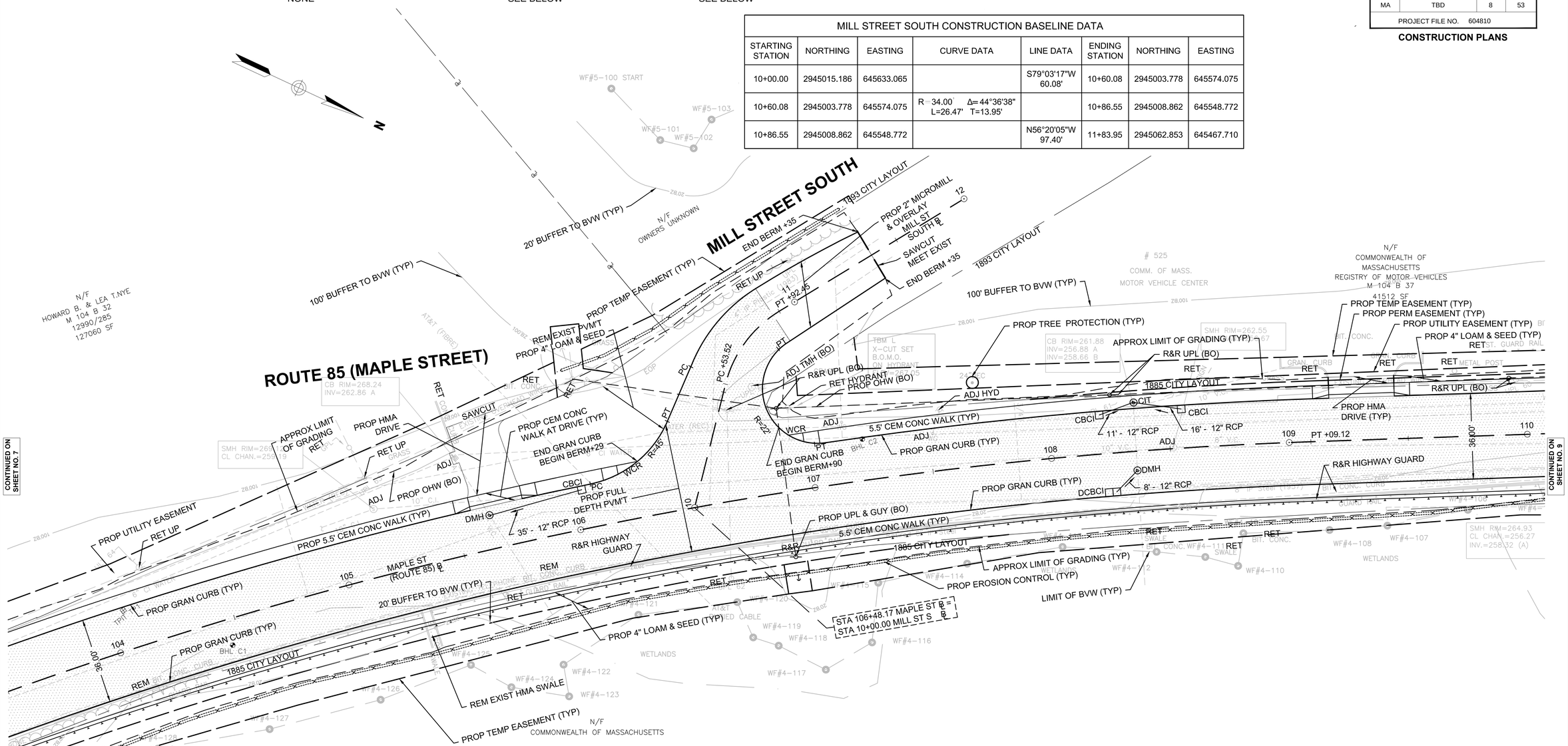
TRAFFIC SIGNAL CONDUIT
NONE

WATER SUPPLY ALTERATIONS
SEE BELOW

DRAINAGE DETAILS
SEE BELOW

MILL STREET SOUTH CONSTRUCTION BASELINE DATA

STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
10+00.00	2945015.186	645633.065		S79°03'17"W 60.08'	10+60.08	2945003.778	645574.075
10+60.08	2945003.778	645574.075	R=34.00' Δ=44°36'38" L=26.47' T=13.95'		10+86.55	2945008.862	645548.772
10+86.55	2945008.862	645548.772		N56°20'05"W 97.40'	11+83.95	2945062.853	645467.710



MAPLE ST (ROUTE 85) CONSTRUCTION BASELINE DATA

STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
103+08.69	2944757.659	645854.305	R=1800.00' Δ=19°06'44" L=600.42' T=303.03'		109+09.12	2945237.948	645498.635
109+09.12	2945237.948	645498.635		N26°57'55"W 877.62'	117+86.74	2946020.157	645100.678

0 20 50 100
SCALE: 1" = 20'

FOR PROFILE PLANS:
SEE SHEET NOS. 19 & 25

604810_HD(GEN).DWG Plotted on 1-Oct-2015 11:35 AM

MARLBOROUGH
ROUTE 85 (MAPLE ST)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	9	53
PROJECT FILE NO. 604810			

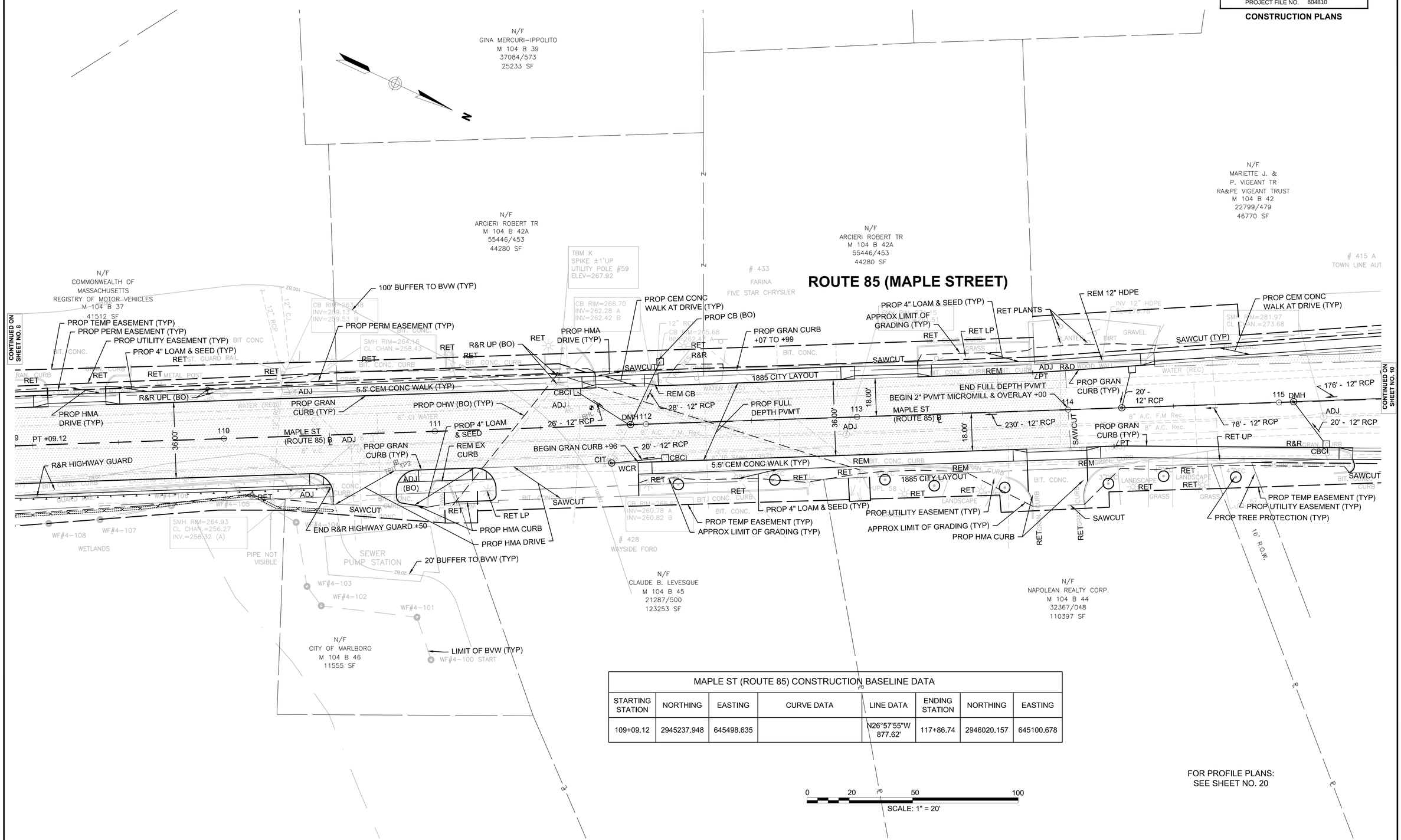
CONSTRUCTION PLANS

HIGHWAY GUARD DETAILS
REMOVE AND RESET 102+79 TO 110+50 RT
TERMINAL END 110+50 RT

TRAFFIC SIGNAL CONDUIT
NONE

WATER SUPPLY ALTERATIONS
SEE BELOW

DRAINAGE DETAILS
SEE BELOW



MAPLE ST (ROUTE 85) CONSTRUCTION BASELINE DATA							
STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
109+09.12	2945237.948	645498.635		N26°57'55"W 877.62'	117+86.74	2946020.157	645100.678

0 20 50 100
SCALE: 1" = 20'

FOR PROFILE PLANS:
SEE SHEET NO. 20

604810_HD(GEN).DWG Plotted on 1-Oct-2015 11:35 AM

MARLBOROUGH
ROUTE 85 (MAPLE ST)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	10	53
PROJECT FILE NO. 604810			

CONSTRUCTION PLANS

HIGHWAY GUARD DETAILS

NONE

TRAFFIC SIGNAL CONDUIT

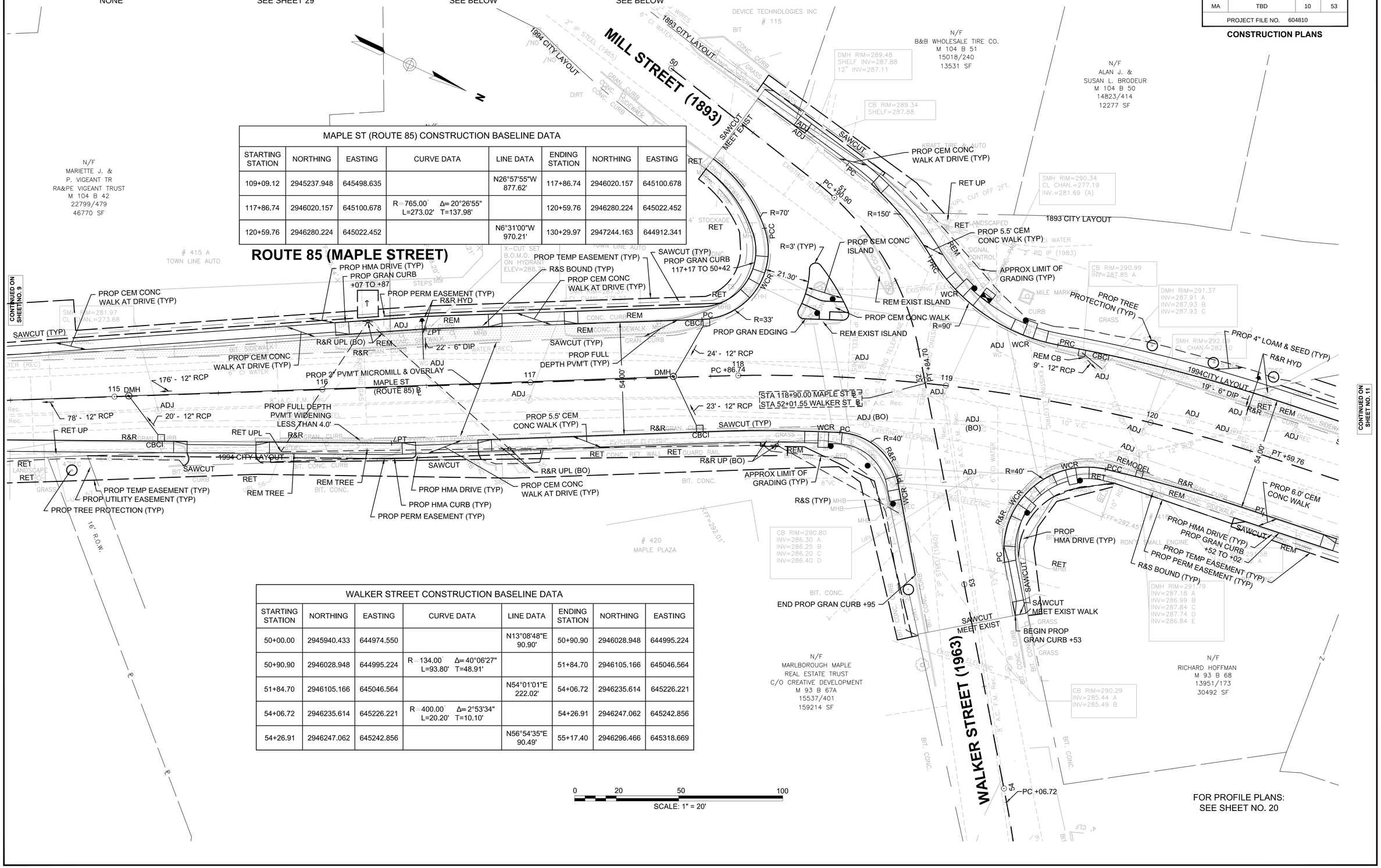
SEE SHEET 29

WATER SUPPLY ALTERATIONS

SEE BELOW

DRAINAGE DETAILS

SEE BELOW



MAPLE ST (ROUTE 85) CONSTRUCTION BASELINE DATA

STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
109+09.12	2945237.948	645498.635		N26°57'55"W 877.62'	117+86.74	2946020.157	645100.678
117+86.74	2946020.157	645100.678	R=765.00' Δ=20°26'55" L=273.02' T=137.98'		120+59.76	2946280.224	645022.452
120+59.76	2946280.224	645022.452		N6°31'00"W 970.21'	130+29.97	2947244.163	644912.341

WALKER STREET CONSTRUCTION BASELINE DATA

STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
50+00.00	2945940.433	644974.550		N13°08'48"E 90.90'	50+90.90	2946028.948	644995.224
50+90.90	2946028.948	644995.224	R=134.00' Δ=40°06'27" L=93.80' T=48.91'		51+84.70	2946105.166	645046.564
51+84.70	2946105.166	645046.564		N54°01'01"E 222.02'	54+06.72	2946235.614	645226.221
54+06.72	2946235.614	645226.221	R=400.00' Δ=2°53'34" L=20.20' T=10.10'		54+26.91	2946247.062	645242.856
54+26.91	2946247.062	645242.856		N56°54'35"E 90.49'	55+17.40	2946296.466	645318.669

FOR PROFILE PLANS:
SEE SHEET NO. 20

604810_HD(GEN).DWG Plotted on 1-Oct-2015 11:35 AM

MARLBOROUGH
ROUTE 85 (MAPLE ST)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	11	53
PROJECT FILE NO. 604810			

CONSTRUCTION PLANS

HIGHWAY GUARD DETAILS

NONE

TRAFFIC SIGNAL CONDUIT

NONE

WATER SUPPLY ALTERATIONS

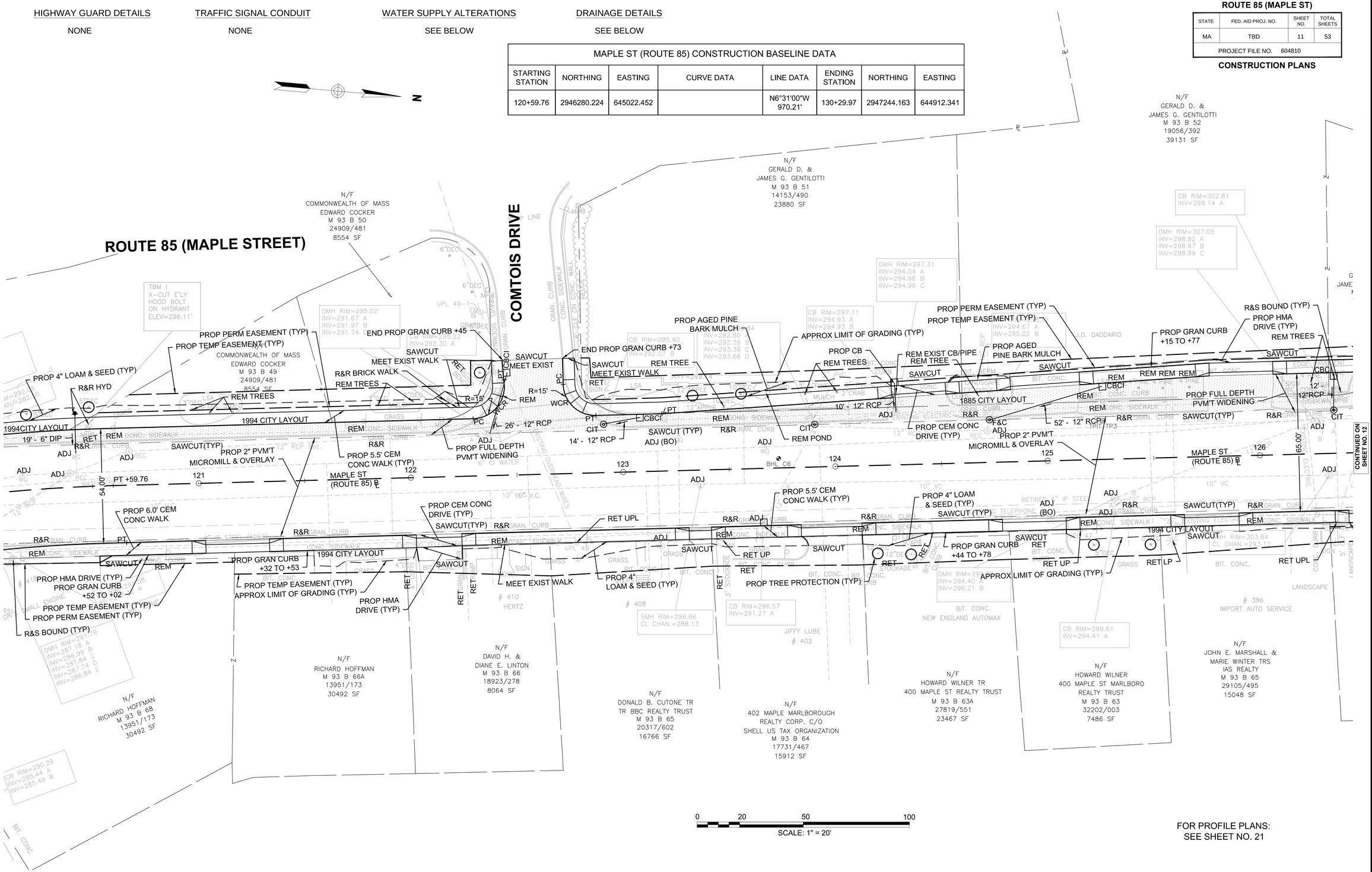
SEE BELOW

DRAINAGE DETAILS

SEE BELOW

MAPLE ST (ROUTE 85) CONSTRUCTION BASELINE DATA

STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
120+59.76	2946280.224	645022.452		N6°31'00"W 970.21'	130+29.97	2947244.163	644912.341



FOR PROFILE PLANS: SEE SHEET NO. 21

604810_HD(GEN).DWG Plotted on 1-Oct-2015 11:36 AM

HIGHWAY GUARD DETAILS

NONE

TRAFFIC SIGNAL CONDUIT

SEE SHEET 32

WATER SUPPLY ALTERATIONS

SEE BELOW

DRAINAGE DETAILS

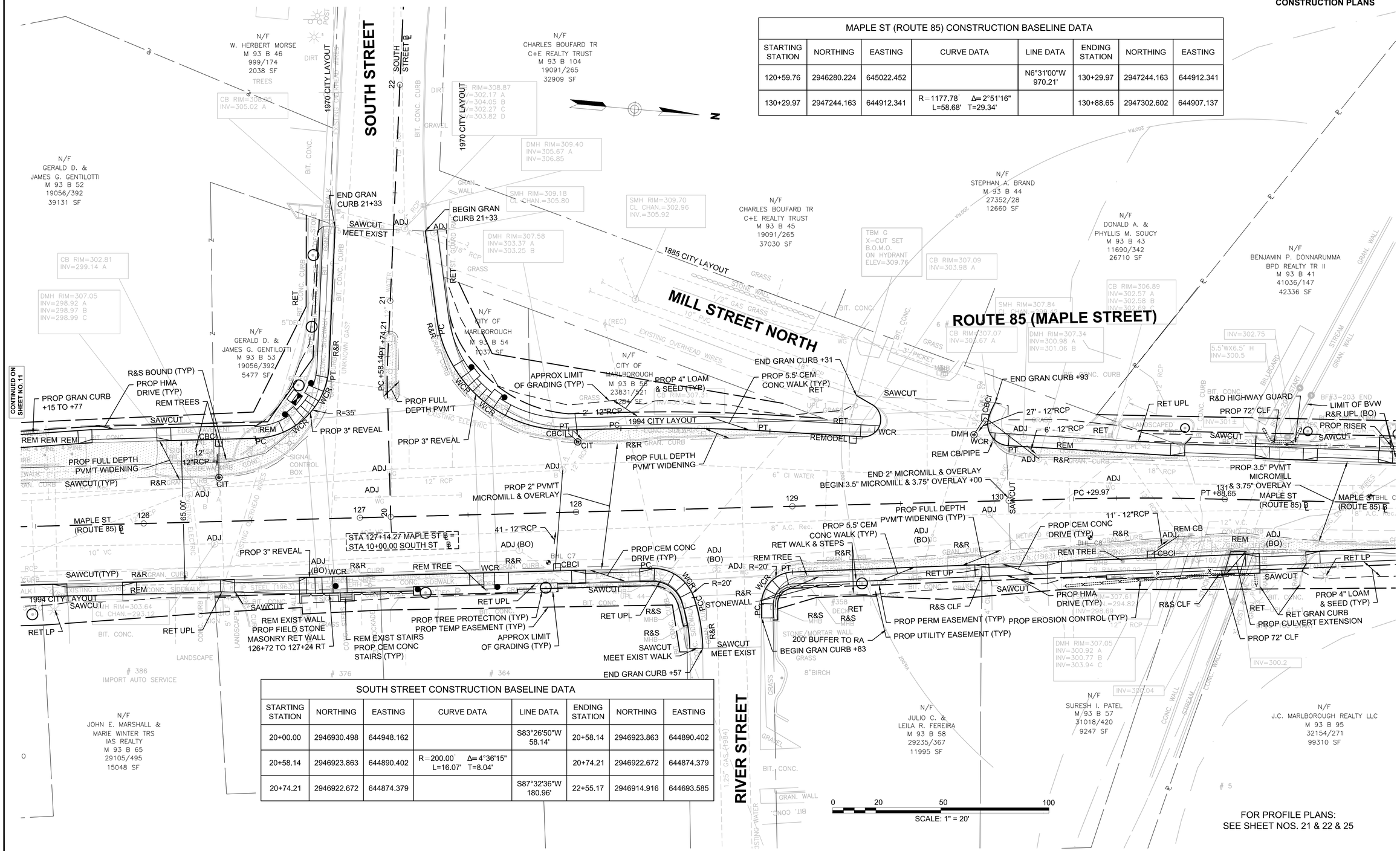
SEE BELOW

MARLBOROUGH
ROUTE 85 (MAPLE ST)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	12	53
PROJECT FILE NO. 604810			

CONSTRUCTION PLANS

MAPLE ST (ROUTE 85) CONSTRUCTION BASELINE DATA							
STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
120+59.76	2946280.224	645022.452		N6°31'00"W 970.21'	130+29.97	2947244.163	644912.341
130+29.97	2947244.163	644912.341	R=1177.78' Δ=2°51'16" L=58.68' T=29.34'		130+88.65	2947302.602	644907.137



SOUTH STREET CONSTRUCTION BASELINE DATA							
STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
20+00.00	2946930.498	644948.162		S83°26'50"W 58.14'	20+58.14	2946923.863	644890.402
20+58.14	2946923.863	644890.402	R=200.00' Δ=4°36'15" L=16.07' T=8.04'		20+74.21	2946922.672	644874.379
20+74.21	2946922.672	644874.379		S87°32'36"W 180.96'	22+55.17	2946914.916	644693.585

FOR PROFILE PLANS:
SEE SHEET NOS. 21 & 22 & 25

604810_HD(GEN).DWG Plotted on 1-Oct-2015 11:36 AM

MARLBOROUGH
ROUTE 85 (MAPLE ST)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	13	53
PROJECT FILE NO. 604810			

CONSTRUCTION PLANS

HIGHWAY GUARD DETAILS
HIGHWAY GUARD STA 135+40 TO 139+74 RT
TANGENT END SECTION 135+40RT
TERMINAL END SECTION 139+74RT

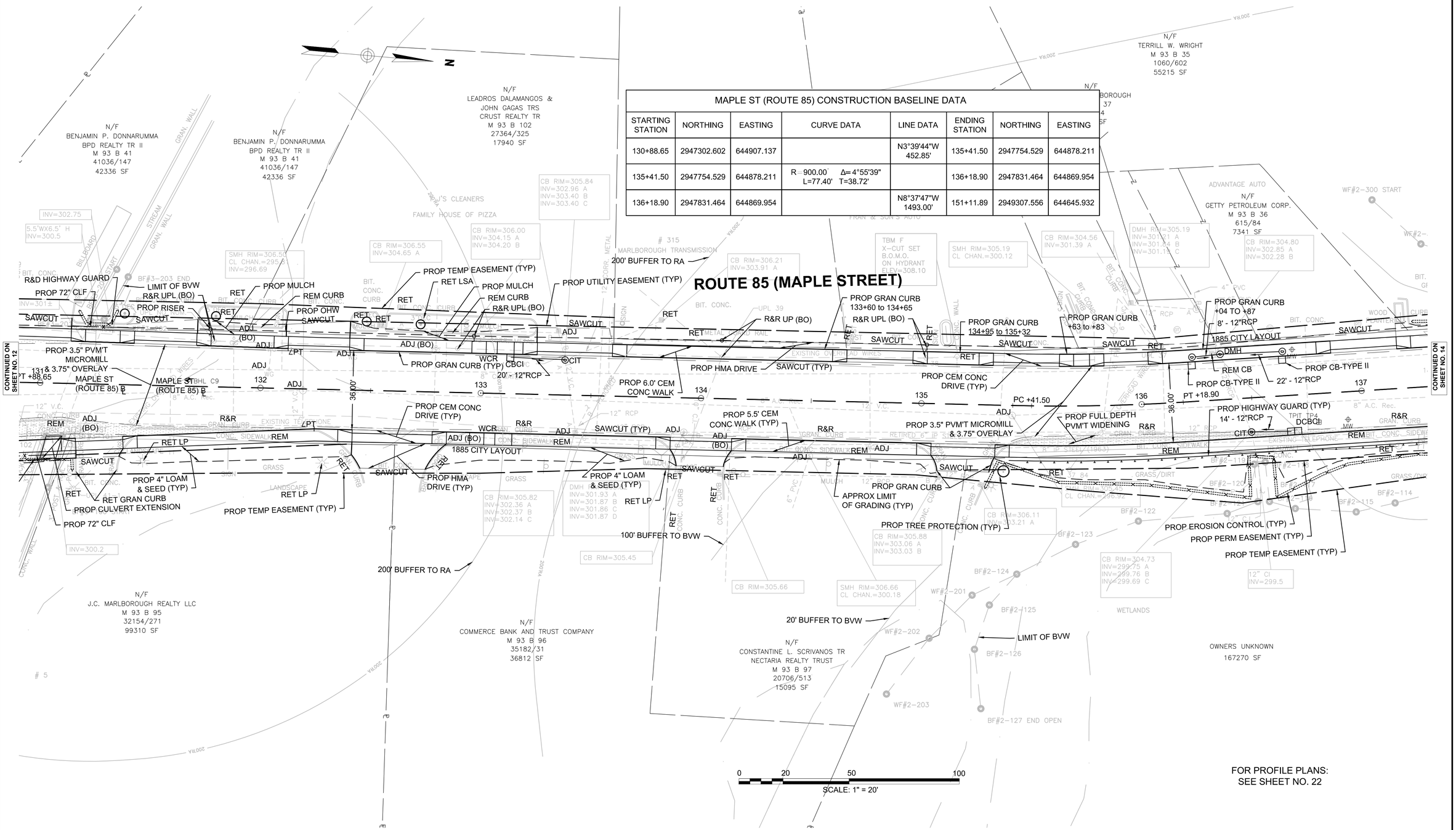
TRAFFIC SIGNAL CONDUIT
NONE

WATER SUPPLY ALTERATIONS
SEE BELOW

DRAINAGE DETAILS
SEE BELOW

MAPLE ST (ROUTE 85) CONSTRUCTION BASELINE DATA

STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
130+88.65	2947302.602	644907.137		N3°39'44"W 452.85'	135+41.50	2947754.529	644878.211
135+41.50	2947754.529	644878.211	R=900.00' Δ=4°55'39" L=77.40' T=38.72'		136+18.90	2947831.464	644869.954
136+18.90	2947831.464	644869.954		N8°37'47"W 1493.00'	151+11.89	2949307.556	644645.932



FOR PROFILE PLANS:
SEE SHEET NO. 22

604810_HD(GEN).DWG Plotted on 1-Oct-2015 11:36 AM

MARLBOROUGH
ROUTE 85 (MAPLE ST)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	14	53
PROJECT FILE NO. 604810			

CONSTRUCTION PLANS

HIGHWAY GUARD DETAILS

HIGHWAY GUARD STA 135+40 TO 139+74 RT

TANGENT END STA 135+40 RT
TERMINAL END STA 139+74 RT

TRAFFIC SIGNAL CONDUIT

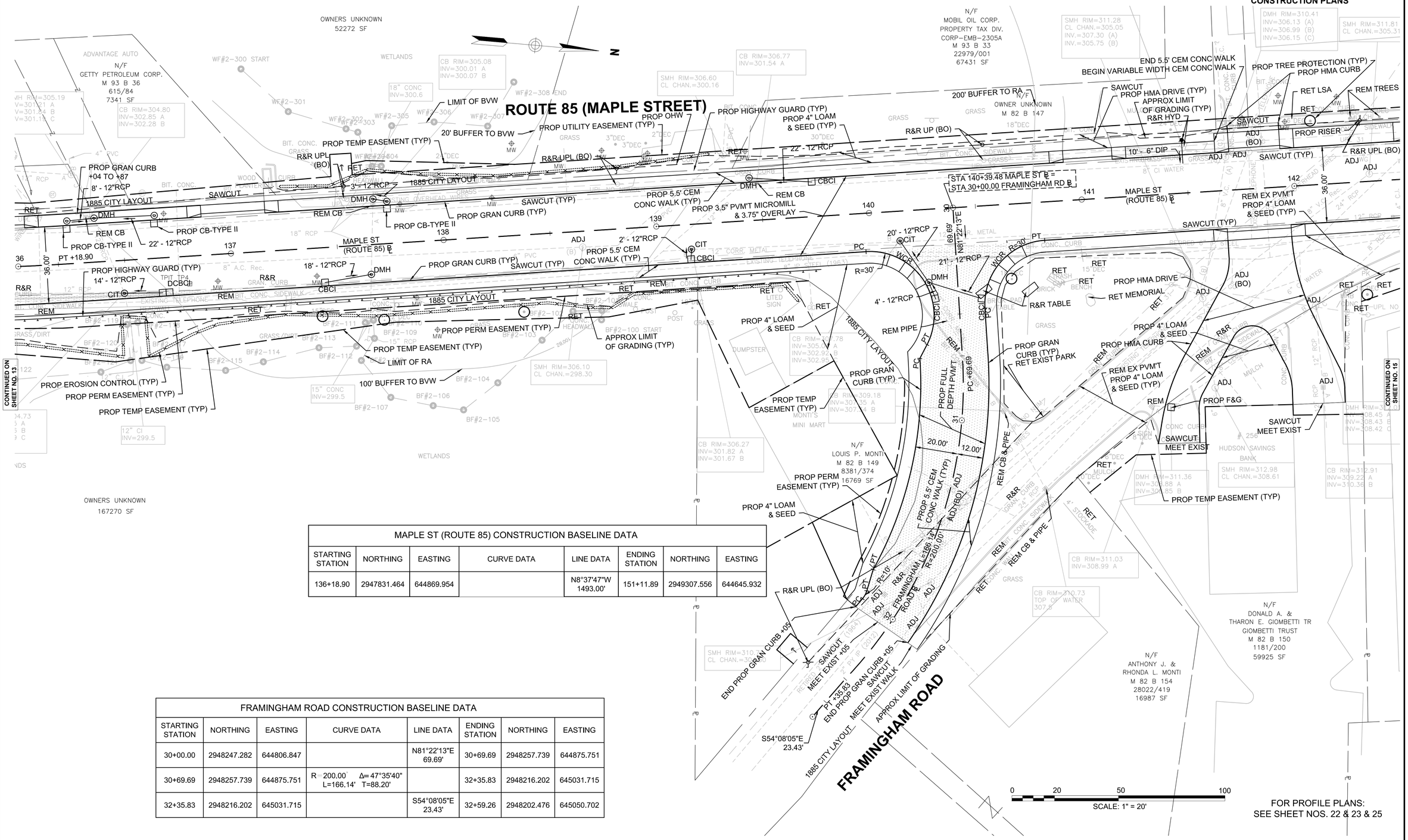
NONE

WATER SUPPLY ALTERATIONS

SEE BELOW

DRAINAGE DETAILS

SEE BELOW



MAPLE ST (ROUTE 85) CONSTRUCTION BASELINE DATA							
STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
136+18.90	2947831.464	644869.954		N8°37'47"W 1493.00'	151+11.89	2949307.556	644645.932

FRAMINGHAM ROAD CONSTRUCTION BASELINE DATA							
STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
30+00.00	2948247.282	644806.847		N81°22'13"E 69.69'	30+69.69	2948257.739	644875.751
30+69.69	2948257.739	644875.751	R=200.00' Δ=47°35'40" L=166.14' T=88.20'		32+35.83	2948216.202	645031.715
32+35.83	2948216.202	645031.715		S54°08'05"E 23.43'	32+59.26	2948202.476	644650.702

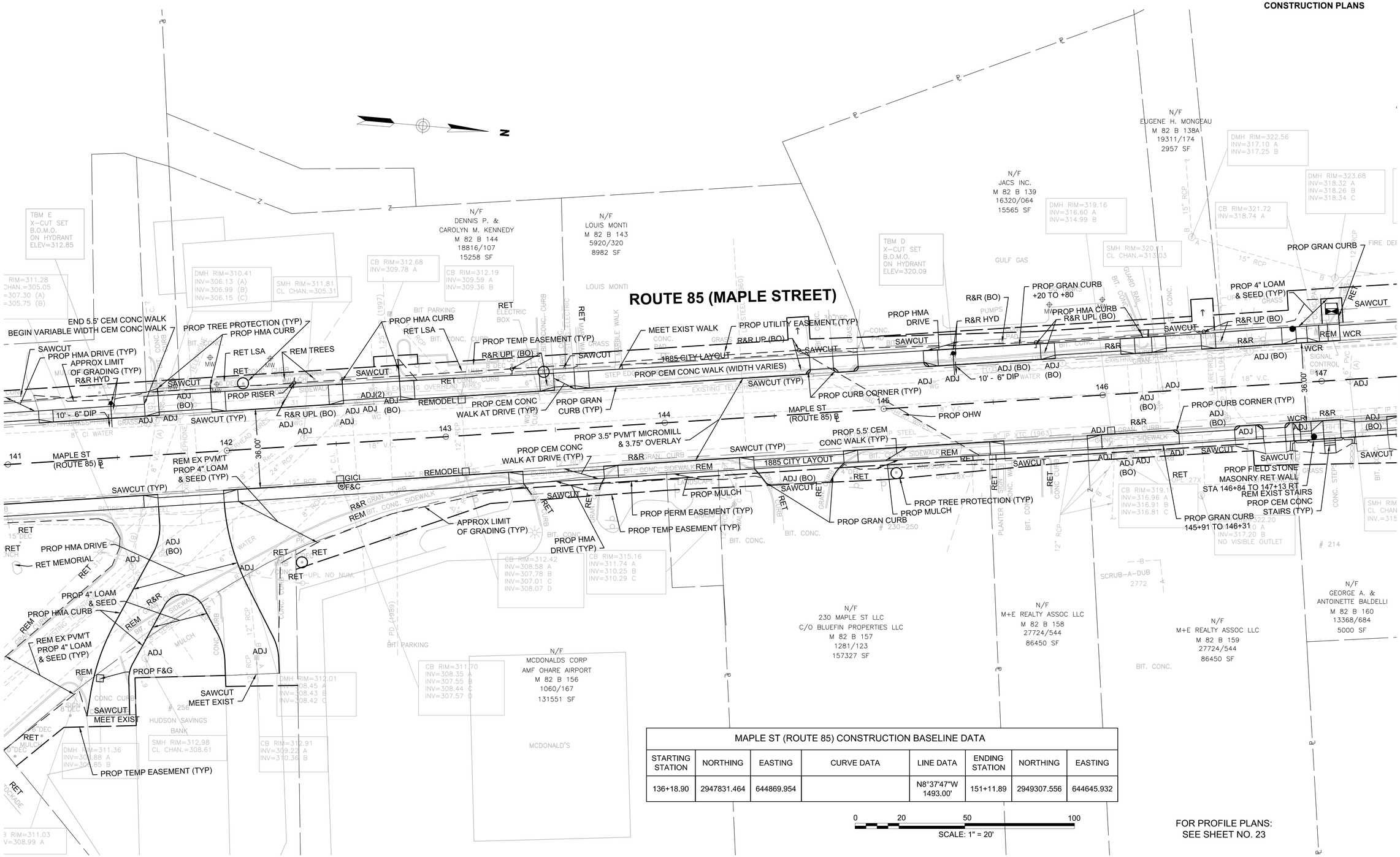
604810_HD(GEN).DWG Plotted on 1-Oct-2015 11:36 AM

MARLBOROUGH
ROUTE 85 (MAPLE ST)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	15	53
PROJECT FILE NO. 604810			

CONSTRUCTION PLANS

HIGHWAY GUARD DETAILS	TRAFFIC SIGNAL CONDUIT	WATER SUPPLY ALTERATIONS	DRAINAGE DETAILS
NONE	SEE SHEET 36	SEE BELOW	SEE BELOW



MAPLE ST (ROUTE 85) CONSTRUCTION BASELINE DATA

STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
136+18.90	2947831.464	644869.954		N8°37'47"W 1493.00'	151+11.89	2949307.556	644645.932

FOR PROFILE PLANS: SEE SHEET NO. 23

604810_HD(GEN).DWG Plotted on 1-Oct-2015 11:36 AM

MARLBOROUGH
ROUTE 85 (MAPLE ST)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	16	53
PROJECT FILE NO. 604810			

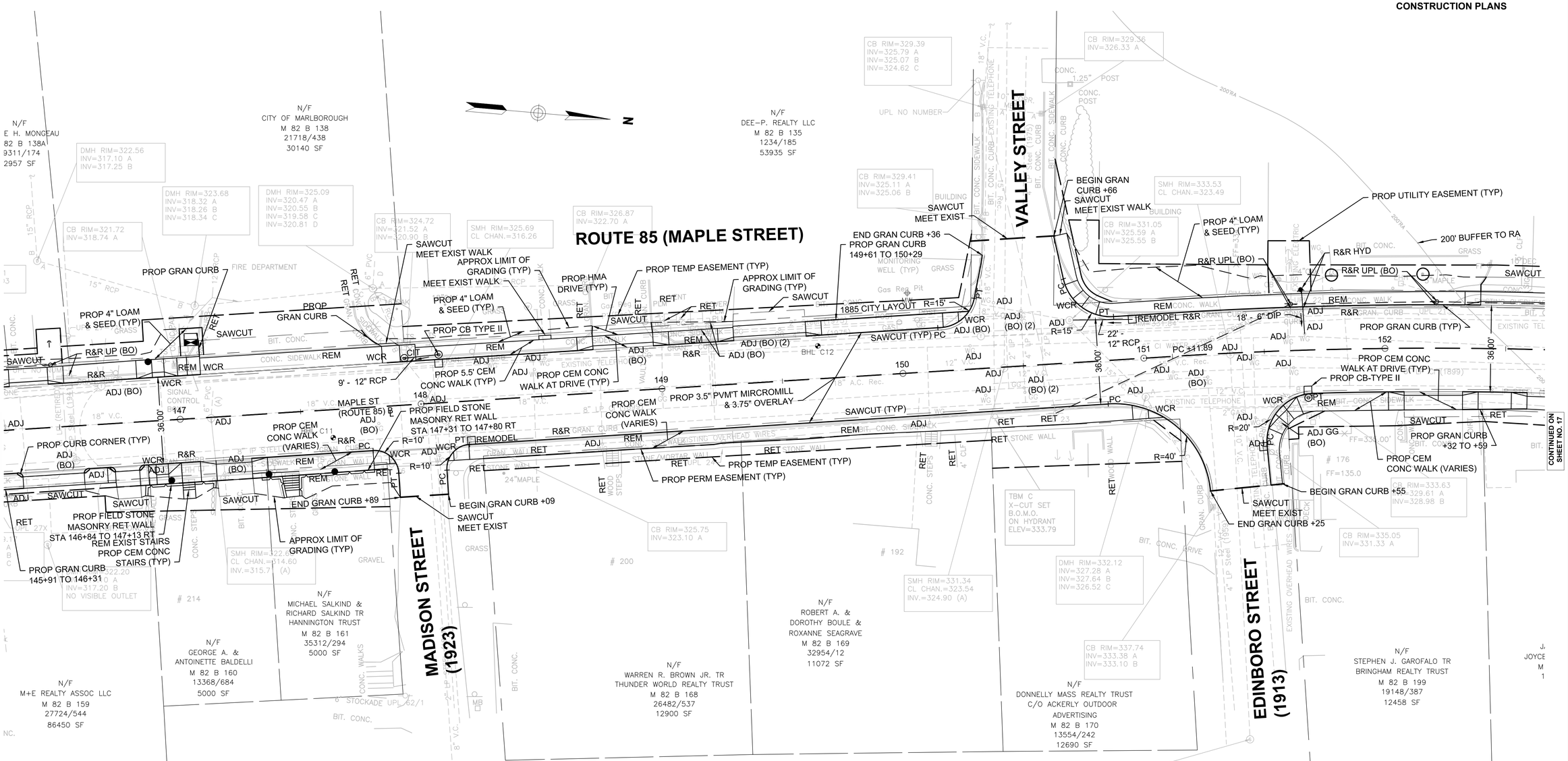
CONSTRUCTION PLANS

HIGHWAY GUARD DETAILS
NONE

TRAFFIC SIGNAL CONDUIT
SEE SHEET 37

WATER SUPPLY ALTERATIONS
SEE BELOW

DRAINAGE DETAILS
SEE BELOW



MAPLE ST (ROUTE 85) CONSTRUCTION BASELINE DATA							
STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
136+18.90	2947831.464	644869.954		N8°37'47"W 1493.00'	151+11.89	2949307.556	644645.932
151+11.89	2949307.556	644645.932	R=1700.00' Δ=12°09'52" L=360.92' T=181.14'		154+72.82	2949667.446	644629.919

0 20 50 100
SCALE: 1" = 20'

FOR PROFILE PLANS:
SEE SHEET NOS. 23 & 24

604810_HD(GEN).DWG Plotted on 1-Oct-2015 11:36 AM

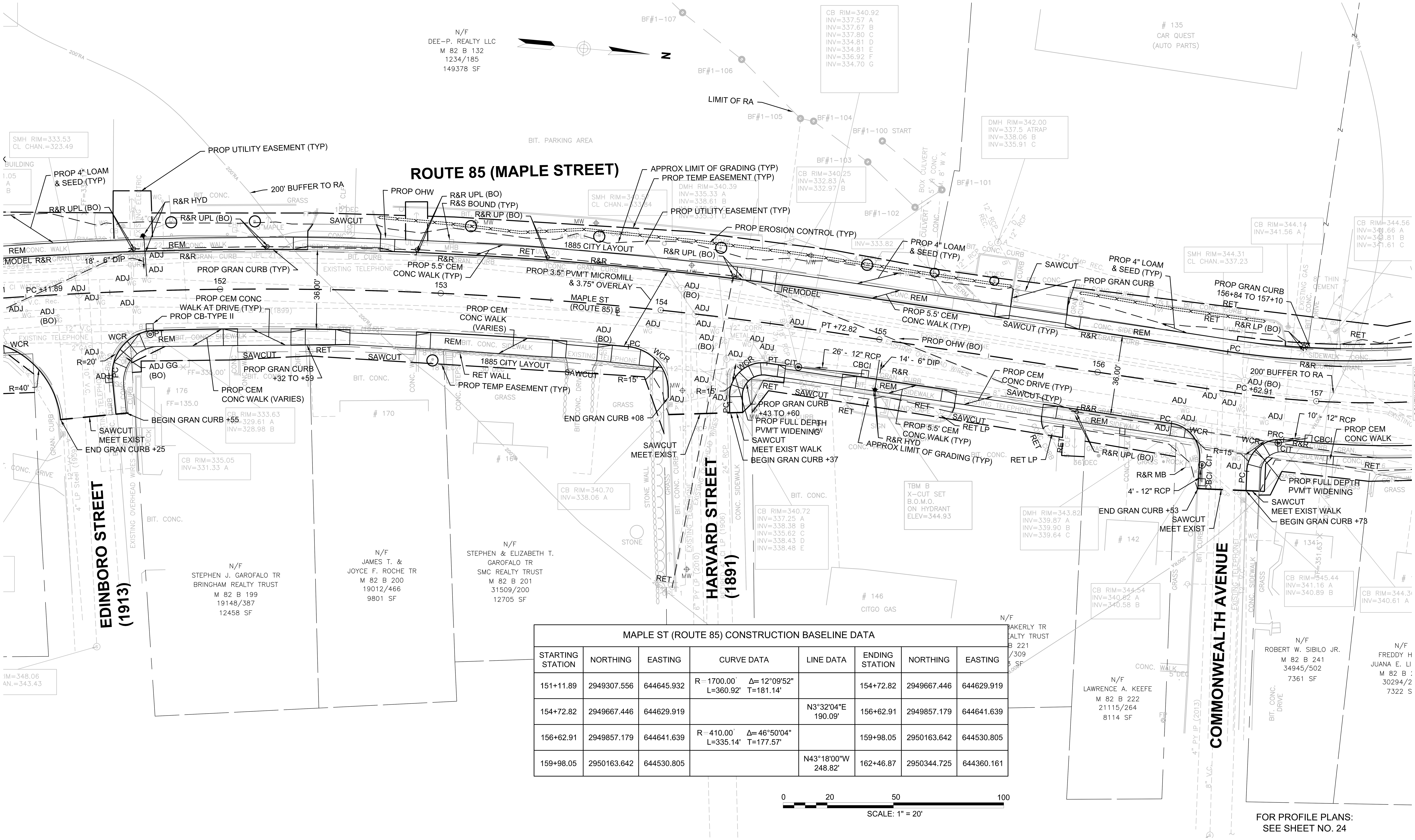
MARLBOROUGH
ROUTE 85 (MAPLE ST)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	17	53
PROJECT FILE NO. 604810			

CONSTRUCTION PLANS

Plotted on 1-Oct-2015 11:37 AM
604810_HD(GEN).DWG

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



MAPLE ST (ROUTE 85) CONSTRUCTION BASELINE DATA							
STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
151+11.89	2949307.556	644645.932	R=1700.00' Δ=12°09'52" L=360.92' T=181.14'		154+72.82	2949667.446	644629.919
154+72.82	2949667.446	644629.919		N3°32'04"E 190.09'	156+62.91	2949857.179	644641.639
156+62.91	2949857.179	644641.639	R=410.00' Δ=46°50'04" L=335.14' T=177.57'		159+98.05	2950163.642	644530.805
159+98.05	2950163.642	644530.805		N43°18'00"W 248.82'	162+46.87	2950344.725	644360.161

0 20 50 100
SCALE: 1" = 20'

CONTINUED ON SHEET NO. 16

CONTINUED ON SHEET NO. 18

FOR PROFILE PLANS: SEE SHEET NO. 24

HIGHWAY GUARD DETAILS

NONE

TRAFFIC SIGNAL CONDUIT

NONE

WATER SUPPLY ALTERATIONS

SEE BELOW

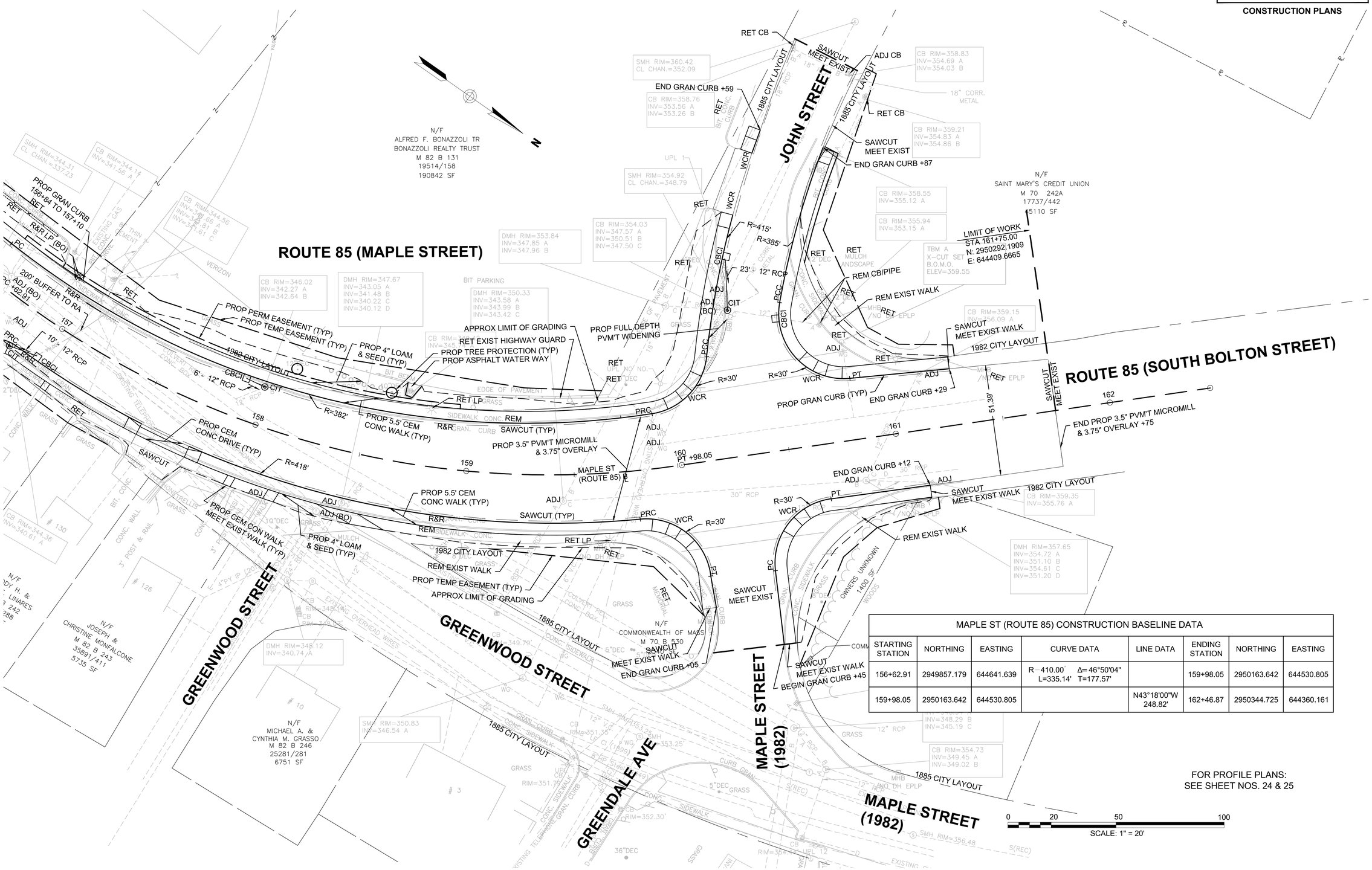
DRAINAGE DETAILS

SEE BELOW

MARLBOROUGH
ROUTE 85 (MAPLE ST)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	18	53
PROJECT FILE NO. 604810			

CONSTRUCTION PLANS



MAPLE ST (ROUTE 85) CONSTRUCTION BASELINE DATA							
STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
156+62.91	2949857.179	644641.639	R=410.00' Δ=46°50'04" L=335.14' T=177.57'		159+98.05	2950163.642	644530.805
159+98.05	2950163.642	644530.805		N43°18'00"W 248.82'	162+46.87	2950344.725	644360.161

FOR PROFILE PLANS:
SEE SHEET NOS. 24 & 25

0 20 50 100
SCALE: 1" = 20'

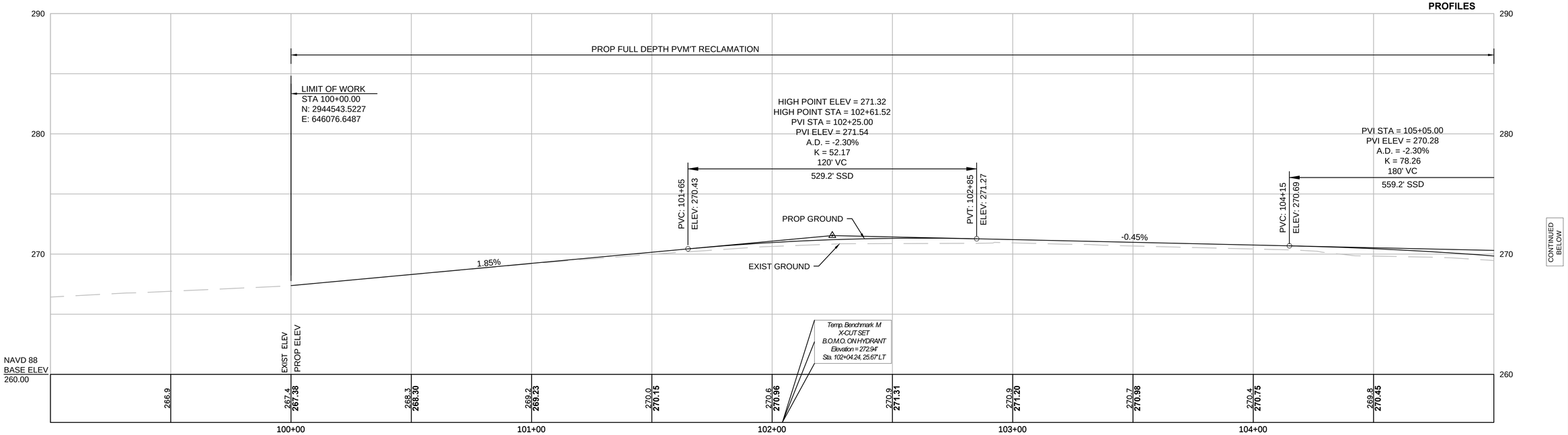
604810_HDI(GEN).DWG Plotted on 1-Oct-2015 11:37 AM

MARLBOROUGH
ROUTE 85 (MAPLE ST)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	19	53
PROJECT FILE NO. 604810			

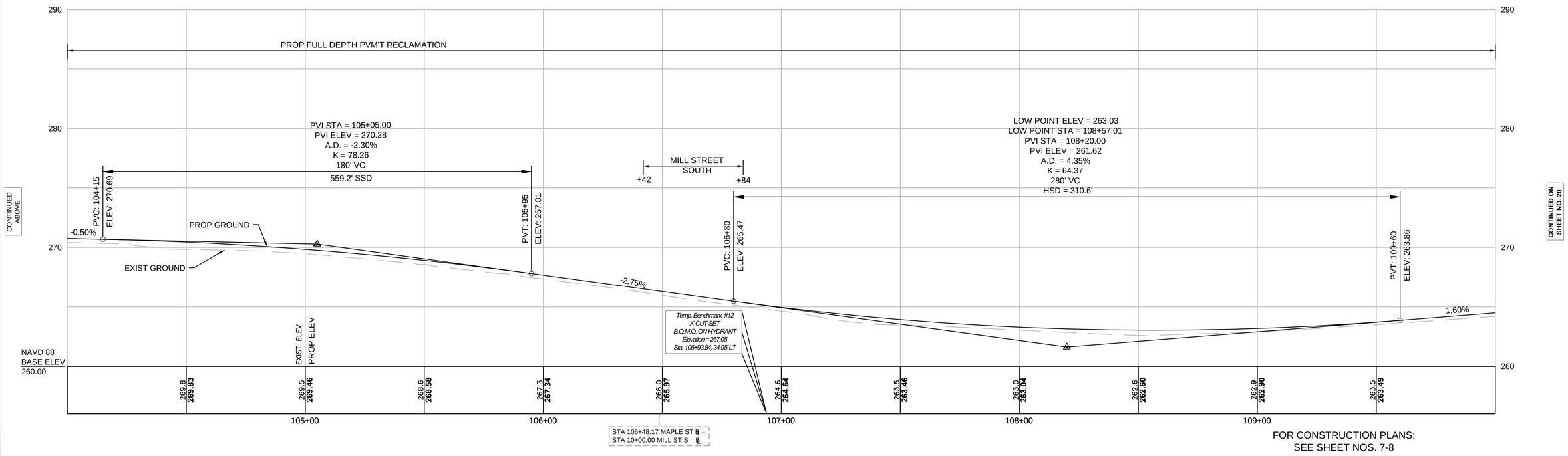
PROFILES

MAPLE ST (ROUTE 85)



MAPLE ST (ROUTE 85)

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



FOR CONSTRUCTION PLANS:
SEE SHEET NOS. 7-8

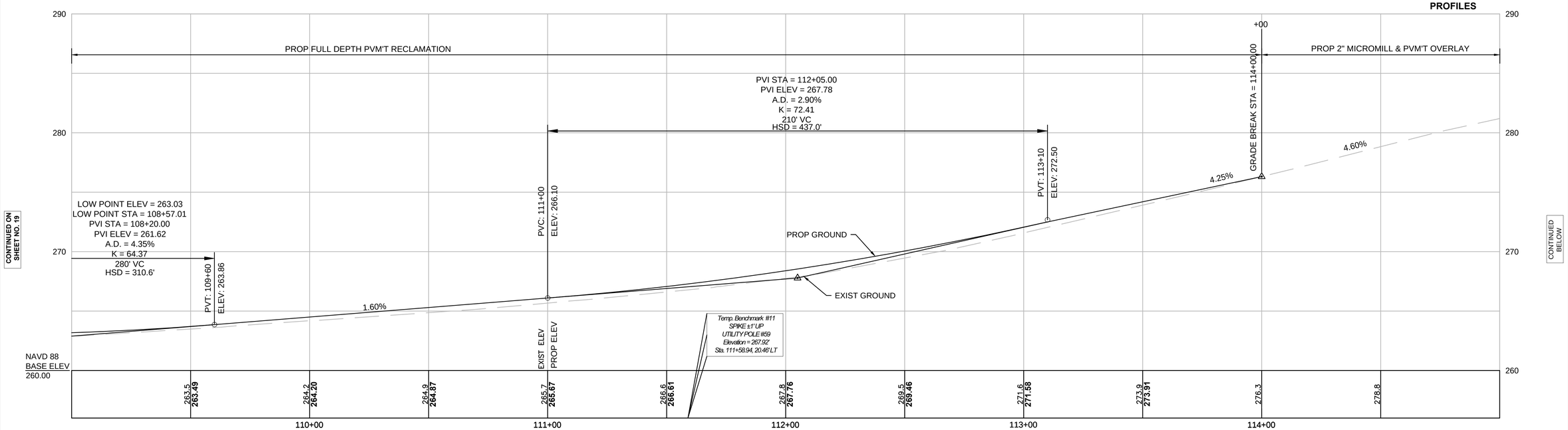
604810_HD(PROF).DWG Plotted on 1-Oct-2015 11:37 AM

MARLBOROUGH
ROUTE 85 (MAPLE ST)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	20	53
PROJECT FILE NO. 604810			

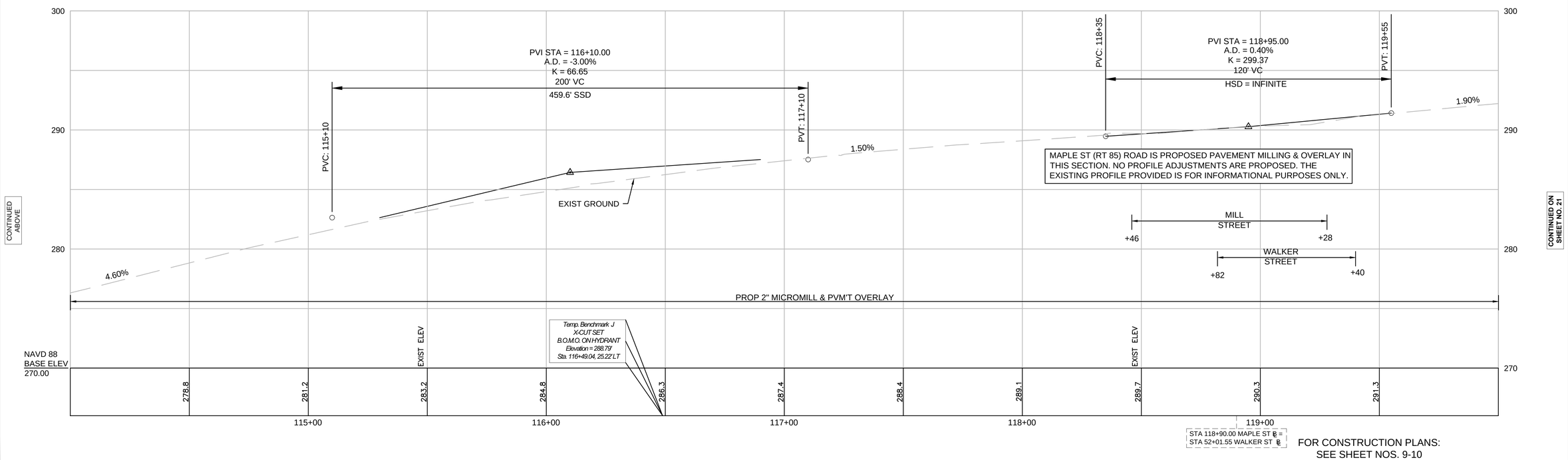
PROFILES

MAPLE ST (ROUTE 85)



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

MAPLE ST (ROUTE 85)



FOR CONSTRUCTION PLANS:
SEE SHEET NOS. 9-10

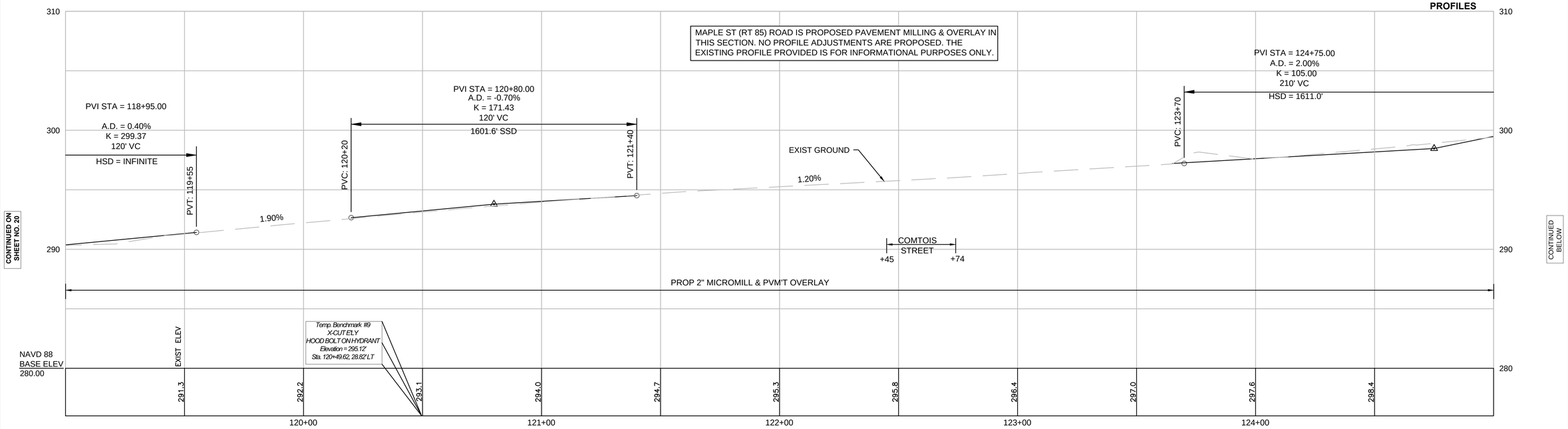
604810_HD(PROF).DWG Plotted on 1-Oct-2015 11:37 AM

MARLBOROUGH
ROUTE 85 (MAPLE ST)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	21	53
PROJECT FILE NO. 604810			

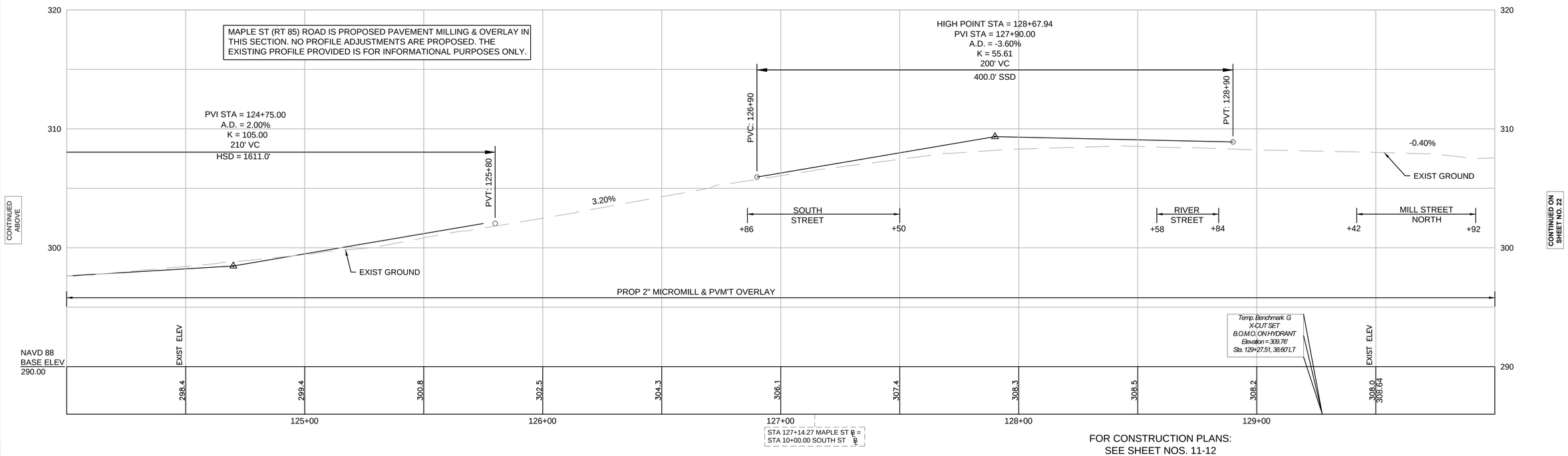
PROFILES

MAPLE ST (ROUTE 85)



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

MAPLE ST (ROUTE 85)



FOR CONSTRUCTION PLANS:
SEE SHEET NOS. 11-12

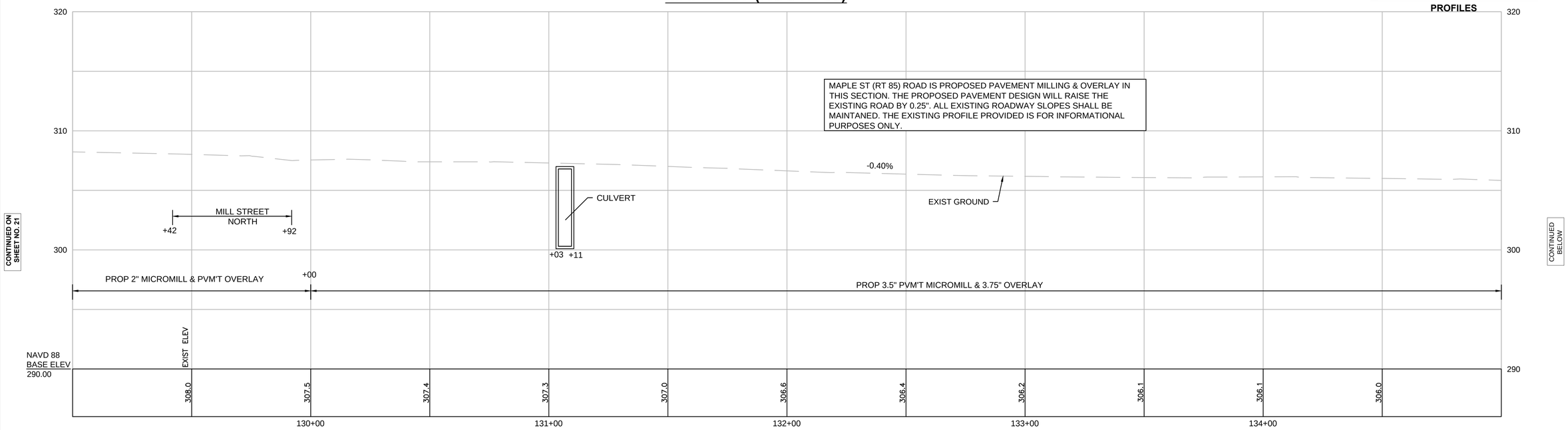
604810_HD(PROF).DWG Plotted on 1-Oct-2015 11:38 AM

MARLBOROUGH
ROUTE 85 (MAPLE ST)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	22	53
PROJECT FILE NO. 604810			

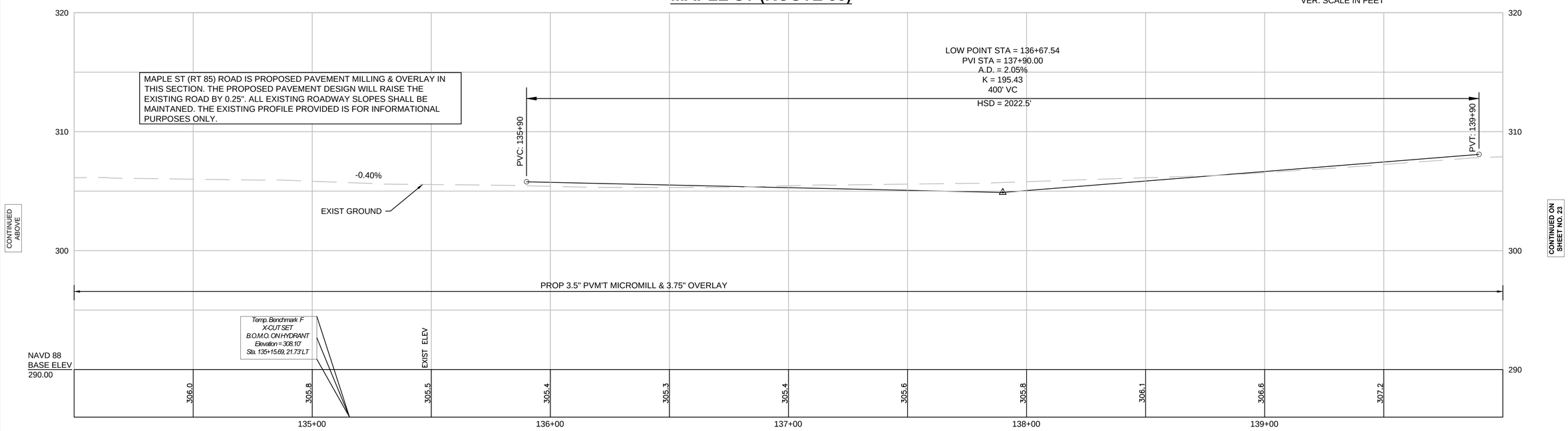
PROFILES

MAPLE ST (ROUTE 85)



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

MAPLE ST (ROUTE 85)



FOR CONSTRUCTION PLANS:
SEE SHEET NOS. 13-14

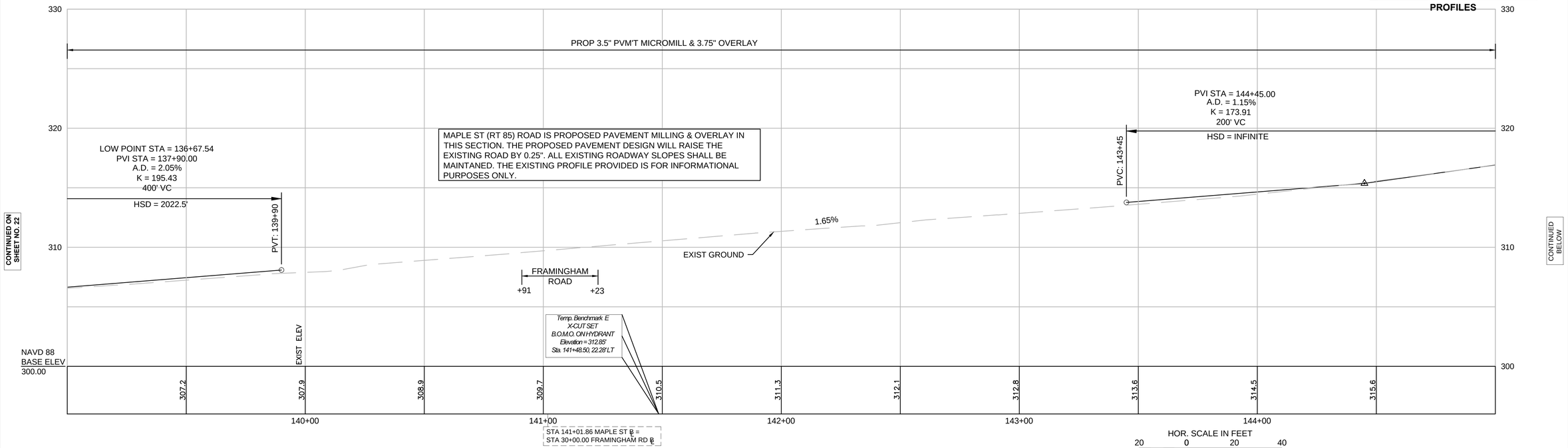
604810_HD(PROF).DWG Plotted on 1-Oct-2015 11:38 AM

MARLBOROUGH
ROUTE 85 (MAPLE ST)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	23	53
PROJECT FILE NO. 604810			

PROFILES

MAPLE ST (ROUTE 85)



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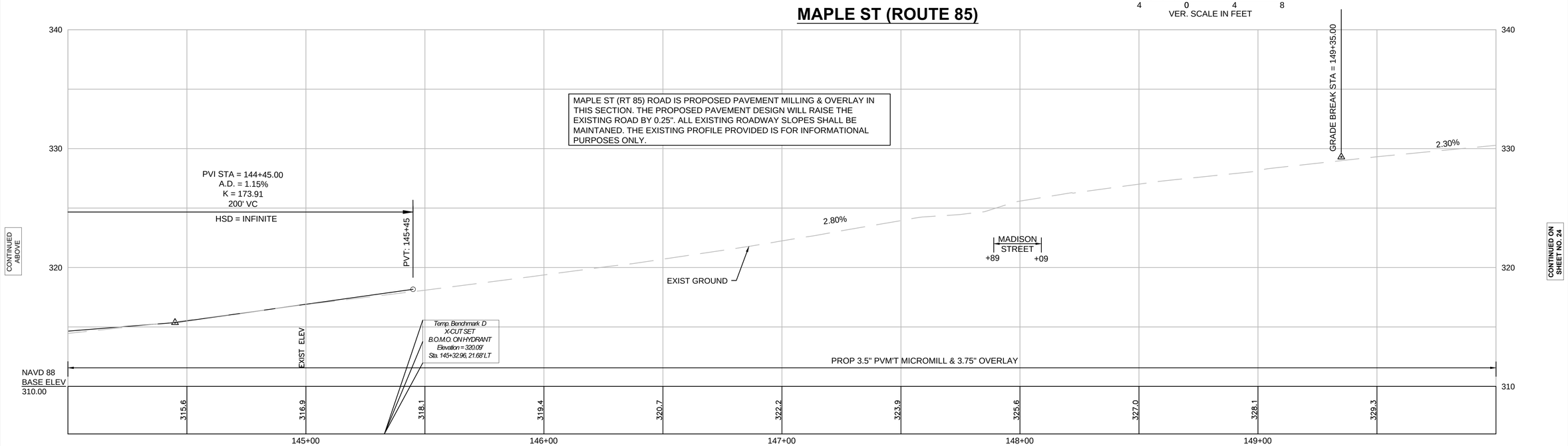
20 0 20 40
4 0 4 8
VER. SCALE IN FEET

MAPLE ST (ROUTE 85)



FOR CONSTRUCTION PLANS:
SEE SHEET NOS. 15-16

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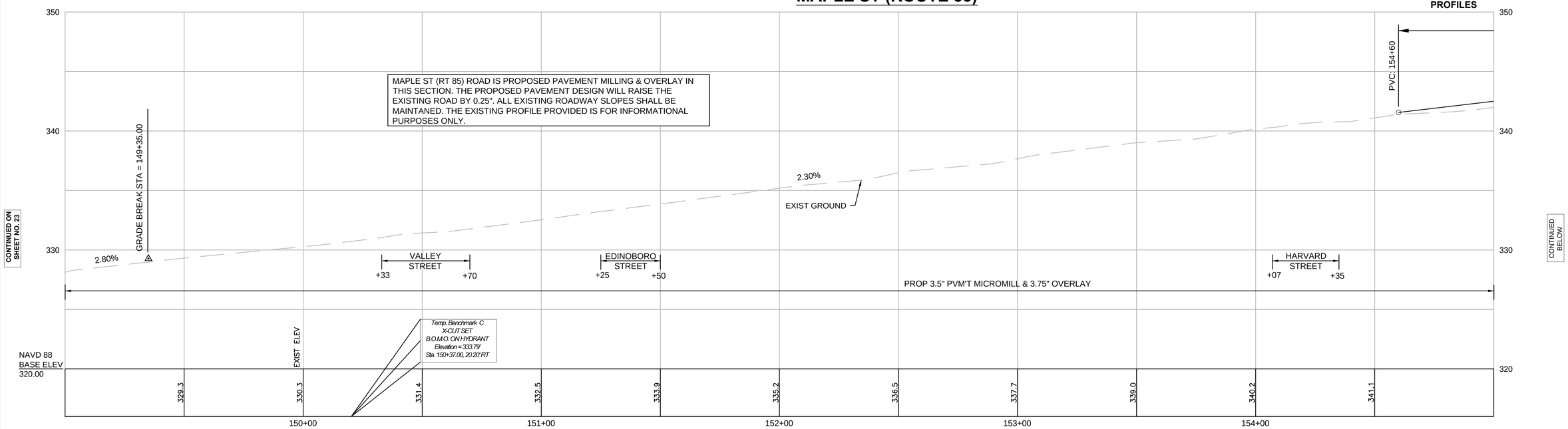
MARLBOROUGH
ROUTE 85 (MAPLE ST)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	24	53
PROJECT FILE NO. 604810			

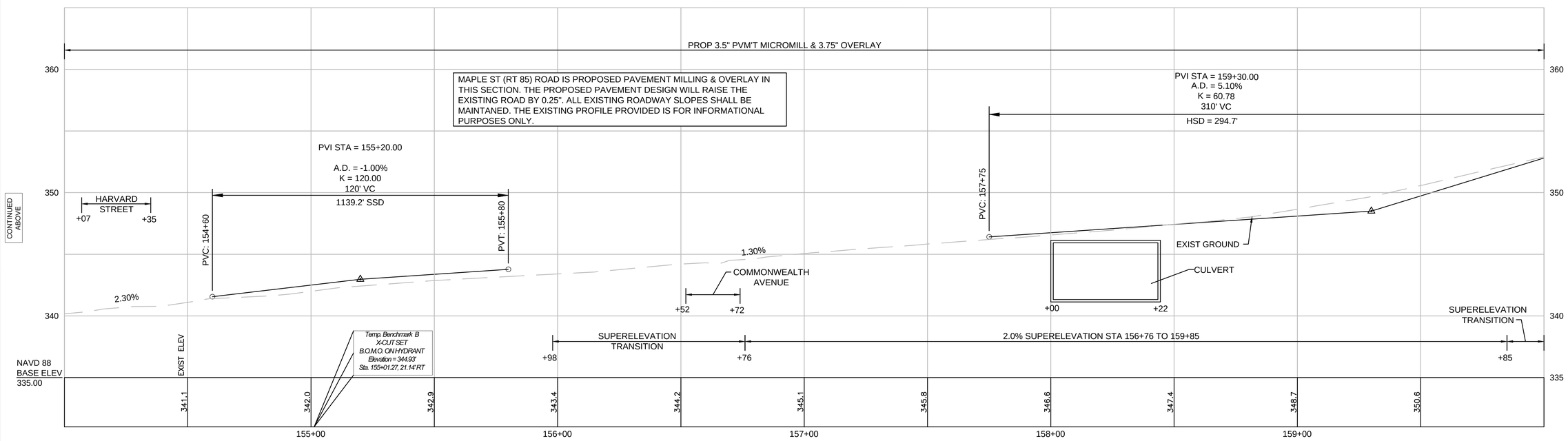
PROFILES

MAPLE ST (ROUTE 85)



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

MAPLE ST (ROUTE 85)



FOR CONSTRUCTION PLANS:
SEE SHEET NOS. 17-18

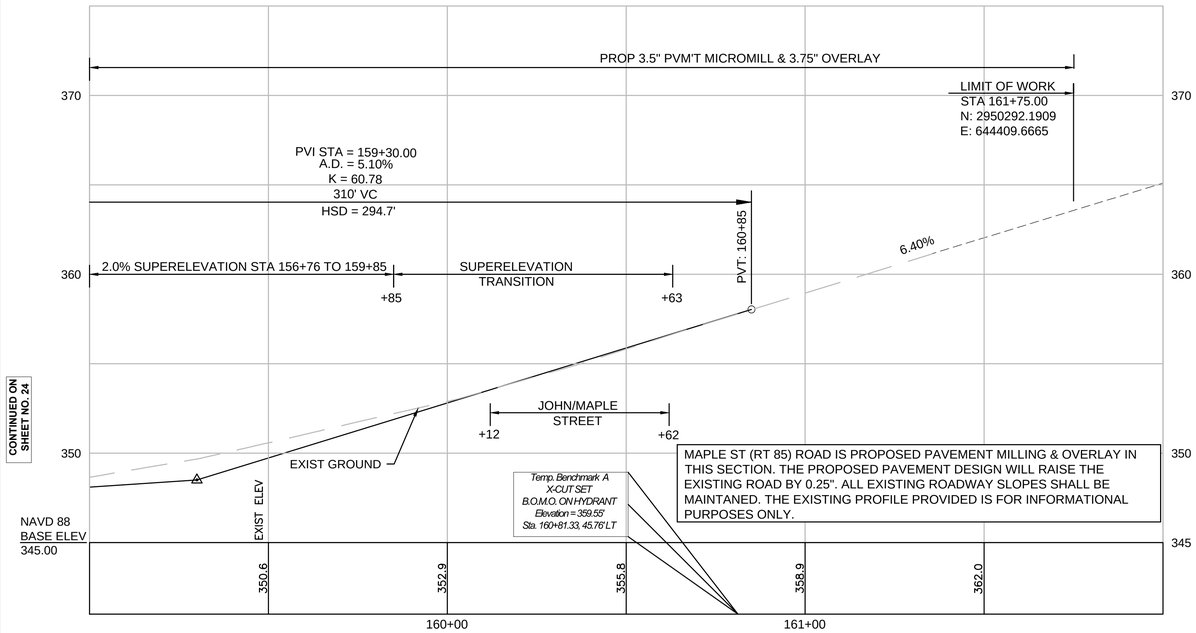
604810_HD(PROF).DWG Plotted on 1-Oct-2015 11:38 AM

MARLBOROUGH
ROUTE 85 (MAPLE ST)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	25	53
PROJECT FILE NO. 604810			

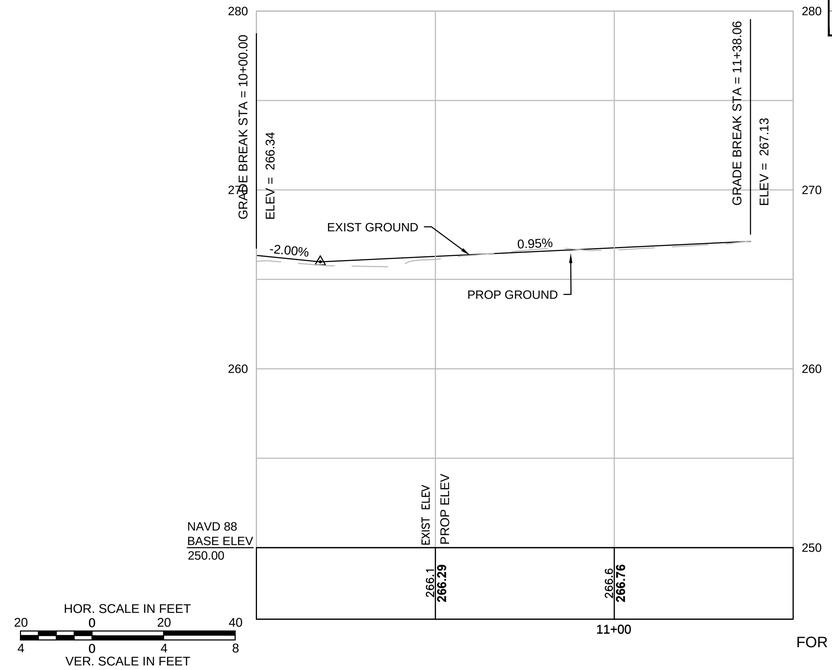
PROFILES

MAPLE ST (ROUTE 85)



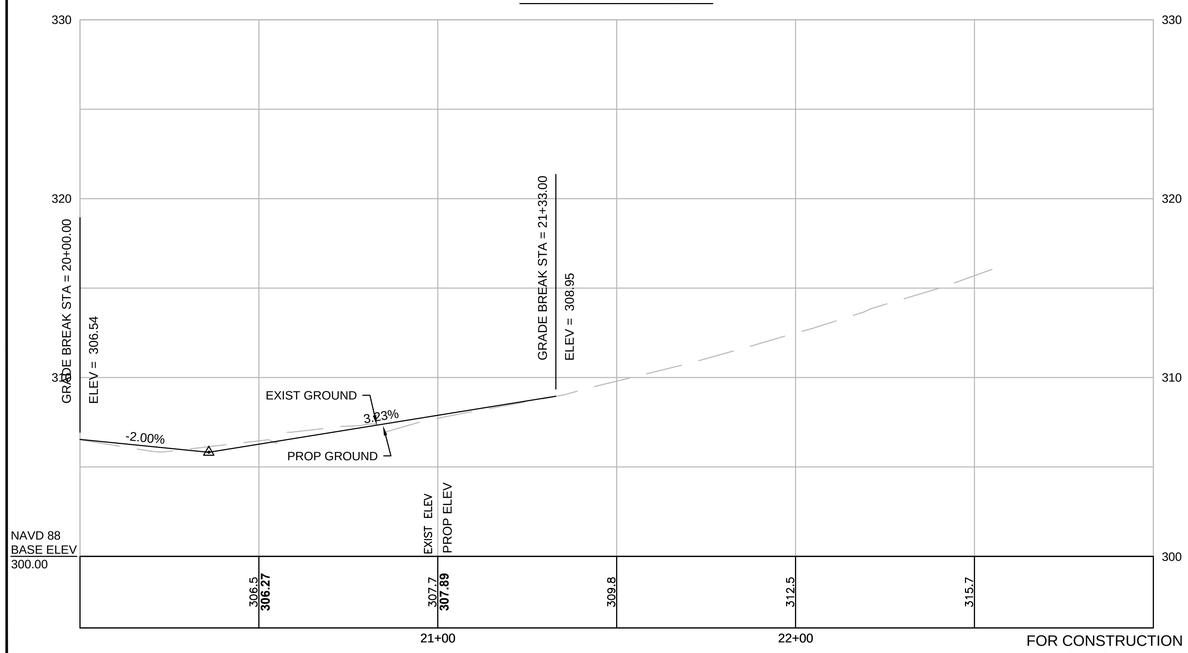
FOR CONSTRUCTION PLANS:
SEE SHEET NO. 18

MILL STREET SOUTH



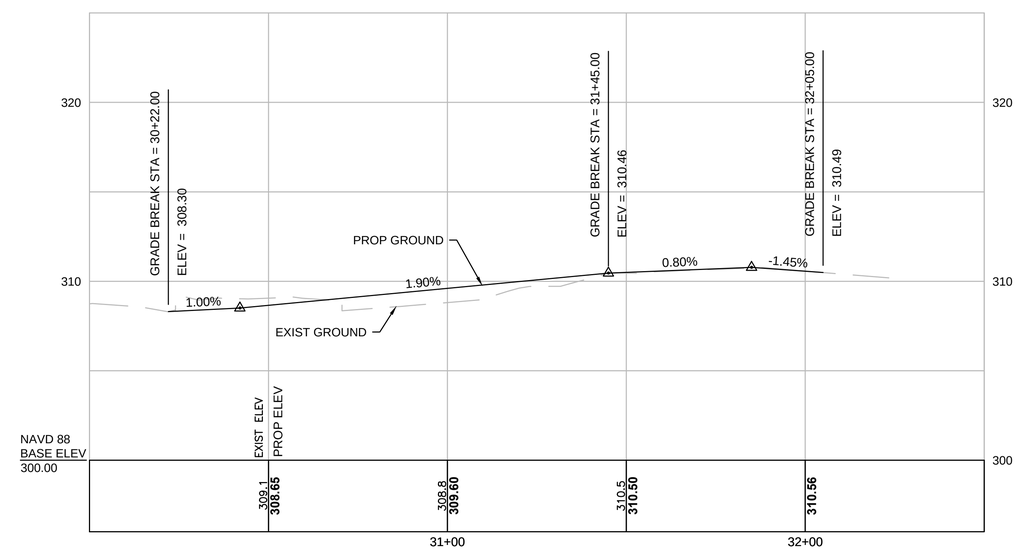
FOR CONSTRUCTION PLANS:
SEE SHEET NO. 8

SOUTH STREET



FOR CONSTRUCTION PLANS:
SEE SHEET NO. 12

FRAMINGHAM ROAD



FOR CONSTRUCTION PLANS:
SEE SHEET NO. 15

604810_HD(PROF).DWG Plotted on 1-Oct-2015 11:38 AM

MARLBOROUGH
ROUTE 85 (MAPLE ST)

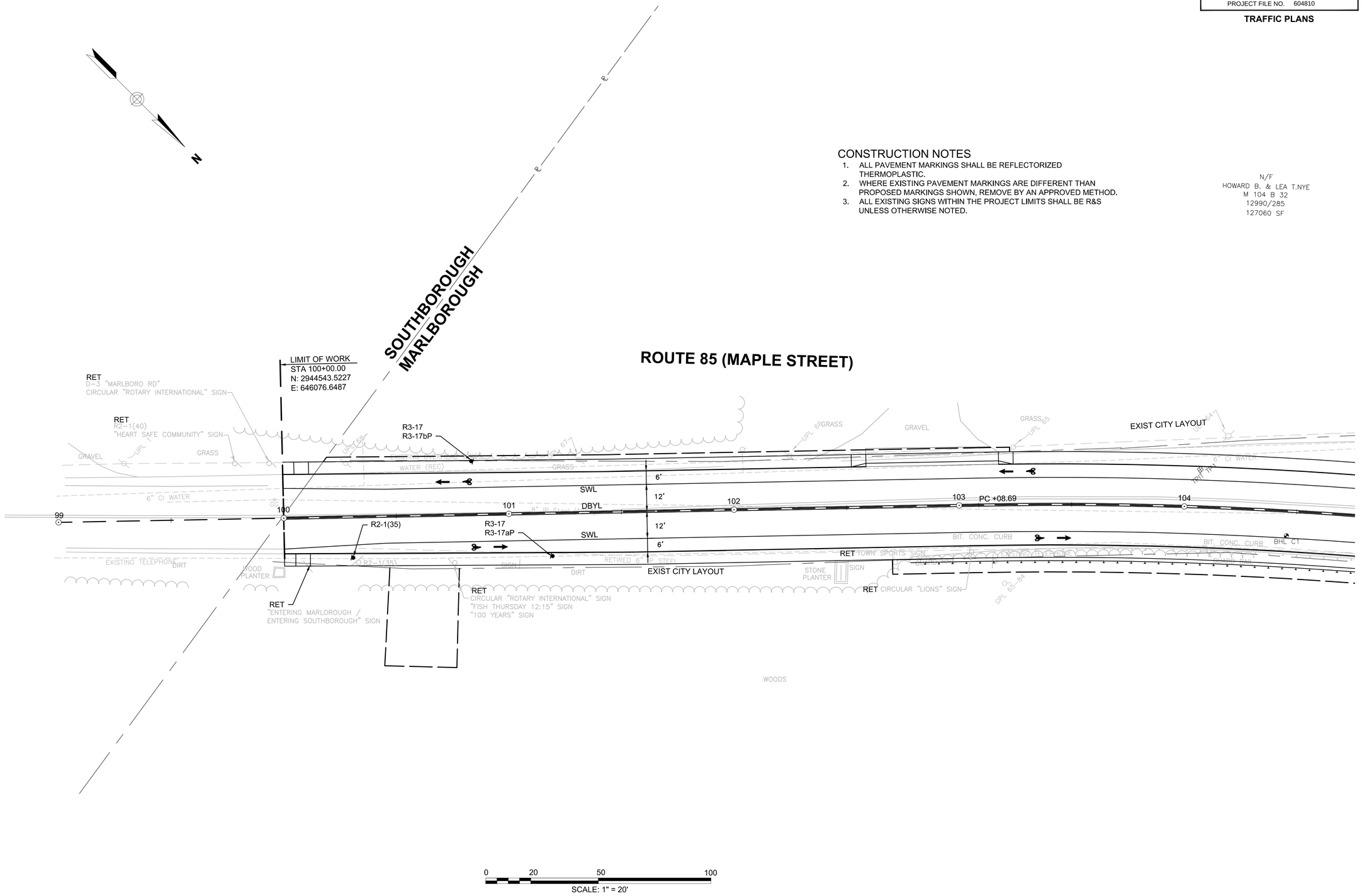
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	26	53
PROJECT FILE NO. 604810			

TRAFFIC PLANS

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. ALL EXISTING SIGNS WITHIN THE PROJECT LIMITS SHALL BE R&S UNLESS OTHERWISE NOTED.

N/F
HOWARD B. & LEA T.NYE
M 104 B 32
12990/285
127060 SF



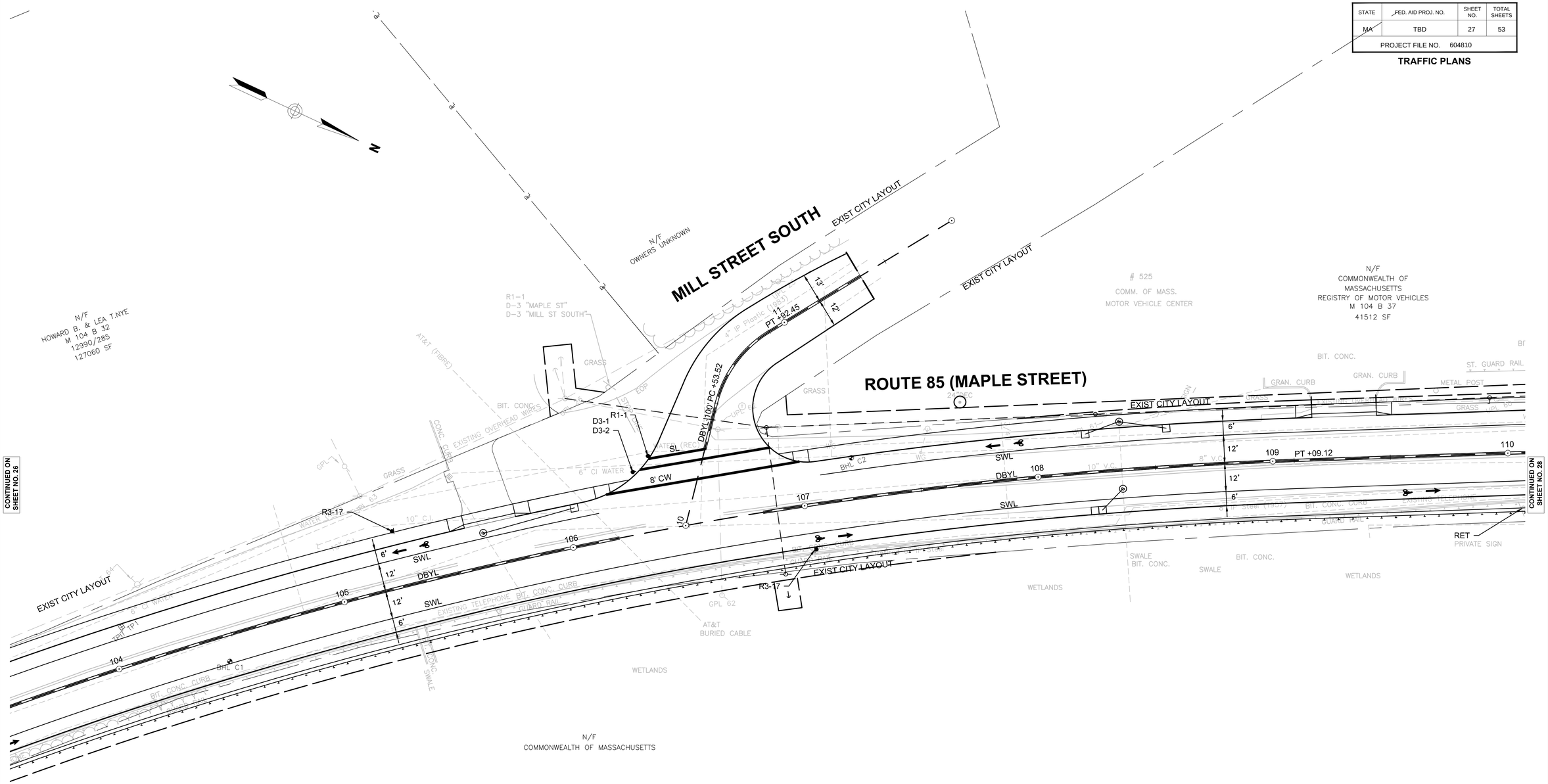
0 20 50 100
SCALE: 1" = 20'

604810_HD(STRP).DWG Plotted on 1-Oct-2015 11:38 AM

MARLBOROUGH
ROUTE 85 (MAPLE ST)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	27	53
PROJECT FILE NO. 604810			

TRAFFIC PLANS



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. ALL EXISTING SIGNS WITHIN THE PROJECT LIMITS SHALL BE R&S UNLESS OTHERWISE NOTED.

0 20 50 100

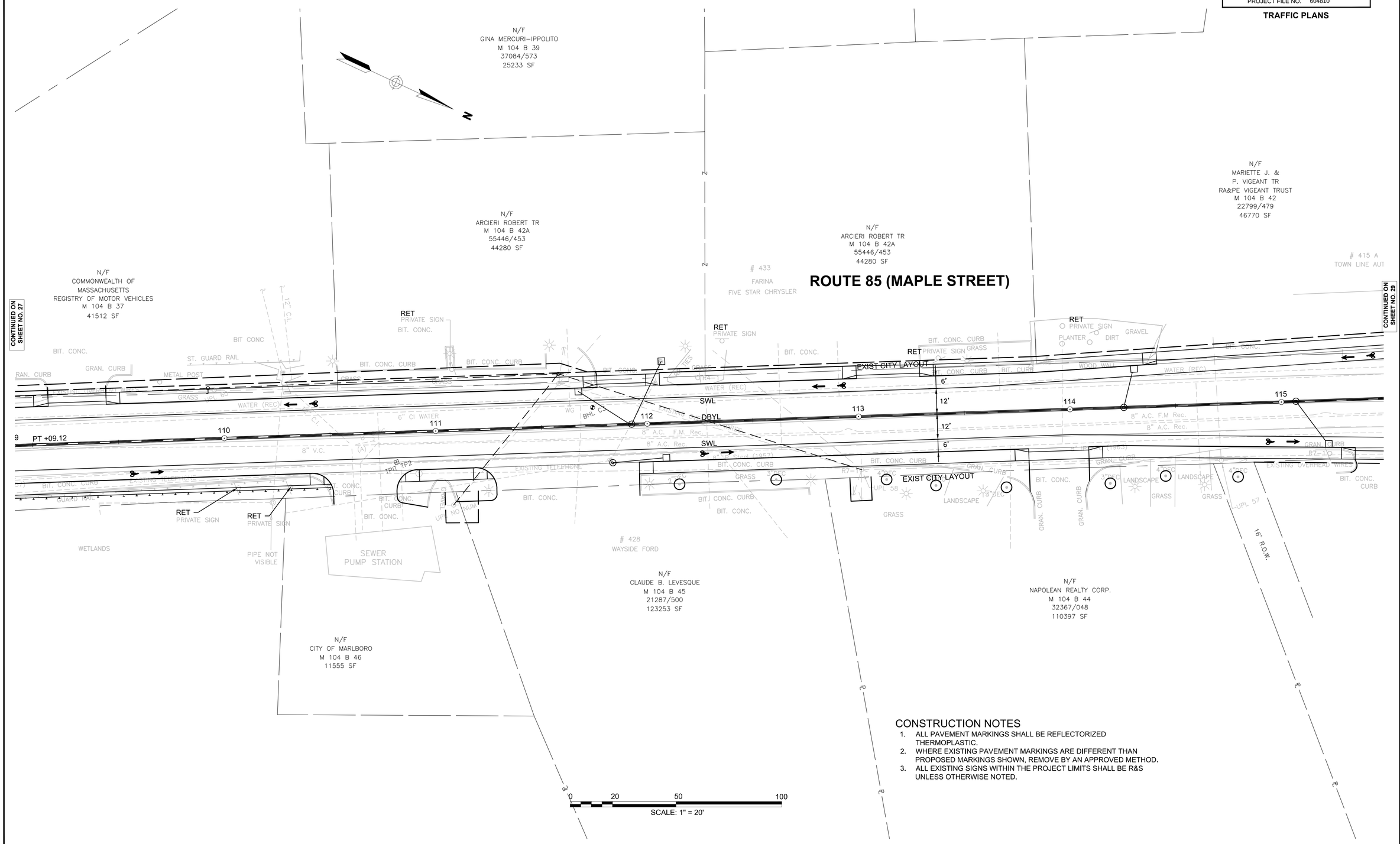
SCALE: 1" = 20'

604810_HD(STRP).DWG Plotted on 1-Oct-2015 11:38 AM

MARLBOROUGH
ROUTE 85 (MAPLE ST)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	28	53
PROJECT FILE NO. 604810			

TRAFFIC PLANS



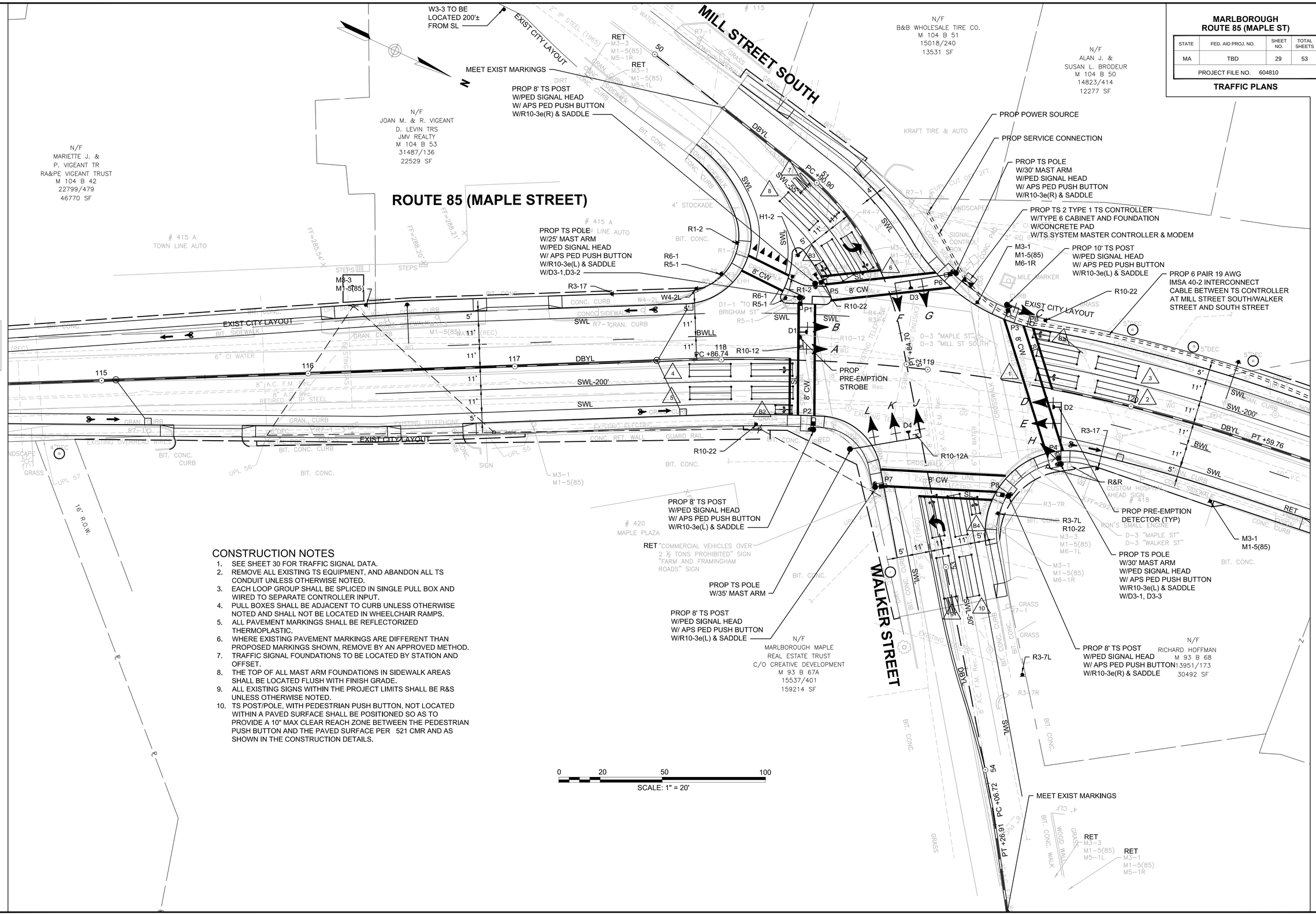
CONSTRUCTION NOTES

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. ALL EXISTING SIGNS WITHIN THE PROJECT LIMITS SHALL BE R&S UNLESS OTHERWISE NOTED.

604810_HD(STRP).DWG Plotted on 1-Oct-2015 11:39 AM

MARLBOROUGH ROUTE 85 (MAPLE ST)			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	29	53
PROJECT FILE NO. 604810			

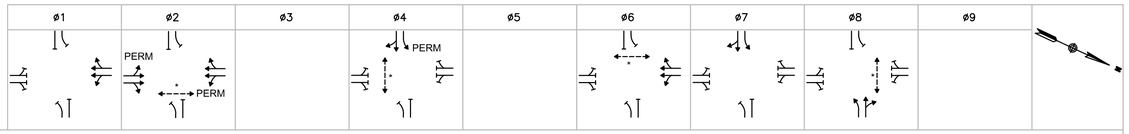
TRAFFIC PLANS



CONSTRUCTION NOTES

1. SEE SHEET 30 FOR TRAFFIC SIGNAL DATA.
2. REMOVE ALL EXISTING TS EQUIPMENT, AND ABANDON ALL TS CONDUIT UNLESS OTHERWISE NOTED.
3. EACH LOOP GROUP SHALL BE SPLICED IN SINGLE PULL BOX AND WIRED TO SEPARATE CONTROLLER INPUT.
4. PULL BOXES SHALL BE ADJACENT TO CURB UNLESS OTHERWISE NOTED AND SHALL NOT BE LOCATED IN WHEELCHAIR RAMPS.
5. ALL PAVEMENT MARKINGS SHALL BE REFLECTORIZED THERMOPLASTIC.
6. WHERE EXISTING PAVEMENT MARKINGS ARE DIFFERENT THAN PROPOSED MARKINGS SHOWN, REMOVE BY AN APPROVED METHOD.
7. TRAFFIC SIGNAL FOUNDATIONS TO BE LOCATED BY STATION AND OFFSET.
8. THE TOP OF ALL MAST ARM FOUNDATIONS IN SIDEWALK AREAS SHALL BE LOCATED FLUSH WITH FINISH GRADE.
9. ALL EXISTING SIGNS WITHIN THE PROJECT LIMITS SHALL BE R&S UNLESS OTHERWISE NOTED.
10. TS POST/POLE, WITH PEDESTRIAN PUSH BUTTON, NOT LOCATED WITHIN A PAVED SURFACE SHALL BE POSITIONED SO AS TO PROVIDE A 10" MAX CLEAR REACH ZONE BETWEEN THE PEDESTRIAN PUSH BUTTON AND THE PAVED SURFACE PER 521 CMR AND AS SHOWN IN THE CONSTRUCTION DETAILS.

604810_HD(STRP).DWG Plotted on 1-Oct-2015 11:39 AM



SEQUENCE AND TIMING FOR FULLY ACTUATED CONTROL (COORDINATED)

APPROACH	DIRECTION	HOUSING	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	FLASH
MAPLE STREET	SB	A	G	Y	R	R	R	R				R	R	R				G	Y	R	R	R	R	R	R	R				FY
MAPLE STREET	SB	B,C	R	R	R	R	R	R				R	R	R				G	Y	R	R	R	R	R	R	R				FY
MAPLE STREET	NB	D,E	R	R	R	G	Y	R				R	R	R				R	R	R	R	R	R	R	R	R				FR
WALKER STREET	WB	F,G	R	R	R	R	R	R				R	R	R				R	R	R	R	R	R	G	Y	R				FR
MILL STREET	EB	H,J	R	R	R	R	R	R				FY	Y	R				R	R	R	G	Y	R	R	R	R				FR
MILL STREET	EB	K,L	R	R	R	R	R	R				G	Y	R				R	R	R	G	Y	R	R	R	R				FR
PEDESTRIAN X-ING	EB-WB	P1-P2	DW	DW	DW	DW	DW	DW				W/FDW	DW	DW				DW	DW	DW	DW	DW	DW	DW	DW	DW				OUT
PEDESTRIAN X-ING	EB-WB	P3-P4	DW	DW	DW	DW	DW	DW				DW	DW	DW				DW	DW	DW	DW	DW	DW	W/FDW	DW	DW				OUT
PEDESTRIAN X-ING	NB-SB	P5-P6	DW	DW	DW	DW	DW	DW				DW	DW	DW				W/FDW	DW	DW	DW	DW	DW	DW	DW	DW				OUT
PEDESTRIAN X-ING	NB-SB	P7-P8	DW	DW	DW	W/FDW	DW	DW				DW	DW	DW				DW	DW	DW	DW	DW	DW	DW	DW	DW				OUT

TIMING IN SECONDS

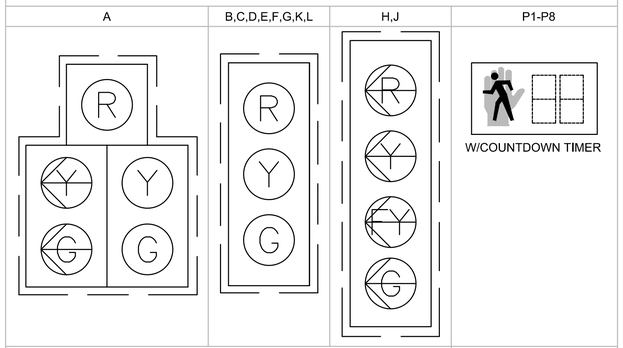
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	FLASH
MINIMUM GREEN (INITIAL)	X																											CONFLICT FLASH OPERATION ONLY
PASSAGE TIME (VEHICLE)	X																											
MAXIMUM 1	X																											
MAXIMUM 2	X																											
YELLOW CLEARANCE		X																										
RED CLEARANCE			X																									
PEDESTRIAN WALK	X																											
PEDESTRIAN CLEARANCE	X																											

	ø1	ø2	ø3	ø4	ø5	ø6	ø7	ø8	ø9
DETECTOR MEMORY	NON-LOCK	NON-LOCK	NON-LOCK	NON-LOCK	NON-LOCK	NON-LOCK	NON-LOCK	NON-LOCK	
RECALL	OFF	SOFT	OFF	OFF	OFF	SOFT	OFF	OFF	

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

NOTES:
1. AUTOMATIC FLASHING OPERATION PER 2009 M.U.T.C.D., AS AMENDED.
2. * NORMALLY DW, W/FDW UPON PEDESTRIAN PUSH BUTTON ACTUATION
3. OL = OVERLAP
4. PERM = PERMISSIVE
5. Y = YIELD CONTROL
6. ø4 & ø8 DUAL ENTRY
7. MAXIMUM 1 = NORMAL OPERATION
8. MAXIMUM 2 = NOT USED
9. STOP AND GO OPERATION FOR 24 HOURS PER DAY. FLASHING OPERATION FOR EMERGENCY ONLY.
10. DURING PEDESTRIAN INTERVAL, FDW THROUGH YELLOW OPERATION SHALL NOT BE IN EFFECT.
11. INHIBIT MAX TERMINATION SHALL BE IN EFFECT DURING COORDINATION.

SIGNAL HEAD DATA



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

LOOP DETECTOR DATA

DETECTOR NO.	NO. SECTION/ SIZE	NO. OF TURNS	OPERATIONS	DELAY /EXT	CALL PHASE	LOOP CONNECTION
1	1-6'X20' QUADRUPOLE	2-4-2	PRESENCE	0	Ø1	SINGLE
2	1-6'X20' QUADRUPOLE	2-4-2	PRESENCE	0	Ø6	SINGLE
3	2-6'X20' QUADRUPOLE	2-4-2	PRESENCE	0	Ø6	SERIES
B1	1-4'X6' QUADRUPOLE	2-4-2	PRESENCE	0	Ø6	SINGLE
4	2-6'X20' QUADRUPOLE	2-4-2	PRESENCE	0	Ø2	SERIES
5	2-6'X20' QUADRUPOLE	2-4-2	PRESENCE	0	Ø2	SERIES
B2	1-4'X6' QUADRUPOLE	2-4-2	PRESENCE	0	Ø2	SINGLE
6	1-6'X20' QUADRUPOLE	2-4-2	PRESENCE	0	Ø7	SINGLE
7	1-6'X20' QUADRUPOLE	2-4-2	PRESENCE	0	Ø4	SINGLE
8	2-6'X20' QUADRUPOLE	2-4-2	PRESENCE	0	Ø4	SERIES
B3	1-4'X6' QUADRUPOLE	2-4-2	PRESENCE	0	Ø4	SINGLE
9	2-6'X20' QUADRUPOLE	2-4-2	PRESENCE	0	Ø8	SERIES
10	2-6'X20' QUADRUPOLE	2-4-2	PRESENCE	0	Ø8	SERIES
B4	1-4'X6' QUADRUPOLE	2-4-2	PRESENCE	0	Ø8	SINGLE

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

SEQUENCE & TIMING NOTES:

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

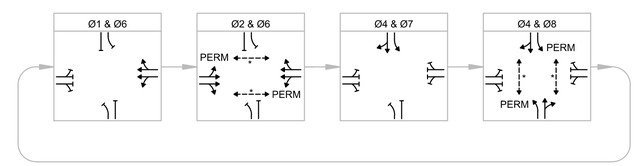
LIST OF MAJOR ITEMS REQUIRED

MAPLE STREET (ROUTE 85) AT WALKER STREET/MILL STREET SOUTH

PAY ITEM	QUANTITY	DESCRIPTION
816.01	1	8Ø TS 2 TYPE 1 CONTROLLER IN A TYPE 6 BASE MOUNTED CABINET INCLUDING FOUNDATION AND CONCRETE PAD
	1	TS 25' MAST ARM TYPE 2, HEAVY LOADING, STEEL, INCL. FOUNDATION
	2	TS 30' MAST ARM TYPE 2, HEAVY LOADING, STEEL, INCL. FOUNDATION
	1	TS 35' MAST ARM TYPE 2, HEAVY LOADING, STEEL, INCL. FOUNDATION
	4	TS POST 8' STANDARD INCL. FOUNDATION
	1	TS POST 10' STANDARD INCL. FOUNDATION
	8	SIGNAL HEAD, 3-SECTION, 12" LENSES
	2	SIGNAL HEAD, 4-SECTION, 12" LENSES
	1	SIGNAL HEAD, 5-SECTION, 12" LENSES
	8	PEDESTRIAN SIGNAL HEAD
	5	PEDESTRIAN PUSH BUTTON W/R10-3e(L) AND SIGN SADDLE
	3	PEDESTRIAN PUSH BUTTON W/R10-3e(R) AND SIGN SADDLE
	7	TYPE C, 2-CHANNEL CARD RACK LOOP DETECTOR AMPLIFIER
	20	WIRE LOOP DETECTOR
	4	EMERGENCY PRE-EMPTION OPTICAL DETECTORS & DETECTOR CABLE
	1	EMERGENCY PRE-EMPTION 4 CHANNEL PHASE SELECTOR
	1	EMERGENCY PRE-EMPTION SYSTEM CHASSIS
	1	EMERGENCY PRE-EMPTION STROBE (WHITE LENS)
	1	SERVICE CONNECTION (OVERHEAD)
811.31	X	PULL BOX-12"x12"
815.923	X	TS SYSTEM MASTER CONTROLLER AND MODEM

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

PREFERENTIAL PHASE SEQUENCE



* NORMALLY DW, W/FDW UPON PEDESTRIAN PUSH BUTTON ACTUATION

PRE-EMPTION PHASING & PRIORITY

DETECTOR & PRIORITY	PRE-EMPT PHASE ASSIGNMENT	MOVEMENT	VEHICLE PHASE ASSIGNMENT
D1	1		Ø1&Ø6
D2	2		Ø2
D3	3		Ø4&Ø7
D4	4		Ø8

EMERGENCY VEHICLE PRE-EMPTION OPERATION

1. EMERGENCY VEHICLE PRE-EMPTION SIGNALS SHALL BE OPTICALLY TRANSMITTED BY OPTICAL EMITTERS MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT EACH INTERSECTION.
2. PRE-EMPTION SIGNALS SHALL BE SERVICED ON A PRIORITY BASIS WITH DETECTORS D1, D2, D3 OR D4 ASSIGNED DESCENDING PRIORITIES AS FOLLOWS: (D1 HIGHEST AND D4 LOWEST)
3. IN RESPONSE TO A PRE-EMPTION SIGNAL RECEIVED AT AN INTERSECTION BY OPTICAL DETECTOR D1 (OR D2, D3, D4) THE CONTROLLER SHALL HOLD OR ADVANCE TO AND HOLD IN EMERGENCY VEHICLE PRE-EMPTION PHASE #1 (OR #2, #3, #4) GREEN FOR A MINIMUM OF TEN (10) SECONDS OR UNTIL PRE-EMPTION SIGNAL CEASES. THE CONTROLLER SHALL THEN TIME PRE-EMPTION PHASE CLEARANCES FOR THE ASSOCIATED PHASE(S) AS SHOWN IN THE SEQUENCE AND TIMING CHART AND SERVICE SUBSEQUENT EMERGENCY VEHICLE PRE-EMPTION PHASES AS NECESSARY.
4. MINIMUM GREEN AND NORMAL VEHICLE CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PRE-EMPTION DEMAND.
5. PRE-EMPTION STROBE SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PRE-EMPTION GREEN IS ON.
6. EMERGENCY VEHICLE PRE-EMPTION SHALL OVERRIDE COORDINATION.

MARLBOROUGH
ROUTE 85 (MAPLE ST)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	30	53
PROJECT FILE NO. 604810			

TRAFFIC PLANS

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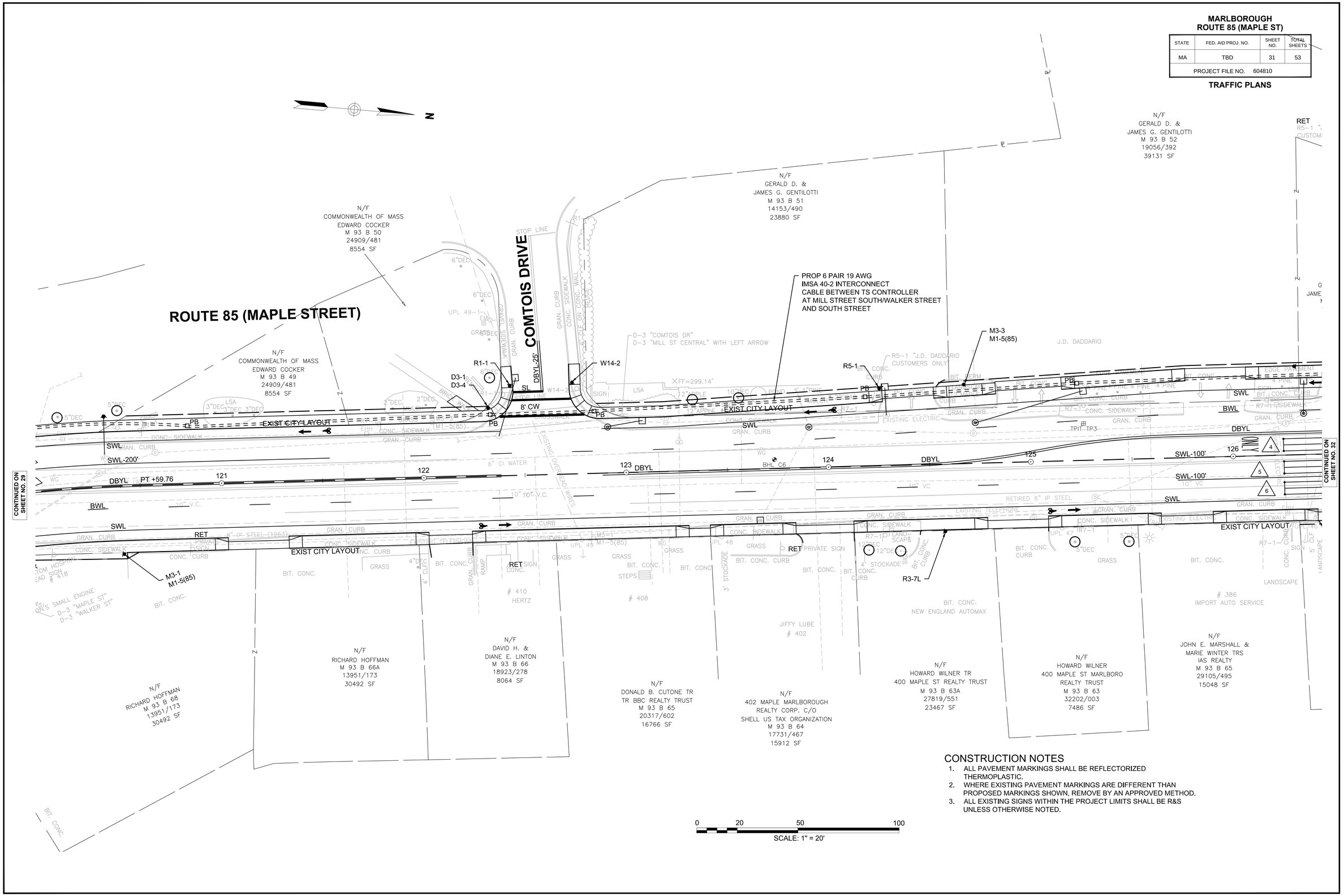
MARLBOROUGH
ROUTE 85 (MAPLE ST)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	31	53
PROJECT FILE NO. 604810			

TRAFFIC PLANS



CONSTRUCTION NOTES

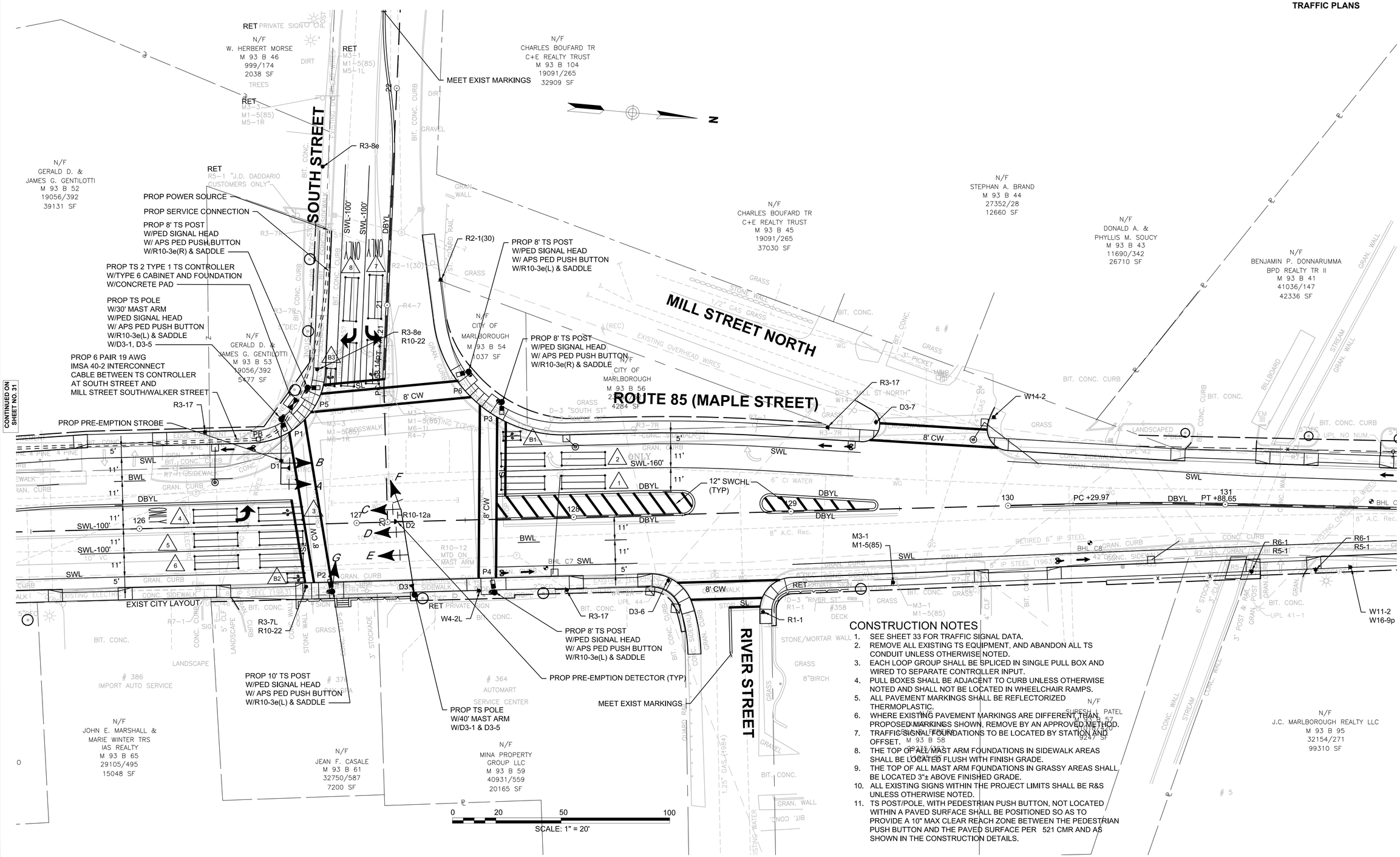
1. ALL PAVEMENT MARKINGS SHALL BE REFLECTORIZED THERMOPLASTIC.
2. WHERE EXISTING PAVEMENT MARKINGS ARE DIFFERENT THAN PROPOSED MARKINGS SHOWN, REMOVE BY AN APPROVED METHOD.
3. ALL EXISTING SIGNS WITHIN THE PROJECT LIMITS SHALL BE R&S UNLESS OTHERWISE NOTED.

604810_HD(STRP).DWG Plotted on 1-Oct-2015 11:39 AM

MARLBOROUGH
ROUTE 85 (MAPLE ST)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	32	53
PROJECT FILE NO. 604810			

TRAFFIC PLANS



CONSTRUCTION NOTES

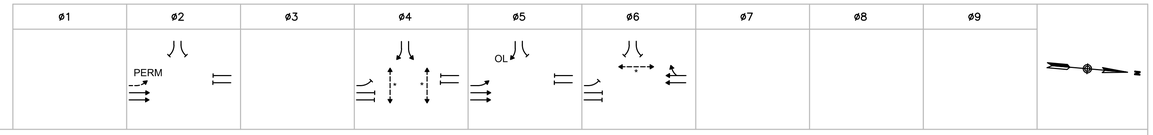
1. SEE SHEET 33 FOR TRAFFIC SIGNAL DATA.
2. REMOVE ALL EXISTING TS EQUIPMENT, AND ABANDON ALL TS CONDUIT UNLESS OTHERWISE NOTED.
3. EACH LOOP GROUP SHALL BE SPLICED IN SINGLE PULL BOX AND WIRED TO SEPARATE CONTROLLER INPUT.
4. PULL BOXES SHALL BE ADJACENT TO CURB UNLESS OTHERWISE NOTED AND SHALL NOT BE LOCATED IN WHEELCHAIR RAMPS.
5. ALL PAVEMENT MARKINGS SHALL BE REFLECTORIZED THERMOPLASTIC.
6. WHERE EXISTING PAVEMENT MARKINGS ARE DIFFERENT THAN PROPOSED MARKINGS SHOWN, REMOVE BY AN APPROVED METHOD.
7. TRAFFIC SIGNAL FOUNDATIONS TO BE LOCATED BY STATION AND OFFSET.
8. THE TOP OF ALL MAST ARM FOUNDATIONS IN SIDEWALK AREAS SHALL BE LOCATED FLUSH WITH FINISH GRADE.
9. THE TOP OF ALL MAST ARM FOUNDATIONS IN GRASSY AREAS SHALL BE LOCATED 3"± ABOVE FINISHED GRADE.
10. ALL EXISTING SIGNS WITHIN THE PROJECT LIMITS SHALL BE R&S UNLESS OTHERWISE NOTED.
11. TS POST/POLE, WITH PEDESTRIAN PUSH BUTTON, NOT LOCATED WITHIN A PAVED SURFACE SHALL BE POSITIONED SO AS TO PROVIDE A 10" MAX CLEAR REACH ZONE BETWEEN THE PEDESTRIAN PUSH BUTTON AND THE PAVED SURFACE PER 521 CMR AND AS SHOWN IN THE CONSTRUCTION DETAILS.

604810_HD(STRP).DWG Plotted on 1-Oct-2015 11:39 AM

MARLBOROUGH
ROUTE 85 (MAPLE ST)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	33	53
PROJECT FILE NO. 604810			

TRAFFIC PLANS



SEQUENCE AND TIMING FOR FULLY ACTUATED CONTROL (COORDINATED)

APPROACH	DIRECTION	HOUSING	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	FLASH
MAPLE STREET	SB	A,B				R	R	R				R	R	R	R	R	R	G	Y	R										FY
MAPLE STREET	NB	C				FY	Y	R				R	R	R	G	Y	R	R	R	R										FY
MAPLE STREET	NB	D,E				G	Y	R				R	R	R	G	Y	R	R	R	R										FY
SOUTH STREET	EB	F				R	R	R				G	Y	R	R	R	R	R	R	R										FR
SOUTH STREET	EB	G				R	R	R				G	Y	R	R–G	R–Y	R	R	R	R										FR
PEDESTRIAN X–ING	EB–WB	P1–P4				DW	DW	DW				W/FDW	DW	DW	DW	DW	DW	DW	DW	DW										OUT
PEDESTRIAN X–ING	NB–SB	P5–P6				DW	DW	DW				DW	DW	DW	DW	DW	DW	W/FDW	DW	DW										OUT

TIMING IN SECONDS

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	
MINIMUM GREEN (INITIAL)	X																											CONFLICT FLASH OPERATION ONLY
PASSAGE TIME (VEHICLE)	X																											
MAXIMUM 1	X																											
MAXIMUM 2	X																											
YELLOW CLEARANCE		X																										
RED CLEARANCE			X																									
PEDESTRIAN WALK	X																											
PEDESTRIAN CLEARANCE	X																											
DETECTOR MEMORY	NON–LOCK			NON–LOCK			NON–LOCK			NON–LOCK			NON–LOCK			NON–LOCK			NON–LOCK			NON–LOCK						
RECALL	OFF			SOFT			OFF			OFF			OFF			SOFT			OFF			OFF						

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

NOTES:
1. AUTOMATIC FLASHING OPERATION PER 2009 M.U.T.C.D., AS AMENDED.
2. * NORMALLY DW, W/FDW UPON PEDESTRIAN PUSH BUTTON ACTUATION
3. OL = OVERLAP
4. PERM = PERMISSIVE
5. ø4 & ø8 DUAL ENTRY
6. MAXIMUM 1 = NORMAL OPERATION
7. MAXIMUM 2 = NOT USED
8. STOP AND GO OPERATION FOR 24 HOURS PER DAY. FLASHING OPERATION FOR EMERGENCY ONLY.
9. DURING PEDESTRIAN INTERVAL, FDW THROUGH YELLOW OPERATION SHALL NOT BE IN EFFECT.
10. INHIBIT MAX TERMINATION SHALL BE IN EFFECT DURING COORDINATION.

SEQUENCE & TIMING NOTES:

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

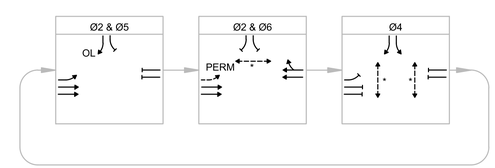
LIST OF MAJOR ITEMS REQUIRED

MAPLE STREET (ROUTE 85) AT SOUTH STREET

PAY ITEM	QUANTITY	DESCRIPTION
816.02	1	8Ø TS 2 TYPE 1 CONTROLLER IN A TYPE 6 BASE MOUNTED CABINET INCLUDING FOUNDATION AND CONCRETE PAD
	1	TS 30' MAST ARM TYPE 2, HEAVY LOADING, STEEL, INCL. FOUNDATION
	1	TS 40' MAST ARM TYPE 2, HEAVY LOADING, STEEL, INCL. FOUNDATION
	4	TS POST 8' STANDARD INCL. FOUNDATION
	1	TS POST 10' STANDARD INCL. FOUNDATION
	5	SIGNAL HEAD, 3-SECTION, 12" LENSES
	1	SIGNAL HEAD, 4-SECTION, 12" LENSES
	1	SIGNAL HEAD, 5-SECTION, 12" LENSES
	6	PEDESTRIAN SIGNAL HEAD
	4	PEDESTRIAN PUSH BUTTON W/R10-3e(L) AND SIGN SADDLE
	2	PEDESTRIAN PUSH BUTTON W/R10-3e(R) AND SIGN SADDLE
	6	TYPE C, 2-CHANNEL CARD RACK LOOP DETECTOR AMPLIFIER
	17	WIRE LOOP DETECTOR
	3	EMERGENCY PRE-EMPTION OPTICAL DETECTORS & DETECTOR CABLE
	1	EMERGENCY PRE-EMPTION 4 CHANNEL PHASE SELECTOR
	1	EMERGENCY PRE-EMPTION SYSTEM CHASSIS
	1	EMERGENCY PRE-EMPTION STROBE (WHITE LENS)
	1	SERVICE CONNECTION (OVERHEAD)
811.31	X	PULL BOX-12"x12"

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

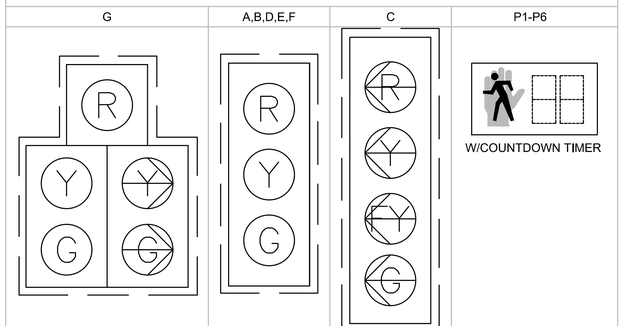
PREFERENTIAL PHASE SEQUENCE



* NORMALLY DW, W/FDW UPON PEDESTRIAN PUSH BUTTON ACTUATION

SIGNAL HEAD DATA

G	A,B,D,E,F	C	P1-P6



ALL 12" LENS

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

LOOP DETECTOR DATA

DETECTOR NO.	NO. SECTION/ SIZE	NO. OF TURNS	OPERATIONS	DELAY /EXT	CALL PHASE	LOOP CONNECTION
1	2-6'X20' QUADRUPOLE	2-4-2	PRESENCE	0	Ø6	SERIES
2	2-6'X20' QUADRUPOLE	2-4-2	PRESENCE	0	Ø6	SERIES
B1	1-4'X6' QUADRUPOLE	2-4-2	PRESENCE	0	Ø6	SINGLE
3	1-6'X20' QUADRUPOLE	2-4-2	PRESENCE	0	Ø5	SINGLE
4	1-6'X20' QUADRUPOLE	2-4-2	PRESENCE	0	Ø2	SINGLE
5	2-6'X20' QUADRUPOLE	2-4-2	PRESENCE	0	Ø2	SERIES
6	2-6'X20' QUADRUPOLE	2-4-2	PRESENCE	0	Ø2	SERIES
B2	1-4'X6' QUADRUPOLE	2-4-2	PRESENCE	0	Ø2	SINGLE
7	2-6'X20' QUADRUPOLE	2-4-2	PRESENCE	0	Ø4	SERIES
8	2-6'X20' QUADRUPOLE	2-4-2	PRESENCE	DELAY 5 SEC	Ø4	SERIES
B3	1-4'X6' QUADRUPOLE	2-4-2	PRESENCE	DELAY 5 SEC	Ø4	SINGLE

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

PRE-EMPTION PHASING & PRIORITY

DETECTOR & PRIORITY	PRE-EMPT PHASE ASSIGNMENT	MOVEMENT	VEHICLE PHASE ASSIGNMENT
D1	1		Ø6
D2	2		Ø2&Ø5
D3	3		Ø4

EMERGENCY VEHICLE PRE-EMPTION OPERATION

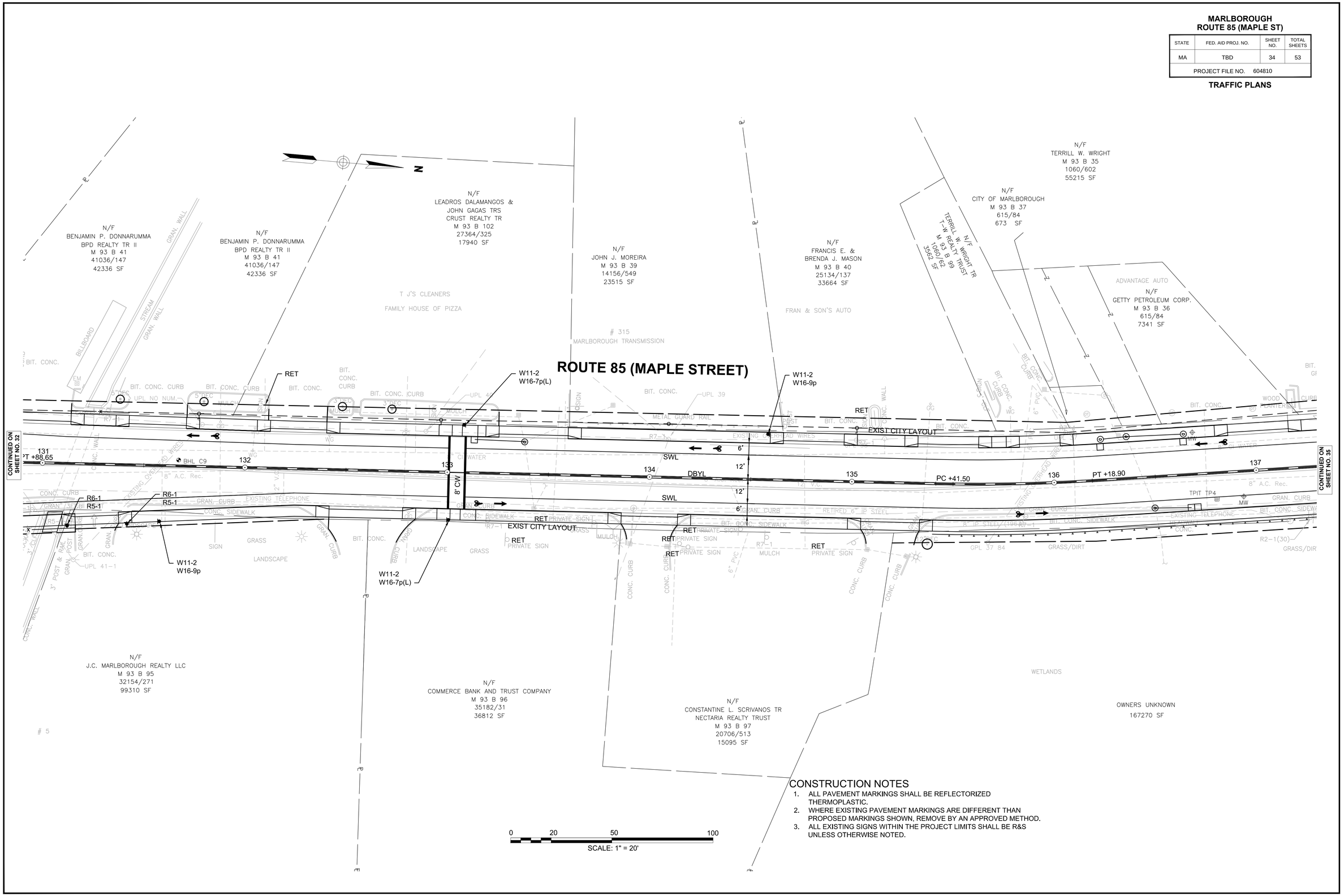
1. EMERGENCY VEHICLE PRE-EMPTION SIGNALS SHALL BE OPTICALLY TRANSMITTED BY OPTICAL EMITTERS MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT EACH INTERSECTION.
2. PRE-EMPTION SIGNALS SHALL BE SERVICED ON A PRIORITY BASIS WITH DETECTORS D1, D2 OR D3 ASSIGNED DESCENDING PRIORITIES AS FOLLOWS: (D1 HIGHEST AND D3 LOWEST)
3. IN RESPONSE TO A PRE-EMPTION SIGNAL RECEIVED AT AN INTERSECTION BY OPTICAL DETECTOR D1 (OR D2, D3) THE CONTROLLER SHALL HOLD OR ADVANCE TO AND HOLD IN EMERGENCY VEHICLE PRE-EMPTION PHASE #1 (OR #2, #3) GREEN FOR A MINIMUM OF TEN (10) SECONDS OR UNTIL PRE-EMPTION SIGNAL CEASES. THE CONTROLLER SHALL THEN TIME PRE-EMPTION PHASE CLEARANCES FOR THE ASSOCIATED PHASE(S) AS SHOWN IN THE SEQUENCE AND TIMING CHART AND SERVICE SUBSEQUENT EMERGENCY VEHICLE PRE-EMPTION PHASES AS NECESSARY.
4. MINIMUM GREEN AND NORMAL VEHICLE CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PRE-EMPTION DEMAND.
5. PRE-EMPTION STROBE SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PRE-EMPTION GREEN IS ON.
6. EMERGENCY VEHICLE PRE-EMPTION SHALL OVERRIDE COORDINATION.

604810_HD(STRP).DWG Plotted on 1-Oct-2015 11:39 AM

MARLBOROUGH
ROUTE 85 (MAPLE ST)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	34	53
PROJECT FILE NO. 604810			

TRAFFIC PLANS



CONSTRUCTION NOTES

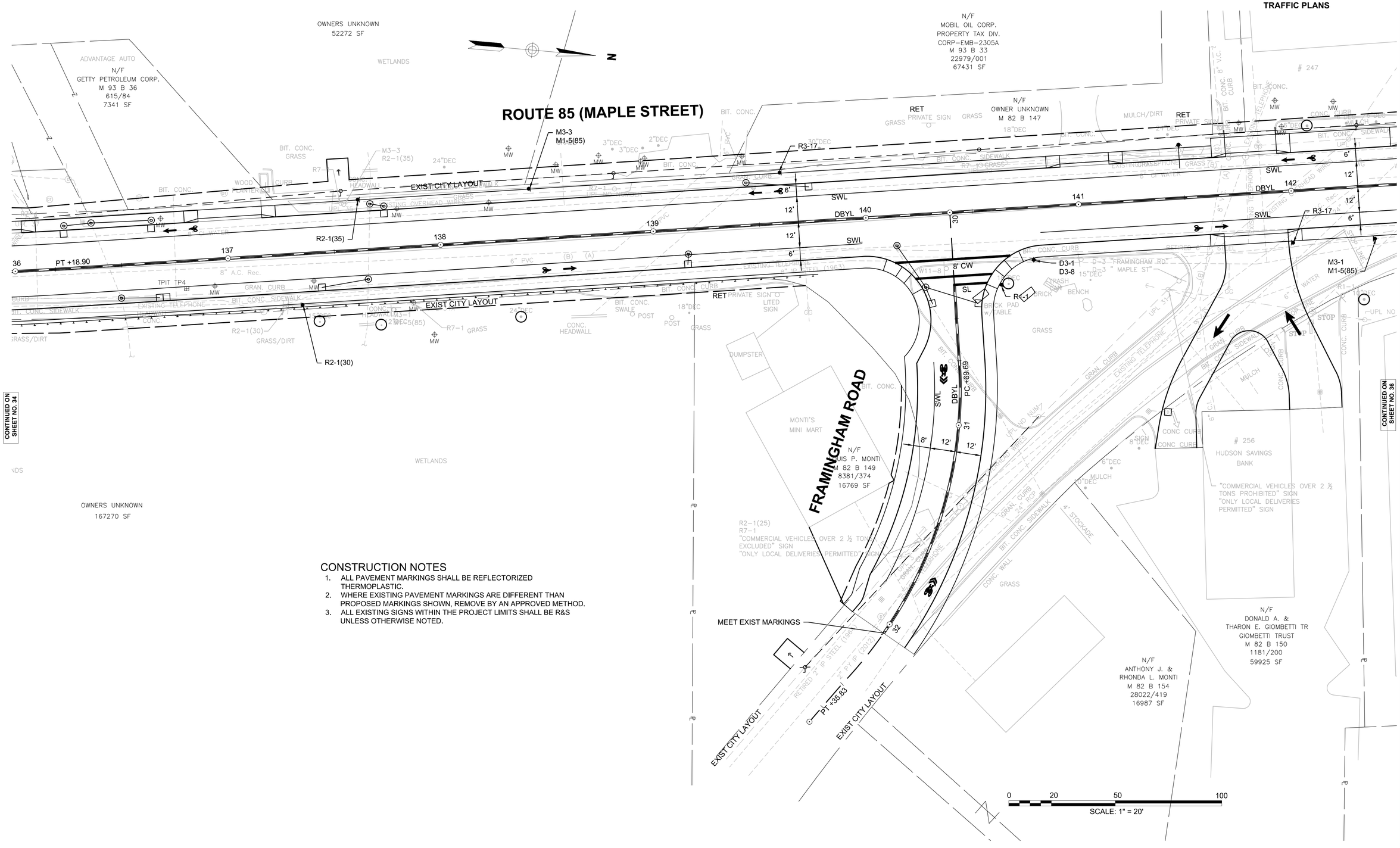
1. ALL PAVEMENT MARKINGS SHALL BE REFLECTORIZED THERMOPLASTIC.
2. WHERE EXISTING PAVEMENT MARKINGS ARE DIFFERENT THAN PROPOSED MARKINGS SHOWN, REMOVE BY AN APPROVED METHOD.
3. ALL EXISTING SIGNS WITHIN THE PROJECT LIMITS SHALL BE R&S UNLESS OTHERWISE NOTED.

604810_HD(STRP).DWG Plotted on 1-Oct-2015 11:39 AM

MARLBOROUGH
ROUTE 85 (MAPLE ST)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	35	53
PROJECT FILE NO. 604810			

TRAFFIC PLANS



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. ALL EXISTING SIGNS WITHIN THE PROJECT LIMITS SHALL BE R&S UNLESS OTHERWISE NOTED.

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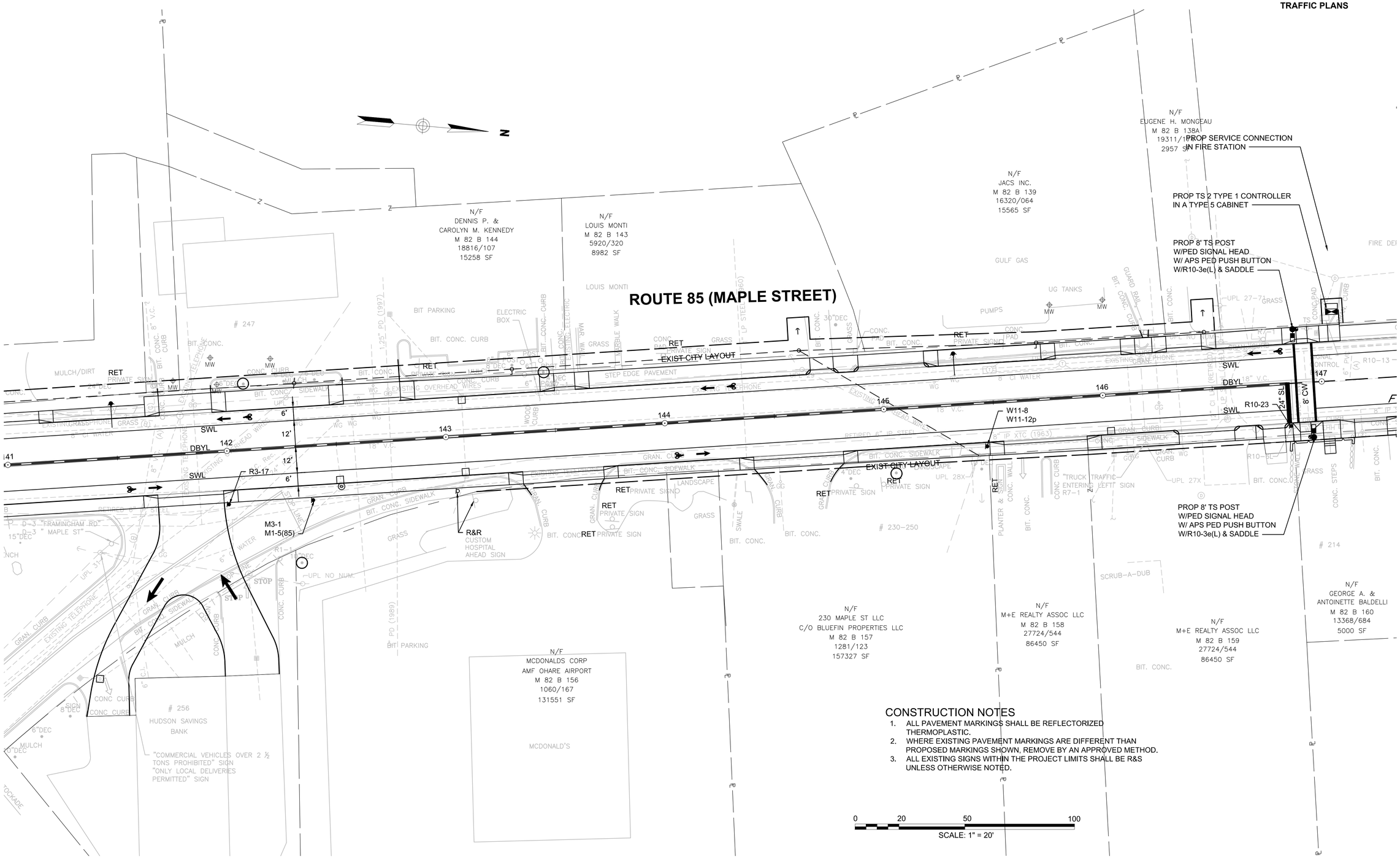
MARLBOROUGH
ROUTE 85 (MAPLE ST)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	36	53
PROJECT FILE NO. 604810			

TRAFFIC PLANS



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. ALL EXISTING SIGNS WITHIN THE PROJECT LIMITS SHALL BE R&S UNLESS OTHERWISE NOTED.

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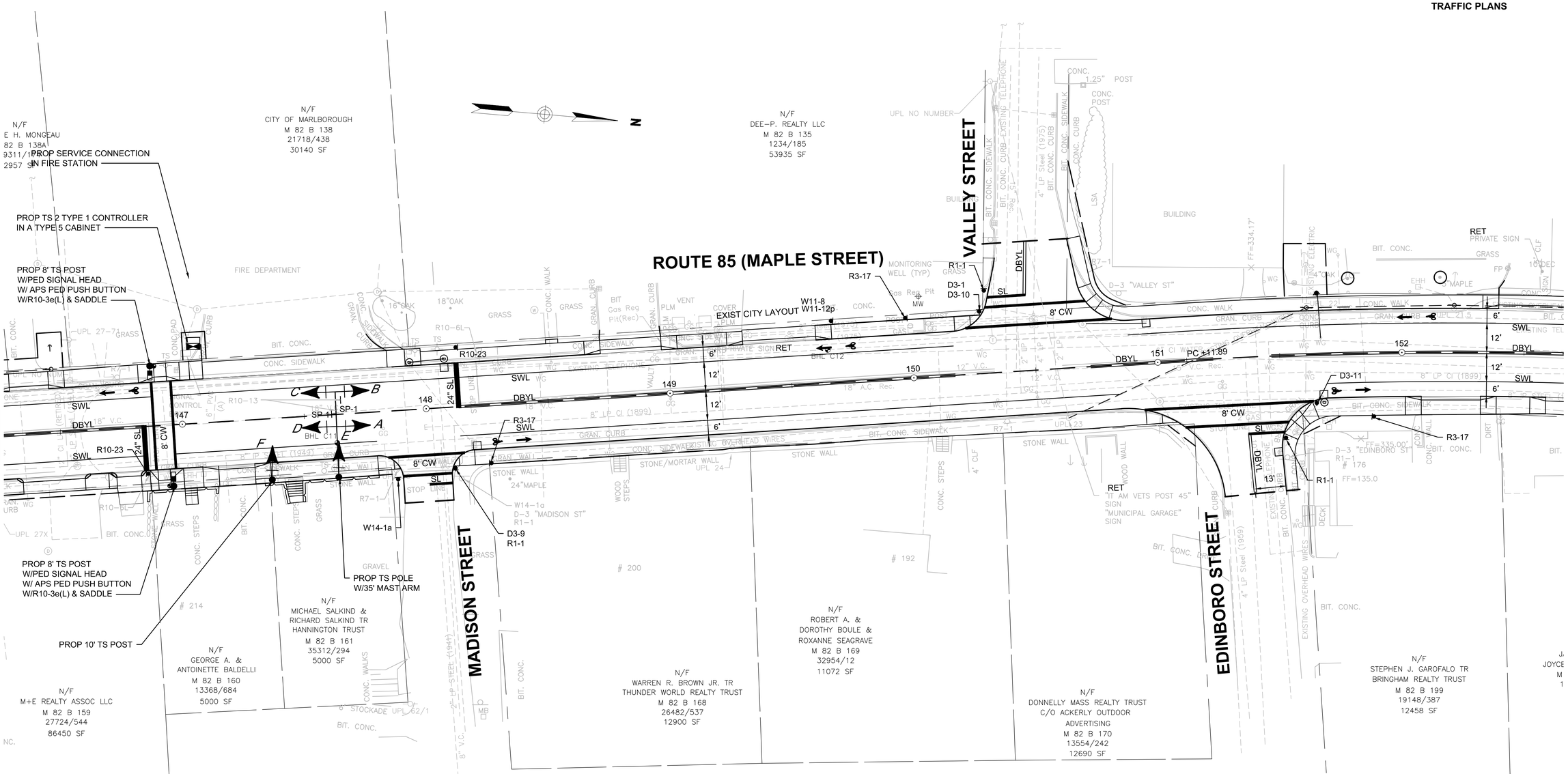
MARLBOROUGH
ROUTE 85 (MAPLE ST)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	37	53
PROJECT FILE NO. 604810			

TRAFFIC PLANS



CONSTRUCTION NOTES

1. SEE SHEET 38 FOR TRAFFIC SIGNAL DATA.
2. REMOVE ALL EXISTING TS EQUIPMENT, AND ABANDON ALL TS CONDUIT UNLESS OTHERWISE NOTED.
3. PULL BOXES SHALL BE ADJACENT TO CURB UNLESS OTHERWISE NOTED AND SHALL NOT BE LOCATED IN WHEELCHAIR RAMPS.
4. ALL PAVEMENT MARKINGS SHALL BE REFLECTORIZED THERMOPLASTIC.
5. WHERE EXISTING PAVEMENT MARKINGS ARE DIFFERENT THAN PROPOSED MARKINGS SHOWN, REMOVE BY AN APPROVED METHOD.
6. 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. ALL EXISTING SIGNS WITHIN THE PROJECT LIMITS SHALL BE R&S UNLESS OTHERWISE NOTED.

0 20 50 100
SCALE: 1" = 20'

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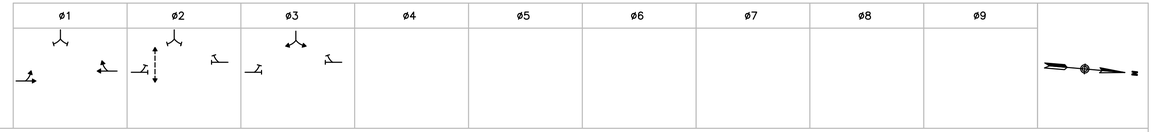
MARLBOROUGH
ROUTE 85 (MAPLE ST)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	38	53
PROJECT FILE NO. 604810			

TRAFFIC PLANS



SEQUENCE AND TIMING FOR FULLY ACTUATED CONTROL (ISOLATED)

APPROACH	DIRECTION	HOUSING	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	FLASH
MAPLE STREET	SB	A,B	DARK	FY	Y	Rx2	FRx2	Rx2	Rx2	FRx2																			FY
MAPLE STREET	NB	C,D	DARK	FY	Y	Rx2	FRx2	Rx2	Rx2	FRx2																			FY
FIRE STATION DRIVEWAY	EB	E,F	R	R	R	R	R	G	Y	R																			FR
PEDESTRIAN X–ING	EB–WB	P1–P2	DW	DW	DW	W	FDW	DW	DW	DW																			OUT

TIMING IN SECONDS

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
MINIMUM GREEN (INITIAL)	X																									
PASSAGE TIME (VEHICLE)	X																									
MAXIMUM 1	X																									
MAXIMUM 2	X																									
YELLOW CLEARANCE		X																								
RED CLEARANCE			X																							
PEDESTRIAN WALK	X																									
PEDESTRIAN CLEARANCE	X																									
DETECTOR MEMORY	NONE			NONE			NONE			NONE																
RECALL	OFF			OFF			OFF			OFF																

CONFLICT FLASH OPERATION ONLY

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

NOTES:
1. AUTOMATIC FLASHING OPERATION PER 2009 M.U.T.C.D., AS AMENDED.
2. * UPON PEDESTRIAN PUSH BUTTON ACTUATION
3. MAXIMUM 1 = NORMAL OPERATION
4. MAXIMUM 2 = NOT USED

LIST OF MAJOR ITEMS REQUIRED

MAPLE STREET AT FIRE STATION HEADQUARTERS

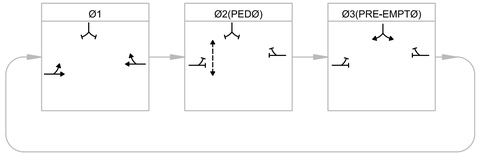
PAY ITEM	QUANTITY	DESCRIPTION
815.00	1	8Ø TS 2 TYPE 1 CONTROLLER IN A TYPE 5 BASE MOUNTED CABINET INCLUDING FOUNDATION AND CONCRETE PAD
	1	TS 35' MAST ARM TYPE 2, HEAVY LOADING, STEEL, INCL. FOUNDATION
	2	TS POST 8' STANDARD INCL. FOUNDATION
	1	TS POST 10' STANDARD INCL. FOUNDATION
	6	SIGNAL HEAD, 3-SECTION, 12" LENSES
	2	PEDESTRIAN SIGNAL HEAD
	2	PEDESTRIAN PUSH BUTTON W/R10-3e(L) AND SIGN SADDLE
	1	SERVICE CONNECTION (OVERHEAD/UNDERGROUND)
	1	FIRE STATION PRE-EMPTION PANEL (WITHIN FIRE STATION)
	6	FIRE STATION REMOTES (FOR RETURNING VEHICLES)
811.31	X	PULL BOX-12"x12"

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

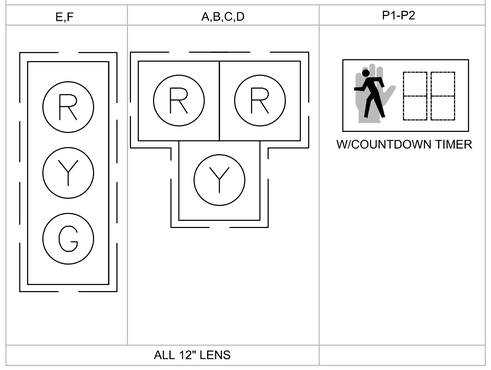
SEQUENCE & TIMING NOTES:

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

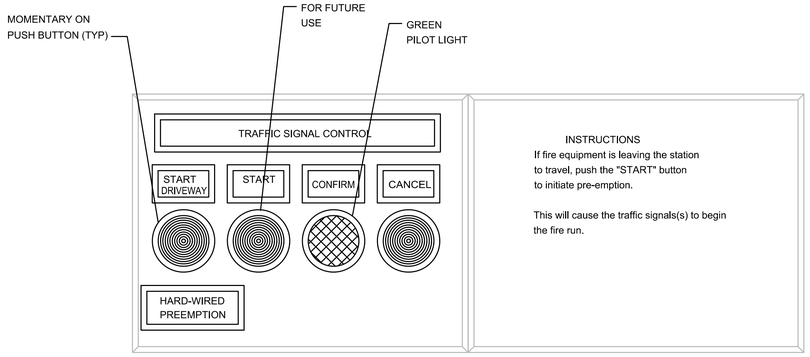
PREFERENTIAL PHASE SEQUENCE



SIGNAL HEAD DATA



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



FIRE STATION PANEL (SAMPLE) DETAIL

(NEMA ENCLOSURE)

NTS

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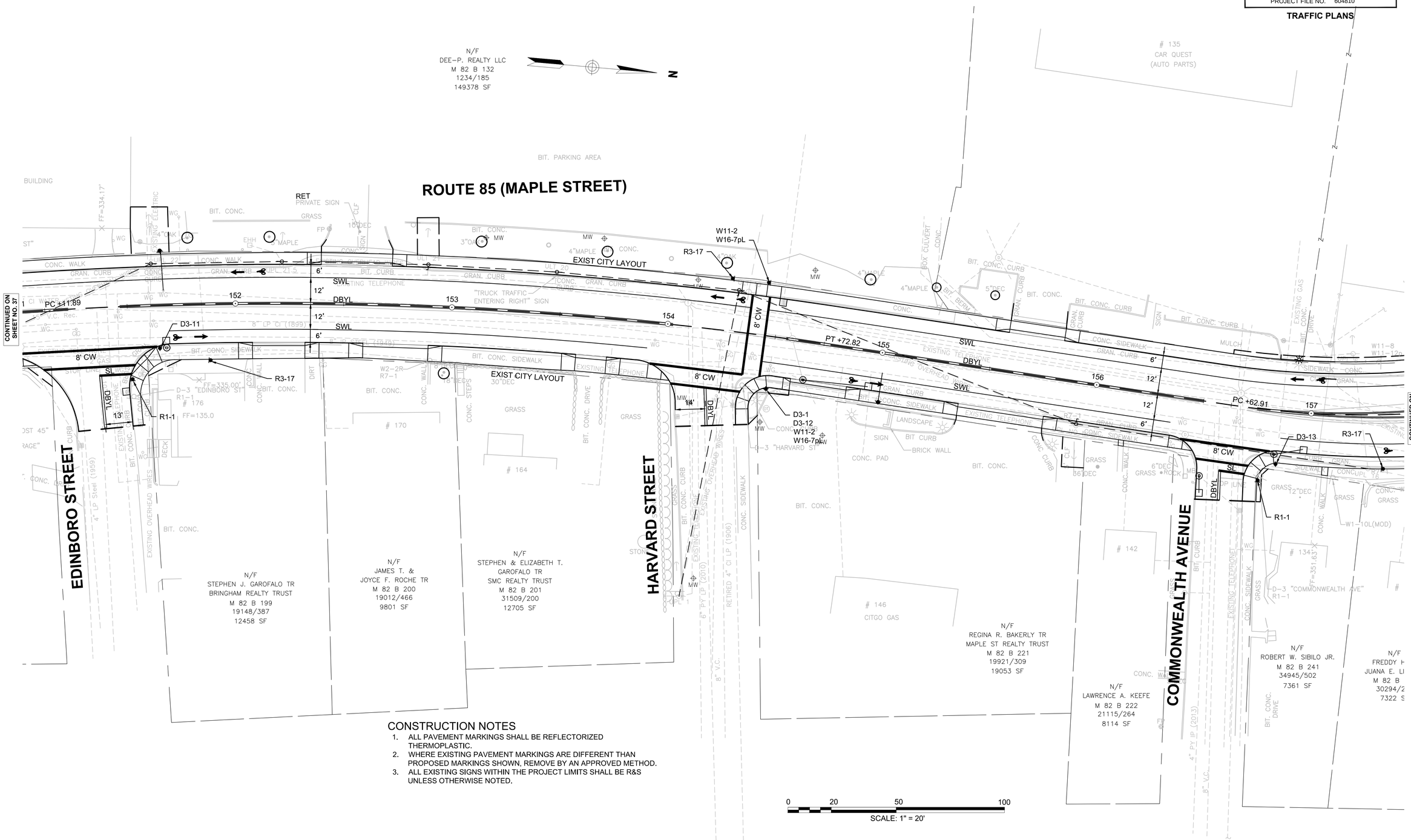
MARLBOROUGH
ROUTE 85 (MAPLE ST)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	39	53
PROJECT FILE NO. 604810			

TRAFFIC PLANS



CONSTRUCTION NOTES

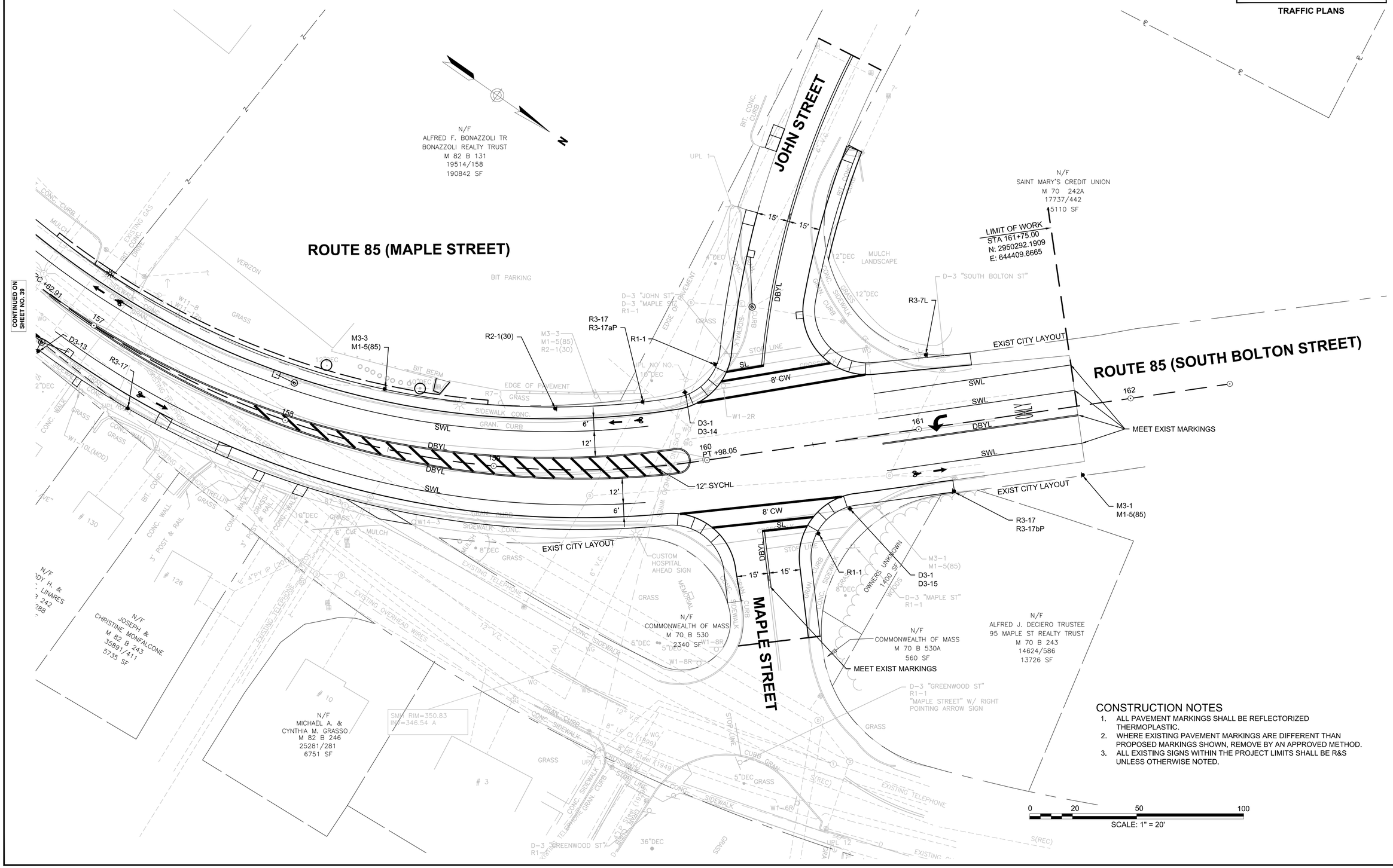
1. ALL PAVEMENT MARKINGS SHALL BE REFLECTORIZED THERMOPLASTIC.
2. WHERE EXISTING PAVEMENT MARKINGS ARE DIFFERENT THAN PROPOSED MARKINGS SHOWN, REMOVE BY AN APPROVED METHOD.
3. ALL EXISTING SIGNS WITHIN THE PROJECT LIMITS SHALL BE R&S UNLESS OTHERWISE NOTED.

604810_HD(STRP).DWG Plotted on 1-Oct-2015 11:40 AM

MARLBOROUGH
ROUTE 85 (MAPLE ST)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	40	53
PROJECT FILE NO. 604810			

TRAFFIC PLANS



CONTINUED ON SHEET NO. 39

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. ALL EXISTING SIGNS WITHIN THE PROJECT LIMITS SHALL BE R&S UNLESS OTHERWISE NOTED.

604810_HD(STRP).DWG Plotted on 1-Oct-2015 11:40 AM

MARLBOROUGH
ROUTE 85 (MAPLE ST)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	41	53
PROJECT FILE NO. 604810			

TRAFFIC SIGN SUMMARY

TRAFFIC SIGN SUMMARY

IDENTIFI-CATION NUMBER	SIZE OF SIGN WIDTH	SIZE OF SIGN HEIGHT	TEXT	TEXT DIMENSIONS (INCHES) LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.	NUMBER OF SIGNS REQUIRED	COLOR BACK-GROUND	LEGEND	BORDER	POST SIZE AND NUMBER REQUIRED	UNIT AREA (S.F.)	AREA IN SQUARE FEET
R1-1	30"	30"	STOP	SEE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS				RED	WHITE	WHITE		5.18	
R1-2	36"x36"x36"		YIELD					RED	WHITE	WHITE		4.50	
R2-1(30)	24"	30"	SPEED LIMIT 30					WHITE	BLACK	BLACK		5.00	
R2-1(35)	24"	30"	SPEED LIMIT 35					WHITE	BLACK	BLACK		5.00	
R3-7L	30"	30"	LEFT LANE MUST TURN LEFT					WHITE	BLACK	BLACK		6.25	
R3-8e	30"	30"	ONLY ONLY					WHITE	BLACK	BLACK		6.25	
R3-17	24"	18"	BIKE LANE					WHITE	BLACK	BLACK		3.00	
R3-17aP	24"	8"	AHEAD					WHITE	BLACK	BLACK		1.33	
R3-17bP	24"	8"	END					WHITE	BLACK	BLACK		1.33	
R5-1	30"	30"	DO NOT ENTER					WHITE	WHITE	RED		6.25	
R6-1	36"	12"	ONE WAY					BLACK	WHITE/ BLACK	WHITE		3.00	
R10-3e(L)	9"	15"						WHITE	WHITE/ BLACK/ ORANGE	BLACK		INCLUDED UNDER 815 ITEMS	
R10-3e(R)	9"	15"						WHITE	WHITE/ BLACK/ ORANGE	BLACK		INCLUDED UNDER 815 ITEMS	
R10-12	30"	36"	LEFT TURN YIELD ON GREEN					WHITE	BLACK/ GREEN	BLACK		7.50	
R10-12a	30"	36"	LEFT TURN YIELD ON FLASHING					WHITE	BLACK/ GREEN	BLACK		7.50	
R10-22	18"	24"	TO REQUEST GREEN WAIT ON					WHITE	BLACK	BLACK		3.00	
R10-23	24"	30"	CROSSWALK STOP ON RED					WHITE	BLACK/ RED	BLACK		2.50	
H1-2	24"	24"		AS PER MASSDOT STANDARD				YELLOW	BLACK	–		INCLUDED UNDER 827.22 ITEMS	

IDENTIFI-CATION NUMBER	SIZE OF SIGN WIDTH	SIZE OF SIGN HEIGHT	TEXT	TEXT DIMENSIONS (INCHES) LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.	NUMBER OF SIGNS REQUIRED	COLOR BACK-GROUND	LEGEND	BORDER	POST SIZE AND NUMBER REQUIRED	UNIT AREA (S.F.)	AREA IN SQUARE FEET
W3-3	36"	36"		SEE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS				YELLOW	BLACK/ RED/ YELLOW/ GREEN	BLACK		9.00	
W4-2L	36"	36"		SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED				YELLOW	BLACK	BLACK		9.00	
W11-2	36"	36"						YELLOW	BLACK	BLACK		6.25	
W11-8	36"	36"						YELLOW	BLACK	BLACK		6.25	
W11-12P	36"	30"	EMERGENCY SIGNAL AHEAD					YELLOW	BLACK	BLACK		7.50	
W14-1a	30"	30"	NOT A THROUGH STREET					YELLOW	BLACK	BLACK		6.25	
W14-2	30"	30"	NO OUTLET					YELLOW	BLACK	BLACK		6.25	
W16-7p(L)	24"	12"						YELLOW	BLACK	BLACK		2.00	
W16-9p	24"	12"	AHEAD					YELLOW	BLACK	BLACK		2.00	
M1-5(85)	24"	24"	85	AS PER MASSDOT STANDARD				WHITE	BLACK	BLACK		4.00	
M3-1	24"	12"	NORTH	SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED				WHITE	BLACK	BLACK		2.00	
M3-3	24"	12"	SOUTH	SEE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS				WHITE	BLACK	BLACK		2.00	
M6-1L	30"	21"						WHITE	BLACK	BLACK		4.38	
M6-1R	30"	21"						WHITE	BLACK	BLACK		4.38	
SP-1	36"	42"	EMERGENCY SIGNAL STOP ON RED					WHITE	BLACK	BLACK		10.50	
D3-1	VARIES	12"	Maple St	6C	3 3	N/A		BLUE	WHITE	WHITE		INCLUDED UNDER ITEM 874	
D3-2	VARIES	12"	Mill St South	6C	3 3	N/A		BLUE	WHITE	WHITE		INCLUDED UNDER ITEM 874	

NOTES:
1. SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION" FOR TEXT DIMENSIONS, AS AMENDED; THE MASSDOT DEPARTMENT SIGN LISTINGS 1993 EDITION, AS AMENDED; AND THE TOWN OF CARVER STANDARD SPECIFICATIONS AND DETAILS.
2. ALL PROPOSED REGULATORY AND WARNING SIGNS SHALL BE 0.08" ALUMINUM WITH HIGH INTENSITY PRISMATIC REFLECTIVE SHEETING.

604810_HD(TSS).DWG Plotted on 1-Oct-2015 11:40 AM

TRAFFIC SIGN SUMMARY

IDENTIFI-CATION 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			
D3-3	VARIES	12"	Walker St	6C	3 3	N/A		BLUE	WHITE	WHITE		INCLUDED UNDER ITEM 874	
D3-4	VARIES	12"	Comtois Dr	6C	3 3	N/A		BLUE	WHITE	WHITE		INCLUDED UNDER ITEM 874	
D3-5	VARIES	12"	South St	6C	3 3	N/A		BLUE	WHITE	WHITE		INCLUDED UNDER ITEM 874	
D3-6	VARIES	12"	River St	6C	3 3	N/A		BLUE	WHITE	WHITE		INCLUDED UNDER ITEM 874	
D3-7	VARIES	12"	Mill St North	6C	3 3	N/A		BLUE	WHITE	WHITE		INCLUDED UNDER ITEM 874	
D3-8	VARIES	12"	Framingham Rd	6C	3 3	N/A		BLUE	WHITE	WHITE		INCLUDED UNDER ITEM 874	
D3-9	VARIES	12"	Madison St	6C	3 3	N/A		BLUE	WHITE	WHITE		INCLUDED UNDER ITEM 874	
D3-10	VARIES	12"	Valley St	6C	3 3	N/A		BLUE	WHITE	WHITE		INCLUDED UNDER ITEM 874	
D3-11	VARIES	12"	Edinboro St	6C	3 3	N/A		BLUE	WHITE	WHITE		INCLUDED UNDER ITEM 874	
D3-12	VARIES	12"	Harvard St	6C	3 3	N/A		BLUE	WHITE	WHITE		INCLUDED UNDER ITEM 874	
D3-13	VARIES	12"	Commonwealth Ave	6C	3 3	N/A		BLUE	WHITE	WHITE		INCLUDED UNDER ITEM 874	
D3-14	VARIES	12"	John St	6C	3 3	N/A		BLUE	WHITE	WHITE		INCLUDED UNDER ITEM 874	
D3-15	VARIES	12"	South Bolton St	6C	3 3	N/A		BLUE	WHITE	WHITE		INCLUDED UNDER ITEM 874	

IDENTIFI-CATION 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	VERTICAL	ARROW		BACK-GROUND	LEGEND	BORDER			

NOTES:
1. SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION" FOR TEXT DIMENSIONS, AS AMENDED; THE MASSDOT DEPARTMENT SIGN LISTINGS 1993 EDITION, AS AMENDED; AND THE TOWN OF CARVER STANDARD SPECIFICATIONS AND DETAILS.
2. ALL PROPOSED REGULATORY AND WARNING SIGNS SHALL BE 0.08" ALUMINUM WITH HIGH INTENSITY PRISMATIC REFLECTIVE SHEETING.

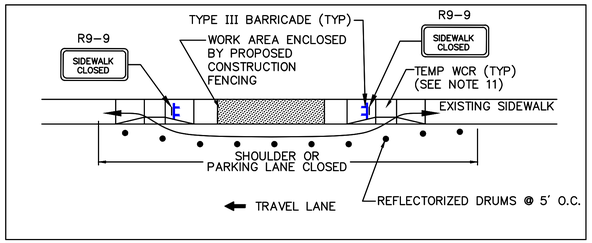
604810_HD(TSS).DWG Plotted on 1-Oct-2015 11:40 AM

MARLBOROUGH ROUTE 85 (MAPLE ST)			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	43	53
PROJECT FILE NO. 604810			

TEMPORARY TRAFFIC CONTROL PLANS

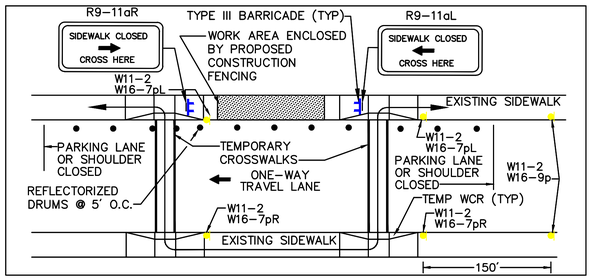
PEDESTRIAN BYPASS

TO BE USED IN CONJUNCTION WITH THE PROPOSED LANE CLOSURE DETAILS AND DURING CONSTRUCTION STAGING AND AS DIRECTED BY THE ENGINEER.



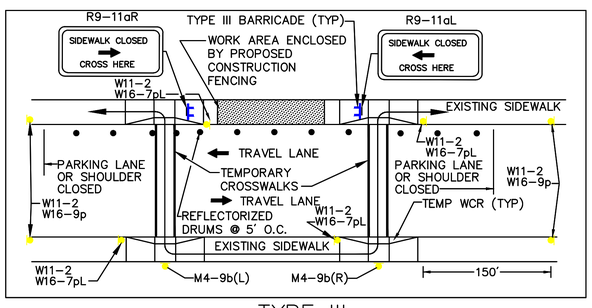
TYPE I

NTS



TYPE II

NTS



TYPE III

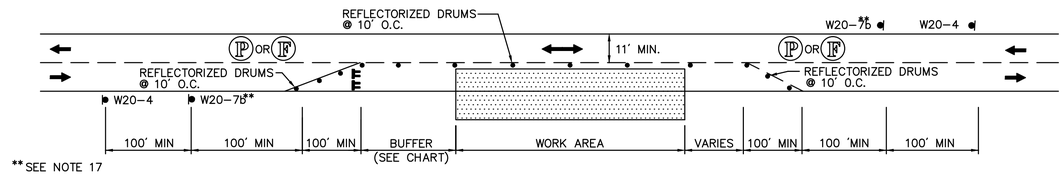
NTS

NOTES:

1. ADDITIONAL ADVANCE WARNING SIGNS MAY BE NECESSARY AS DETERMINED BY THE ENGINEER.
2. CONTROLS FOR PEDESTRIAN TRAFFIC ONLY, ARE SHOWN. VEHICULAR TRAFFIC SHALL BE MAINTAINED AS SHOWN ELSEWHERE.
3. STREET LIGHTING SHOULD BE CONSIDERED WHEN LOCATING CONTROL DEVICES.
4. ⟷ INDICATES DIRECTION OF PEDESTRIAN TRAVEL.
5. IF THE WORK ZONE DOES NOT PERMIT PEDESTRIANS TO TRAVEL ADJACENT TO IT AS SHOWN IN PEDESTRIAN BYPASS TYPE I, TEMPORARY CROSSWALKS WITH APPROPRIATE SIGNS SHALL BE INSTALLED TO CROSS PEDESTRIANS TO THE OPPOSITE SIDE OF THE STREET AS SHOWN IN PEDESTRIAN BYPASS TYPE II AND TYPE III, AND AS DIRECTED BY THE ENGINEER.
6. PROPOSED TEMPORARY CROSSWALKS SHALL BE 12" WIDE SURFACE APPLIED TAPE OR REFLECTORIZED PAINT AS DIRECTED BY THE ENGINEER.
7. ALL TEMPORARY PEDESTRIAN PATHWAYS SHALL COMPLY FULLY WITH ALL REQUIREMENTS OF THE MUTCD AND ALL APPLICABLE MAAB AND ADAAG REQUIREMENTS.
8. CONTRACTOR SHALL MAINTAIN AS WIDE OF A PEDESTRIAN ACCESS AS POSSIBLE AT ALL TIMES. EXCEPT WHERE NECESSARY, THE CONTRACTOR MAY TEMPORARILY REDUCE PEDESTRIAN PATHWAYS TO 4 FEET IN WIDTH (EXCLUDING CURB) FOR NO MORE THAN 200 LINEAR FEET AT A TIME IN ACCORDANCE WITH ALL STANDARDS.
9. TEMPORARY WHEELCHAIR RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH MASSDOT, MAAB, AND ADAAG REQUIREMENTS.
10. W16-7pR OR W16-7pL SIGNS SHALL BE USED IN COMBINATION WITH W11-2 SIGNS AS DIRECTED BY THE ENGINEER.
11. EXISTING WHEELCHAIR RAMPS (WCR) MAY BE USED IN LIEU OF TEMPORARY WHEELCHAIR RAMPS FOR TEMPORARY DETOURS UNLESS OTHERWISE DRIECTED BY THE ENGINEER.

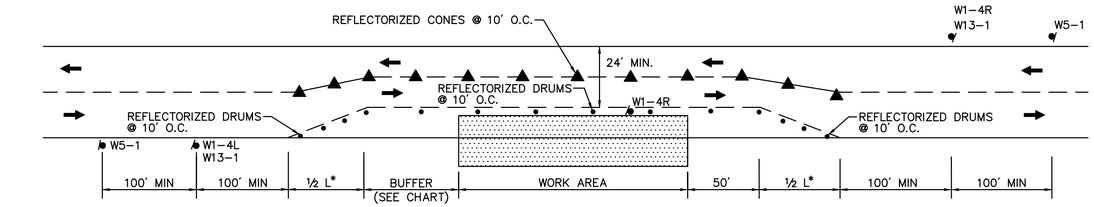
OPERATIONAL SIGNING

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



TYPICAL TWO WAY STREET LANE CLOSURE

NOT TO SCALE



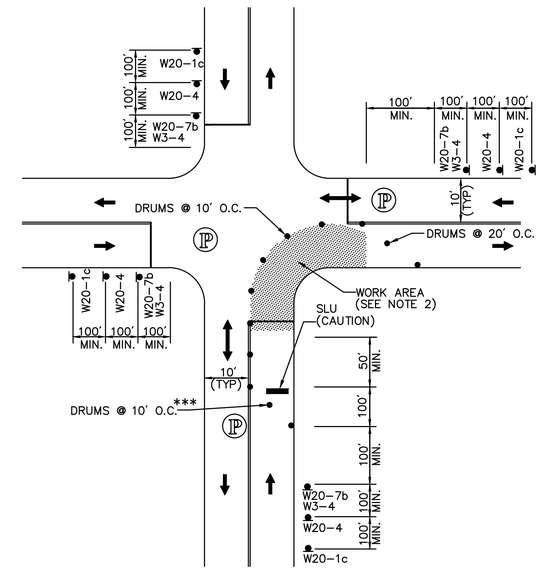
TYPICAL TWO WAY STREET LANE SHIFT

NOT TO SCALE

LEGEND

- REFLECTORIZED DRUM
- REFLECTORIZED CONE
- POLICE OFFICER/FLAGGER
- TEMPORARY TRAFFIC CONTROL SIGN
- TYPE III BARRICADES
- WORK ZONE
- PROPOSED TRAFFIC FLOW
- SPECIAL LIGHTING UNIT (SLU)

NTS NOT TO SCALE



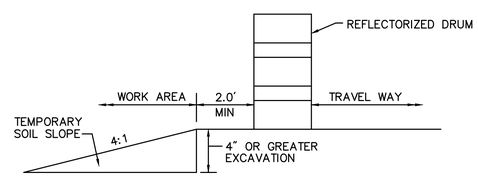
***SEE TRAFFIC MANAGEMENT GENERAL NOTE 16.

ONE LANE BI-DIRECTIONAL TRAFFIC AT INTERSECTIONS

NOT TO SCALE

NOTE:

1. ADVANCE WARNING SIGN PLACEMENT TO BE ADJUSTED AS NECESSARY
2. ANY EXCAVATION GREATER THAN 3' DEEP ADJACENT TO TRAFFIC SHALL BE PROTECTED BY TEMPORARY CONCRETE BARRIER

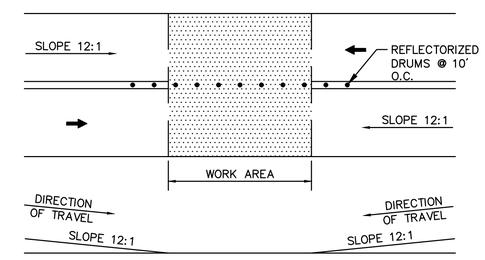


ROADWAY SLOPE PROTECTION

NOT TO SCALE

BUFFER SPACING

SPEED (MPH)	DISTANCE (FEET)
15	80
20	115
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645



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

TEMPORARY PAVEMENT TRANSITION DETAIL

NOT TO SCALE

FOR POSTED SPEEDS GREATER THAN 40 MPH

*$L = W \times S$ L=TAPER LENGTH W=WIDTH OF ROADWAY TO BE SHIFTED OR REDIRECTED S=POSTED SPEED LIMIT

FOR POSTED SPEEDS OF 40 MPH OR LESS

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

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TEMPORARY TRAFFIC CONTROL PLAN GENERAL NOTES

1. ALL CONSTRUCTION SIGNING, TEMPORARY TRAFFIC CONTROL DEVICES, AND ROADSIDE ELEMENTS SHALL CONFORM WITH THE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AS AMENDED, THE LATEST REVISIONS OF THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, (AASHTO) ROADSIDE DESIGN GUIDE, AASHTO POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS, AND NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM (NCHRP) REPORT 350 OR THE AASHTO MANUAL FOR ASSESSING SAFETY HARDWIRE (MASH).
2. ALL TEMPORARY PEDESTRIAN PATHWAYS SHALL COMPLY FULLY WITH ALL REQUIREMENTS OF THE MUTCD AND ALL APPLICABLE MASSACHUSETTS ARCHITECTURAL ACCESS BOARD (MAAB) AND AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES (ADAAG) REQUIREMENTS.
3. WORK HOURS SHALL BE 9:30AM TO 3:00PM MONDAY THRU FRIDAY UNLESS OTHERWISE APPROVED BY THE ENGINEER. WORK SHALL NOT AFFECT TRAFFIC PATTERNS DURING PEAK TRAFFIC PERIODS. PEAK TRAFFIC PERIODS ARE DEFINED AS MONDAY THRU FRIDAY 7:00AM–9:00AM AND 3:00PM–6:00PM.
4. ALL DRUMS SHALL BE SET AT 20′ ON CENTER MAX. ON LOCAL ROADWAY AND 50′ ON CENTER MAX. UNLESS OTHERWISE NOTED OR ADJUSTED BY THE ENGINEER.
5. ALL DRUMS SHALL BE APPROXIMATELY PLACED AND MOVED AS NECESSARY TO MAINTAIN ADEQUATE ABUTTER ACCESS AT ALL TIMES. WORK MAY REQUIRE ADDITIONAL SIGNS, DRUMS AND OTHER TRAFFIC CONTROL DEVICES, GRADING AND TEMPORARY PAVEMENT FOR PASSAGE OF PEDESTRIAN, VEHICULAR AND EMERGENCY TRAFFIC THROUGH THE WORK AREAS, BOTH DURING AND AFTER WORKING HOURS, TO MAINTAIN SUCH ACCESS.
6. THE CONTRACTOR SHALL NOTIFY EACH ABUTTOR AT LEAST 24 HOURS IN ADVANCE OF THE START OF ANY WORK THAT WILL REQUIRE THE TEMPORARY CLOSURE OF ACCESS.
7. FOR RESTORATIVE WORK ON LOCAL ROADWAYS, A MINIMUM OF ONE LANE OF TRAFFIC IN EACH DIRECTION ON TWO WAY STREETS SHALL BE MAINTAINED AT ALL TIMES, EXCEPT THAT DURING WORKING HOURS, TRAFFIC MAY BE REDUCED TO ONE LANE UNDER POLICE CONTROL FOR SHORT TIME PERIODS WHEN REQUIRED FOR THE WORK, AS SHOWN UNLESS OTHERWISE APPROVED BY THE ENGINEER.
8. GRADE SEPARATIONS IN EXCESS OF 2″ DURING NON–WORKING HOURS WILL REQUIRE DELINEATION BY USE OF DRUMS.
9. EXCAVATION EDGES IN EXCESS OF 4 INCHES DEEP SHALL BE PROTECTED DURING NON–WORKING HOURS BY BACKFILLING WITH A WEDGE OF COMPACTED GRAVEL BORROW AT A 4:1 SLOPE PER THE DETAIL SHOWN. EXCAVATIONS IN EXCESS OF 4 FEET SHOULD BE PROTECTED BY A MASSDOT APPROVED TEMPORARY CONCRETE BARRIER WITH A MINIMUM LEVEL LATERAL OFFSET OF 3 FEET FROM THE EDGE OF EXCAVATION. BARRIER PLACED WITH LESS THAN THE RECOMMENDED LATERAL OFFSET TO THE EDGE OF EXCAVATION SHALL BE ANCHORED/RESTRAINED TO PREVENT LATERAL MOVEMENT WHEN STRUCK BY ERRANT VEHICLES TRAVELING AT THE POSTED SPEED.
10. THE CONTRACTOR SHALL PROVIDE TEMPORARY IMPACT ATTENUATORS TO PROTECT ALL BLUNT–ENDS OF TEMPORARY CONCRETE BARRIER OR AS REQUIRED ON THE TRAFFIC MANAGEMENT PLANS. TEMPORARY IMPACT ATTENUATORS SHALL BE DESIGNED BY THE CONTRACTOR AND SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO THE START OF WORK. ALL TEMPORARY IMPACT ATTENUATORS SHALL BE DESIGNED FOR TEST LEVEL 2 (TL–2) ON ALL ROADWAYS HAVING A POSTED SPEED LESS THAN 45MPH AND TEST LEVEL 3 (TL–3) ON ROADWAYS HAVING A POSTED SPEED IN EXCESS OF 45MPH.
11. 11′ MINIMUM LANE WIDTHS SHALL BE MAINTAINED.
12. TRAFFIC CONTROL DEVICES AND SIGNS SHALL BE COVERED OR REMOVED DURING NON–WORKING HOURS WHEN NOT IN USE.
13. ADVISORY SPEED PLATES (W13–1) SHALL BE USED IF APPROPRIATE AND AS DIRECTED BY THE ENGINEER.
14. SIGNS INSTALLED ON PORTABLE STANDS REQUIRE 12 INCH MINIMUM MOUNTING HEIGHT FROM THE ROADWAY SURFACE TO THE BOTTOM OF THE SIGN.
15. 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.
16. SIGNS MOUNTED ON POSTS REQUIRE A MINIMUM 84 INCH MOUNTING HEIGHT FROM THE ROADWAY OR SIDEWALK SURFACE TO THE BOTTOM OF THE SIGN.
17. W20–7b SIGNS SHALL BE REPLACED BY W20–7a SIGNS WHEN FLAGGERS ARE USED IN LIEU OF POLICE OFFICER DETAILS.
18. IMPACT ATTENUATORS ON LOCAL ROADWAYS SHALL BE DESIGNED TO MEET THE CRITERIA FOR TEST LEVEL 2 OF NCHRP 350 OR MASH.
19. TEMPORARY MARKINGS SHALL BE WATER–BORNE PAINT.
20. TEMPORARY TRAFFIC CONTROL DEVICES ON TAPERS AND AT ROADWAY/RAMP CLOSURE LOCATIONS SHALL BE REFLECTORIZED DRUMS.
21. REFLECTORIZED CONES SHALL BE A MINIMUM OF 36 INCHES IN HEIGHT.
22. CONES MAY BE USED IN LIEU OF DRUMS OUTSIDE OF TAPER AREAS.
23. PROVIDE CLEAR ZONES AROUND MOVEABLE IMPACT ATTENUATOR DEVICES AS REQUIRED BY THE THE MANUFACTURER.
24. W20–8a 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.
25. W8–15 SIGNS SHALL BE INSTALLED IN ADVANCE (100′ MIN) OF PAVEMENT MILLING AREAS OR AS REQUESTED BY THE ENGINEER.
26. THERE IS NO DESIGNATED BICYCLE LANE ON THE ROADWAY WITHIN THE PROJECT LIMITS. BICYCLES ARE EXPECTED TO SHARE THE ROAD WITH GENERAL VEHICULAR TRAFFIC.

TEMPORARY TRAFFIC CONTROL SIGNS

IDENTIFI–CATION NUMBER	SIZE OF SIGN		TEXT	COLOR			TEXT DIMENSIONS (INCHES)		
	WIDTH	HEIGHT		BACK–GROUND	LEGEND	BORDER	LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.
R2–10a	48″	36″	WORK ZONE SPEEDING FINES DOUBLED	FL. ORANGE / WHITE	BLACK	BLACK	SEE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS		
R2–10c	36″	48″	END ROAD WORK / DOUBLE FINES END	FL. ORANGE / WHITE	BLACK	BLACK			
R9–9	30″	18″	SIDEWALK CLOSED	WHITE	BLACK	BLACK			
R9–11aL	48″	24″	SIDEWALK CLOSED ← CROSS HERE	WHITE	BLACK	BLACK			
R9–11aR	48″	24″	SIDEWALK CLOSED → CROSS HERE	WHITE	BLACK	BLACK			
W1–4L	36″	36″		FL. ORANGE	BLACK	BLACK			
W1–4R	36″	36″		FL. ORANGE	BLACK	BLACK			
W5–1	36″	36″	ROAD NARROWS	FL. ORANGE	BLACK	BLACK			
W8–15	36″	36″	GROOVED PAVEMENT	FL. ORANGE	BLACK	BLACK			
W11–2	36″	36″		FL. YELLOW	BLACK	BLACK			
W13–1P	24″	30″	XX MPH	FL. ORANGE	BLACK	BLACK			
W16–7pL	24″	12″		FL. YELLOW	BLACK	BLACK			
W16–9p	24″	12″	AHEAD	FL. YELLOW	BLACK	BLACK			
W20–1c	36″	36″	ROAD WORK AHEAD	FL. ORANGE	BLACK	BLACK			
W20–4	36″	36″	ONE LANE ROAD	FL. ORANGE	BLACK	BLACK			
W20–7a	36″	36″		FL. ORANGE	BLACK	BLACK			
W20–7b	36″	36″	POLICE OFFICER AHEAD	FL. ORANGE	BLACK	BLACK	SEE MASSDOT STANDARD DRAWINGS AND SPECS		
W20–8a	36″	36″	RAISED CASTINGS AHEAD	FL. ORANGE	BLACK	BLACK	SEE MASSDOT STANDARD DRAWINGS AND SPECS		

MARLBOROUGH
ROUTE 85 (MAPLE ST)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	44	53
PROJECT FILE NO. 604810			

TEMPORARY TRAFFIC CONTROL PLANS

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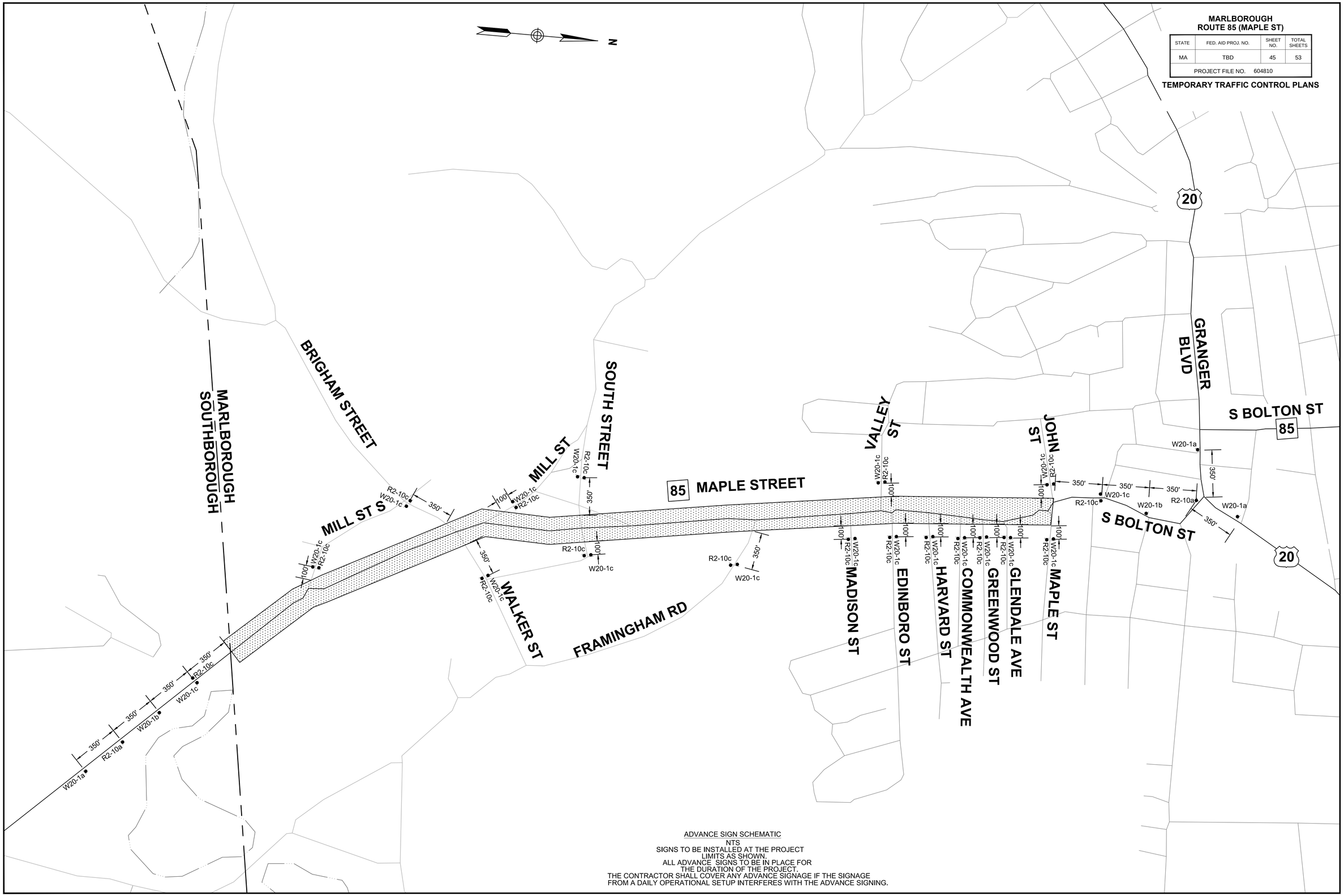
MARLBOROUGH
ROUTE 85 (MAPLE ST)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	45	53
PROJECT FILE NO. 604810			

TEMPORARY TRAFFIC CONTROL PLANS



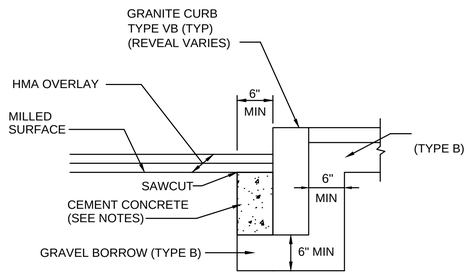
ADVANCE SIGN SCHEMATIC
NTS
SIGNS TO BE INSTALLED AT THE PROJECT
LIMITS AS SHOWN.
ALL ADVANCE SIGNS TO BE IN PLACE FOR
THE DURATION OF THE PROJECT.
THE CONTRACTOR SHALL COVER ANY ADVANCE SIGNAGE IF THE SIGNAGE
FROM A DAILY OPERATIONAL SETUP INTERFERES WITH THE ADVANCE SIGNING.

604810_HD(TTCP).DWG Plotted on 1-Oct-2015 11:41 AM

MARLBOROUGH
ROUTE 85 (MAPLE ST)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	46	53
PROJECT FILE NO. 604810			

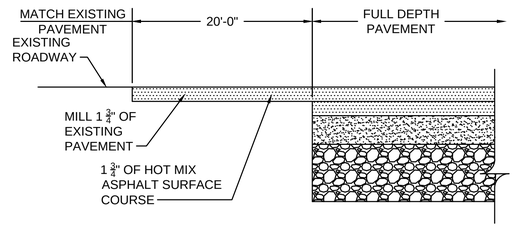
CONSTRUCTION DETAILS



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 PAVEMENT MILLING AND OVERLAY

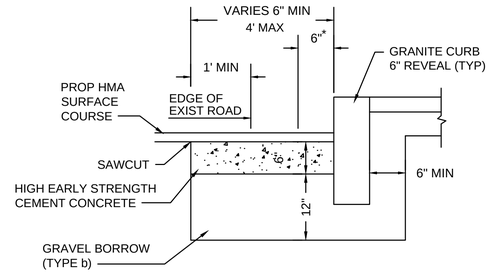
SCALE: N.T.S. DWG: CURB-04 DATE: APRIL 2003



LONGITUDINAL SECTION

FULL DEPTH PAVEMENT TRANSITION

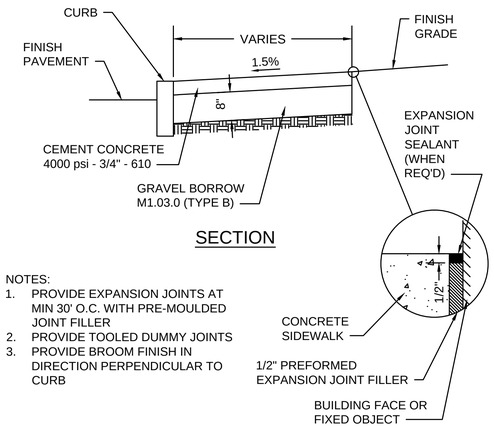
SCALE: N.T.S. DWG: PVMT-03 DATE: OCT. 2012



* 6" OF HIGH EARLY STRENGTH CEMENT CONCRETE BASE COURSE SHALL BE INCLUDED IN PRICE BID FOR GRANITE CURB.

GRANITE CURB IN FULL DEPTH PAVEMENT LESS THAN 4' WIDE

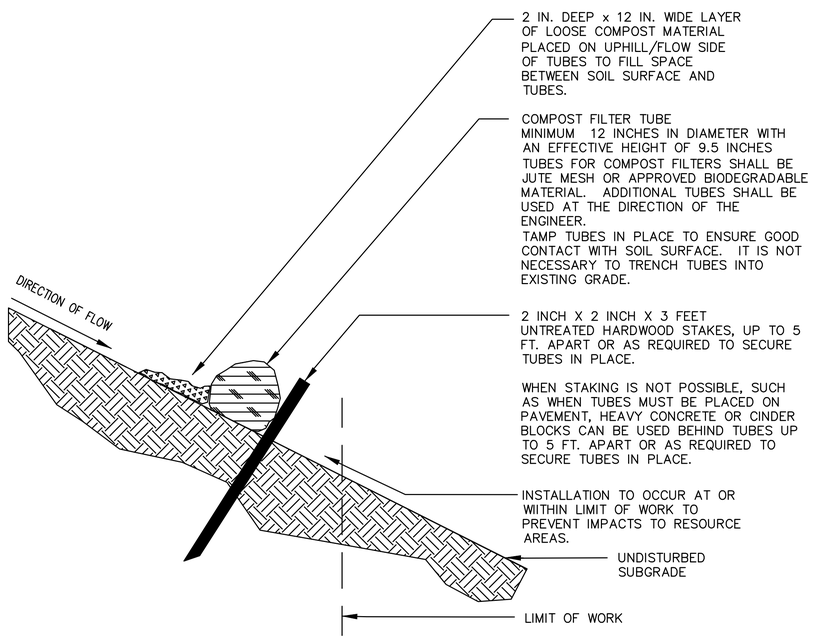
SCALE: N.T.S. DWG: CURB-06 DATE: FEB. 2013



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

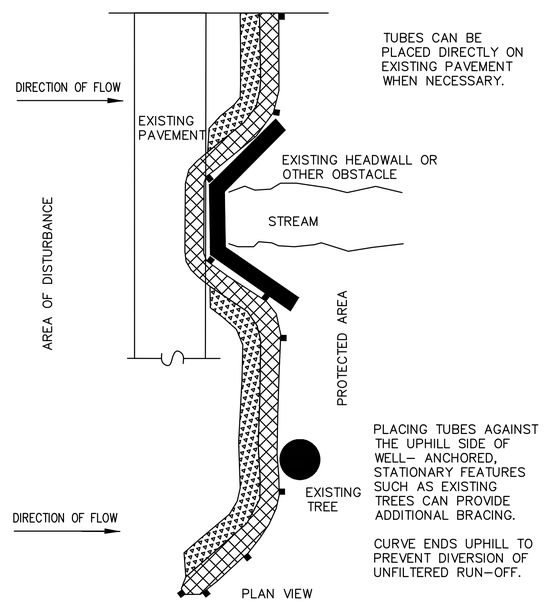
CEMENT CONCRETE SIDEWALK

SCALE: N.T.S. DWG: WALK-01 DATE: MARCH 2013

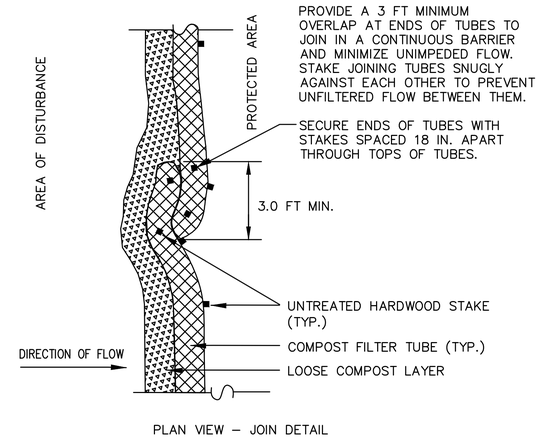


SINGLE COMPOST MULCH FILTER TUBE DETAIL

SCALE: N.T.S. DWG: ---- DATE: ----



GENERAL NOTES:
1. PROVIDE A MINIMUM TUBE DIAMETER OF 12 INCHES FOR SLOPES UP TO 50 FEET IN LENGTH WITH A SLOPE RATIO OF 3H:1V OR STEEPER. LONGER SLOPES OF 3H:1V MAY REQUIRE LARGER TUBE DIAMETER OR ADDITIONAL COURSING OF FILTER TUBES TO CREATE A FILTER BERM. REFER TO MANUFACTURER'S RECOMMENDATIONS FOR SITUATIONS WITH LONGER OR STEEPER SLOPES.
2. INSTALL TUBES ALONG CONTOURS AND PERPENDICULAR TO SHEET OR CONCENTRATED FLOW.
3. DO NOT INSTALL IN PERENNIAL, EPHEMERAL OR INTERMITTENT STREAMS.
4. CONFIGURE TUBES AROUND EXISTING SITE FEATURES TO MINIMIZE SITE DISTURBANCE AND MAXIMIZE CAPTURE AREA OF STORMWATER RUN-OFF.



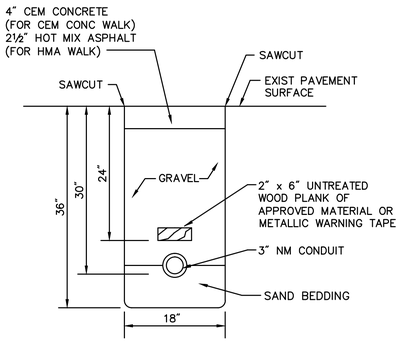
PLAN VIEW – JOIN DETAIL

604810_HD(DET).DWG Plotted on 1-Oct-2015 11:41 AM

MARLBOROUGH
ROUTE 85 (MAPLE ST)

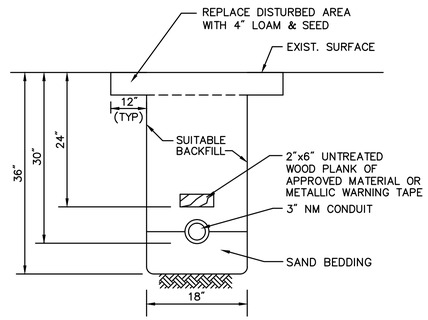
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	47	53
PROJECT FILE NO. 604810			

CONSTRUCTION DETAILS



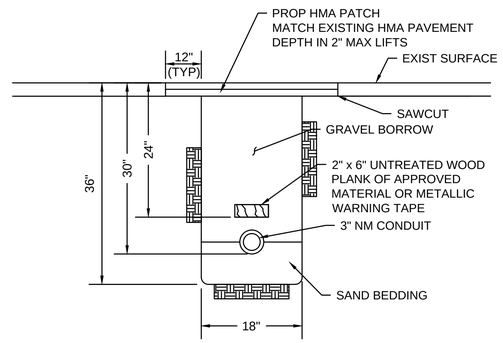
CONDUIT IN SIDEWALK

SCALE: N.T.S. DWG: TRENCH-01



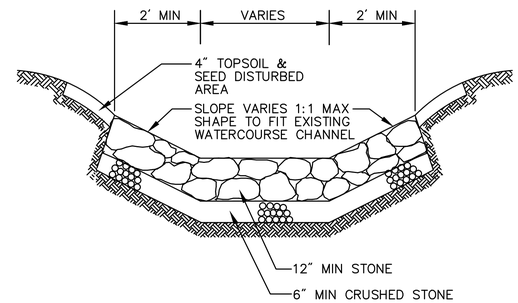
CONDUIT IN GRASS

SCALE: N.T.S. DWG: TRENCH-01



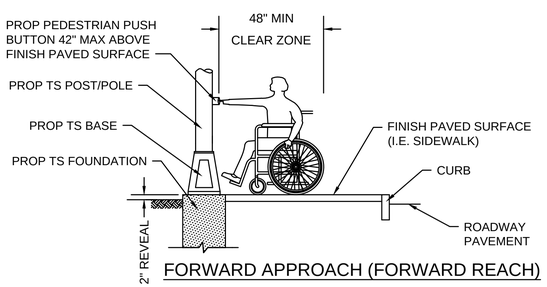
CONDUIT CROSSING ROADWAY/DRIVEWAY

SCALE: N.T.S. DWG: TRENCH-01

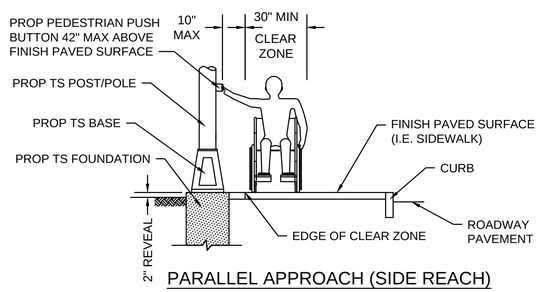


CHANNEL PAVING

SCALE: N.T.S. DWG: TRENCH-01



FORWARD APPROACH (FORWARD REACH)



PARALLEL APPROACH (SIDE REACH)

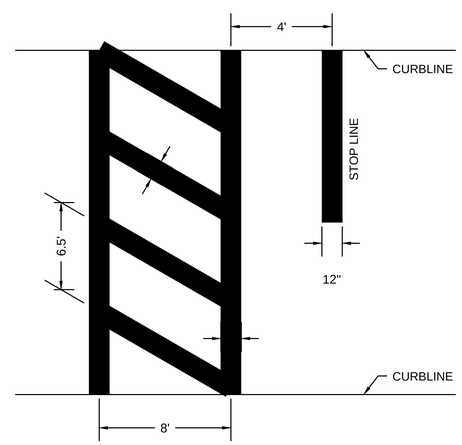
NOTE:
A CLEAR GROUND SPACE SHALL CONSIST OF A STABLE AND FIRM AREA, COMPLYING WITH 521 CMR 6.5 (FORWARD REACH) OR 521 CMR 6.6 (SIDE REACH) AND SHALL BE PROVIDED AT EACH OF THE PEDESTRIAN PUSH BUTTONS.

a) WHERE A FORWARD APPROACH IS PROVIDED, PEDESTRIAN PUSH BUTTONS SHALL ABUT AND BE CENTERED ON THE CLEAR GROUND SPACE.

b) WHERE A PARALLEL APPROACH IS PROVIDED, PEDESTRIAN PUSH BUTTONS SHALL BE WITHIN TEN INCHES (10") HORIZONTALLY OF AND CENTERED ON THE CLEAR GROUND SPACE.

PEDESTRIAN PUSH BUTTON CLEAR ZONE

SCALE: N.T.S. DWG: PM-10 DATE: APRIL 2013



NOTES:
1. ALL 12" THERMOPLASTIC LINES SHALL BE APPLIED IN ONE APPLICATION, NO COMBINATION OF LINES (TWO - 6" LINES) WILL BE ACCEPTED.
2. LAYOUT OF CROSSWALKS SHALL BE APPROVED BY A MARLBOROUGH DPW REPRESENTATIVE PRIOR TO APPLICATION OF THERMOPLASTIC.
3. 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.

STANDARD CROSSWALK WITH DIAGONAL LINES

SCALE: N.T.S. DWG: PM-07 DATE: APRIL 2013

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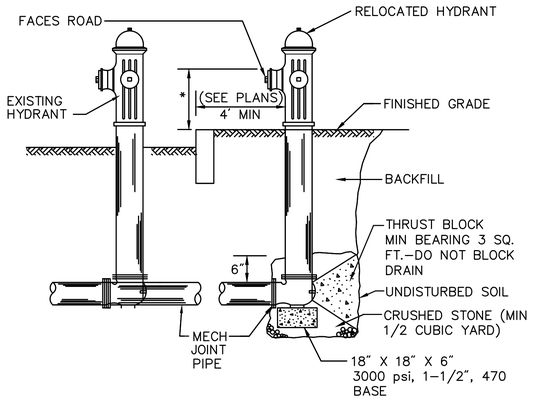
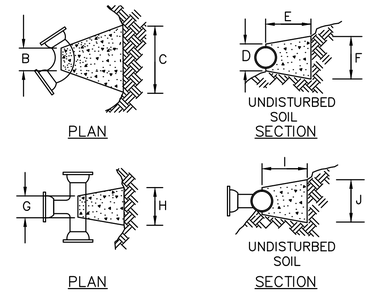


HYDRANT RELOCATION DETAIL

SCALE: N.T.S. DWG: WS-03 DATE: APRIL 2003

BENDS		B	C	D	E	F	BENDS		B	C	D	E	F
6"	11–1/4°	8"	15"	12"	24"	12"	6"	45°	8"	30"	12"	24"	14"
6"	22–1/2°	"	19"	"	"	13"	6"	90°	"	30"	"	"	27"
8"	11–1/4°	"	20"	"	"	12"	8"	45°	"	30"	"	"	24"
8"	22–1/2°	"	22"	"	"	17"	8"	90°	"	38"	"	"	36"
12"	11–1/4°	"	30"	"	"	15"	12"	45°	"	40"	"	"	40"
12"	22–1/2°	"	35"	"	"	25"	12"	90°	"	60"	"	"	52"
TEES		G	H	I	J		TEES		G	H	I	J	
6"x 6"x 6"		12"	24"	24"	18"		12"x12"x6"		12"	24"	24"	12"	
8"x 8"x 6"		"	"	"	"		12"x12"x8"		"	"	"	24"	
8"x 8"x 8"		"	"	"	24"		12"x12"x12"		"	36"	"	36"	



NOTES:
1. PROVIDE BLOCKS FOR TAPPING SLEEVES, DEAD ENDS, GATE VALVES AND VERTICAL BENDS, SAME SIZE AS REQUIRED FOR TEES.
2. PROVIDE ANCHOR RODS AT VERTICAL BENDS AND GATE VALVES
3. CONCRETE SHALL NOT BE PLACED AGAINST PIPE BEYOND FITTING.

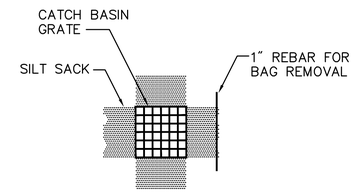
CONCRETE THRUST BLOCK

SCALE: N.T.S. DWG: WS-02 DATE: APRIL 2003

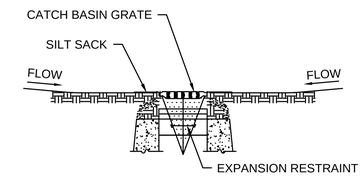
MARLBOROUGH
ROUTE 85 (MAPLE ST)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	48	53
PROJECT FILE NO. 604810			

CONSTRUCTION DETAILS



PLAN VIEW

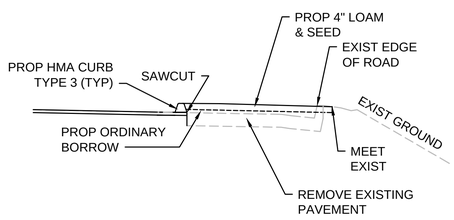


SECTION VIEW

NOTES:
1. INSTALL SILT SACK IN EXISTING CATCH BASINS, BEFORE COMMENCING WORK, AND IN NEW CATCH BASINS IMMEDIATELY AFTER INSTALLATION OF STRUCTURE. MAINTAIN UNTIL BINDER COURSE PAVING IS COMPLETE OR A PERMANENT STAND OF GRASS HAS BEEN ESTABLISHED.
2. GRATE TO BE PLACED OVER SILT SACK.
3. SILT SACK SHALL BE INSPECTED PERIODICALLY AND AFTER ALL STORM EVENTS AND CLEANING OR REPLACEMENT SHALL BE PERFORMED

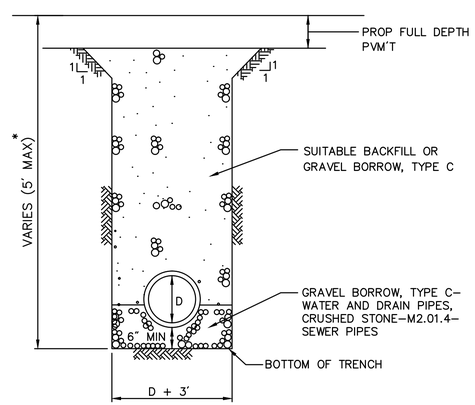
INLET PROTECTION - SILT SACK IN CATCH BASIN

SCALE: N.T.S. DWG: EV-03 DATE: MARCH 2013



REMOVAL OF EXIST ROADWAY

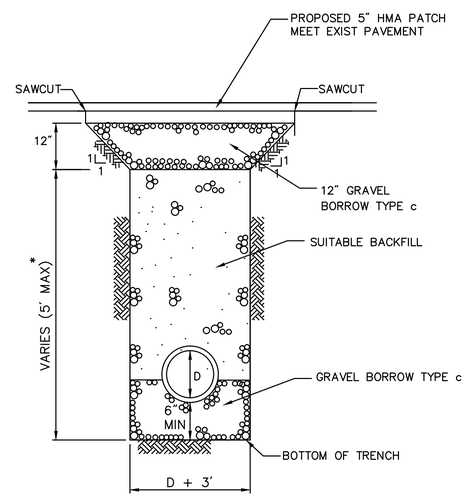
SCALE: N.T.S. DWG: PVMT-08 DATE: FEB. 2012



* TRENCHES DEEPER THAN 5 FEET REQUIRE SLOPE STABILIZATION AND/OR TRENCH BOXES

TRENCH IN FULL DEPTH/RECLAIMED PAVEMENT

SCALE: N.T.S. DWG: TRENCH-01 DATE: FEB. 2012



* TRENCHES DEEPER THAN 5 FEET REQUIRE SLOPE STABILIZATION AND/OR TRENCH BOXES

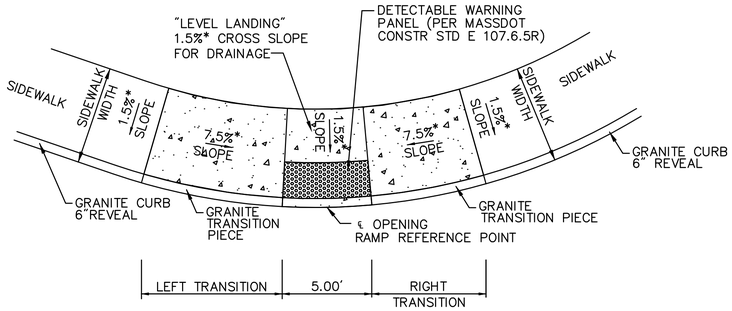
TRENCH IN MICROMILL & PAVEMENT OVERLAY

SCALE: N.T.S. DWG: TRENCH-01

604810_HD(DET).DWG Plotted on 1-Oct-2015 11:41 AM

MARLBOROUGH ROUTE 85 (MAPLE ST)			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	49	53
PROJECT FILE NO. 604810			

CONSTRUCTION DETAILS

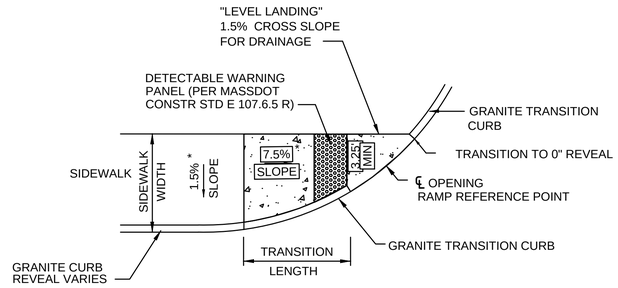


NTS

TOLERANCE FOR CONSTRUCTION ±0.5%

WHEEL CHAIR RAMP - TWO WINGS CURVED - SIDEWALK LESS THAN 6.5'

SCALE: N.T.S. DWG: DATE:



* TOLERANCE FOR CONSTRUCTION ±0.5%

WHEEL CHAIR RAMP SINGLE DIRECTION

SCALE: N.T.S. DWG: DATE:

DETECTABLE WARNING PANELS

NTS

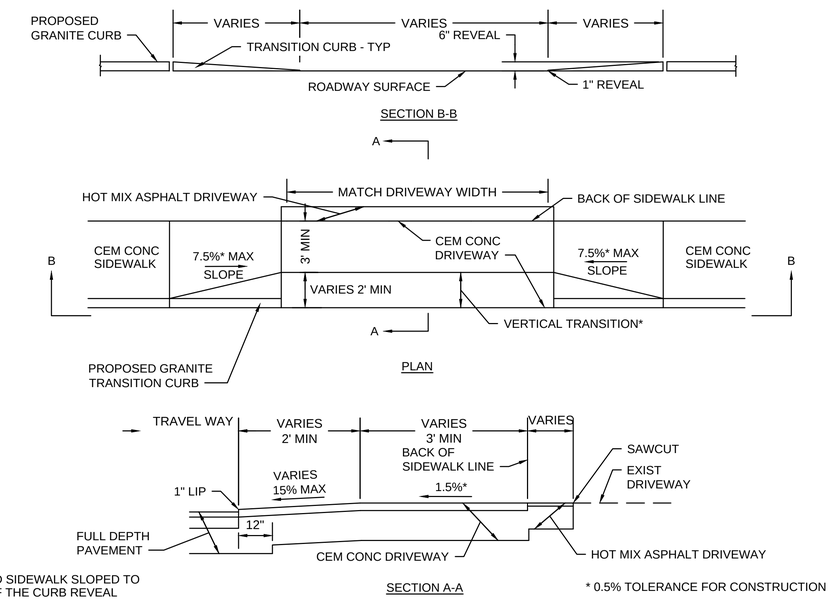
NOTES:

1. DETECTABLE WARNING PANELS ARE REQUIRED TO BE CONSTRUCTED ON ALL PROPOSED WHEELCHAIR RAMPS AND ARE TO BE INSTALLED IN ACCORDANCE WITH MASSDOT CONSTRUCTION STANDARD E 107.6.5R.
2. PANELS MAY BE CONCRETE PRECAST OR CAST IN PLACE OR OTHER SUITABLE MATERIAL PERMANENTLY APPLIED TO THE RAMP. THERE MUST BE A MINIMUM 70% CONTRAST IN LIGHT REFLECTANCE BETWEEN THE DETECTABLE WARNING AND AN ADJOINING SURFACE.
3. NO SEPARATE PAYMENT SHALL BE MADE FOR DETECTABLE WARNING PANELS, BUT ALL COSTS IN CONNECTION THERE WITH SHALL BE INCLUDED WITH ITEM 701.2.

LEGEND

LIMITS OF CEMENT CONCRETE WHEELCHAIR RAMP

LIMITS OF DETECTABLE WARNING PANEL (SEE SPECIFICATIONS FOR COLOR)

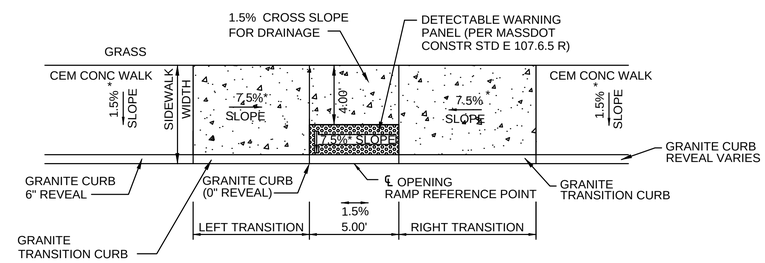


* DRIVEWAY AND SIDEWALK SLOPED TO MEET AT 1/2 OF THE CURB REVEAL

* 0.5% TOLERANCE FOR CONSTRUCTION

TYPICAL DRIVEWAY WITH SIDEWALK AND GRANITE TRANSITION CURB - TYPE I

SCALE: N.T.S.



WHEEL CHAIR RAMP - SIDEWALK LESS THAN 6.5'

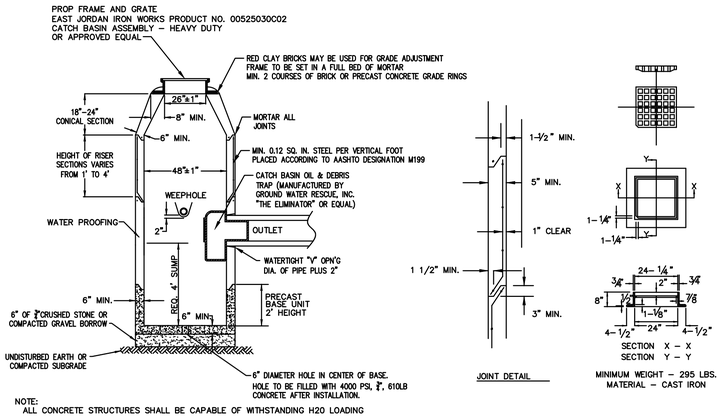
SCALE: N.T.S. DWG: DATE:

604810_HD(DET).DWG Plotted on 1-Oct-2015 11:41 AM

MARLBOROUGH
ROUTE 85 (MAPLE ST)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	50	53
PROJECT FILE NO. 604810			

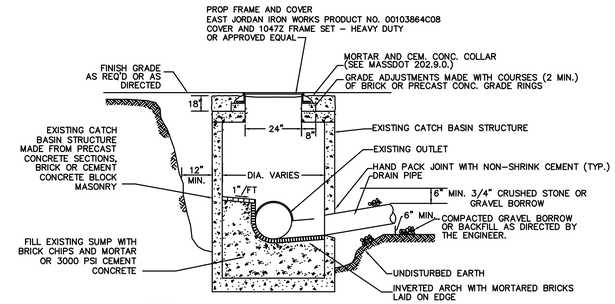
CONSTRUCTION DETAILS



NOTE:
ALL CONCRETE STRUCTURES SHALL BE CAPABLE OF WITHSTANDING H20 LOADING

PRECAST CONCRETE CATCH BASIN DETAIL – CITY STANDARD

NTS

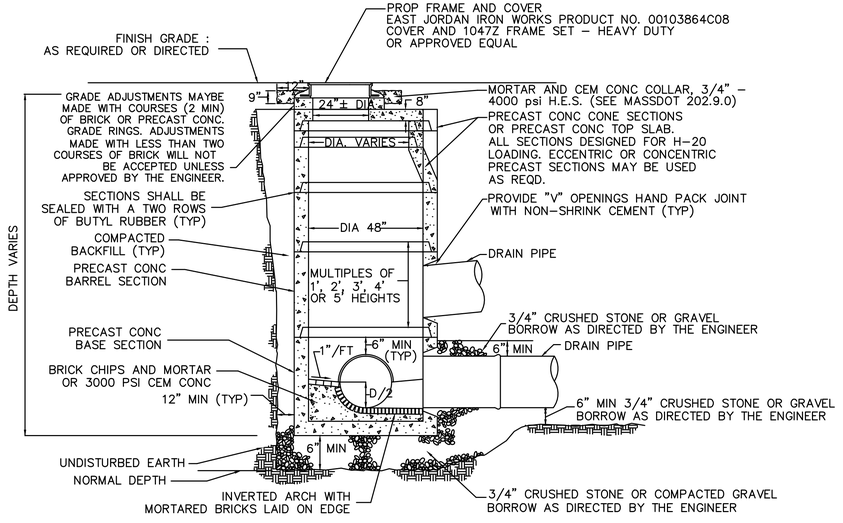


NOTES

1. DRAIN PIPE FOR LATERAL CONNECTIONS TO CATCH BASINS SHALL BE INSTALLED AND TEMPORARILY PLUGGED AS REQUIRED OR DIRECTED.
2. SEE GENERAL PLANS FOR PIPE SIZE, LINE AND GRADE.
3. BACKFILL MATERIAL SHALL CONSIST OF SUITABLE EXCAVATED MATERIAL.
4. CATCH BASIN SUMP SHALL BE CLEANED PRIOR TO CONSTRUCTING PROPOSED INVERT. INVERT CONSTRUCTION SHALL NOT BEGIN UNTIL THE SUMP IS INSPECTED AND APPROVED BY THE ENGINEER.

PROPOSED MANHOLE CONVERTED
FROM EXISTING CATCH BASIN

NTS

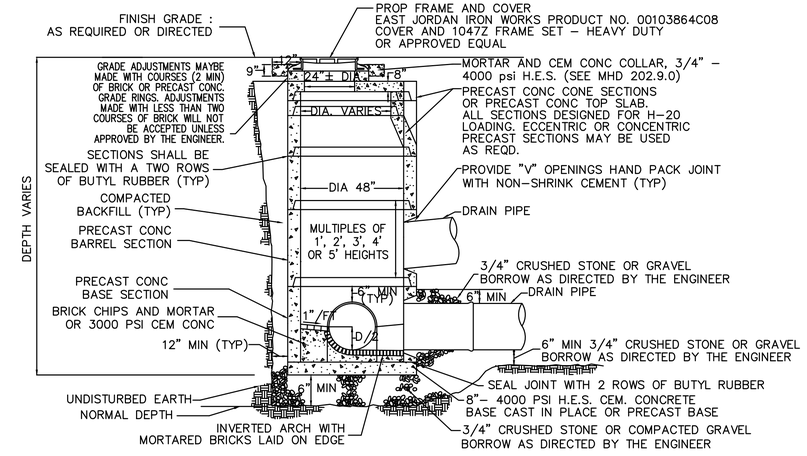


NOTES

1. MANHOLE SHALL BE PRECAST CEMENT CONCRETE MANUFACTURED IN ACCORDANCE WITH ASTM C–478 DESIGNED FOR H–20 LOADING. MANHOLES SHALL BE 48" DIA. UNLESS OTHERWISE INDICATED ON GENERAL PLANS.
2. SEE GENERAL PLANS FOR PIPE SIZE, LINE AND GRADE.
3. BACKFILL MATERIAL SHALL CONSIST OF SUITABLE EXCAVATED MATERIAL AND/OR GRAVEL BORROW AS DIRECTED BY THE ENGINEER.

PRECAST CONCRETE DRAIN MANHOLE – CITY STANDARD

NTS



NOTES

1. MANHOLE SHALL BE PRECAST CEMENT CONCRETE MANUFACTURED IN ACCORDANCE WITH ASTM C–478 DESIGNED FOR H–20 LOADING. MANHOLES SHALL BE 48" DIA. UNLESS OTHERWISE INDICATED ON GENERAL PLANS.
2. SEE GENERAL PLANS FOR PIPE SIZE, LINE AND GRADE.
3. BACKFILL MATERIAL SHALL CONSIST OF SUITABLE EXCAVATED MATERIAL AND/OR GRAVEL BORROW AS DIRECTED BY THE ENGINEER.

PRECAST CONCRETE DRAIN MANHOLE
BUILT OVER EXISTING DRAIN LINE

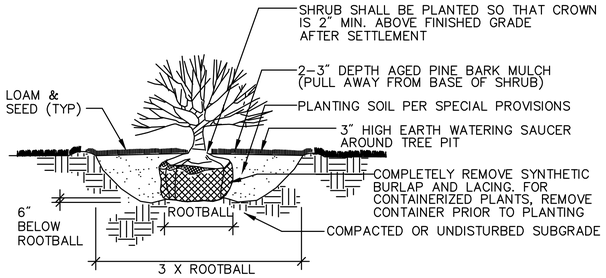
NTS

604810_HD(DET).DWG Plotted on 1-Oct-2015 11:41 AM

MARLBOROUGH
ROUTE 85 (MAPLE ST)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	51	53
PROJECT FILE NO. 604810			

CONSTRUCTION DETAILS

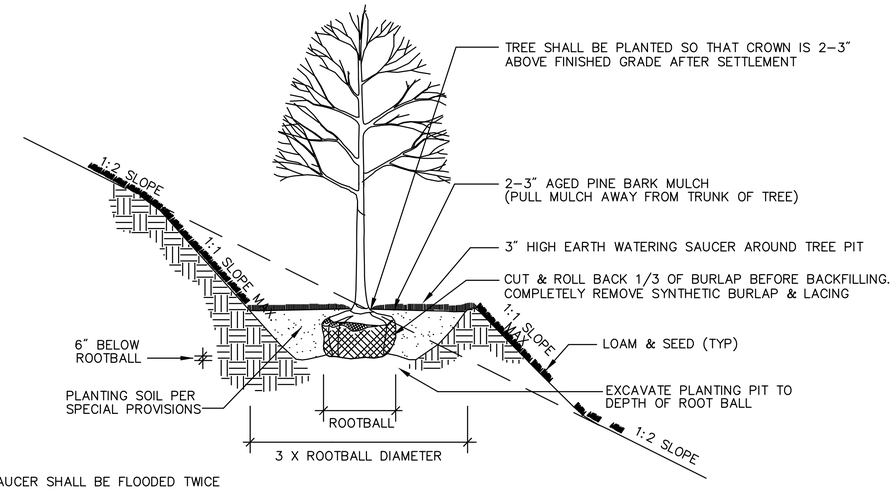


LOOSE OR CRACKED ROOTBALLS WILL NOT BE ACCEPTED FOR PLANTING

NOTES:
1. RAISE AND REPLANT ANY SHRUBS WHICH SETTLE MORE THAN 2" AFTER PLANTING & WATERING.
2. SHRUBS SHALL BE SET PLUMB
3. WATER BY FLOODING TWICE IN FIRST TWO HOURS AFTER PLANTING. WATER & MAINTAIN AS PER STANDARD SPECIFICATIONS.
4. EXCAVATE TO REQUIRED DEPTH AND BACKFILL WITH PLANTING MIX

SHRUB PLANTING IN SLOPE

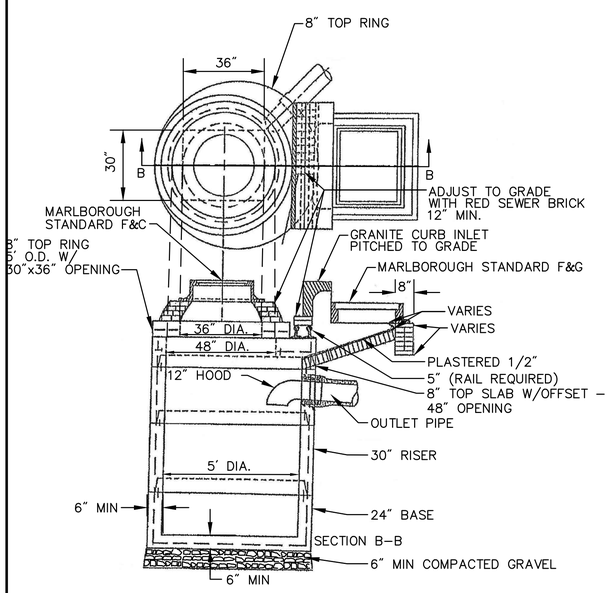
SCALE: N.T.S. DWG: DRIVE-03 DATE: JUNE 2013



NOTES:
1. WATERING SAUCER SHALL BE FLOODED TWICE DURING THE FIRST 24 HOURS AFTER PLANTING
2. DO NOT CUT LEADER
3. TREE WRAP SHALL NOT BE USED
4. TREE SHALL BE SET PLUMB
5. IN AREAS WITH PHYSICAL CONSTRAINTS ON BOTH SIDES OF PROP TREE LOCATIONS, SIDE SLOPES AND PLANTING PIT SIZE MAY VARY TO FACILITATE TREE PLANTING.

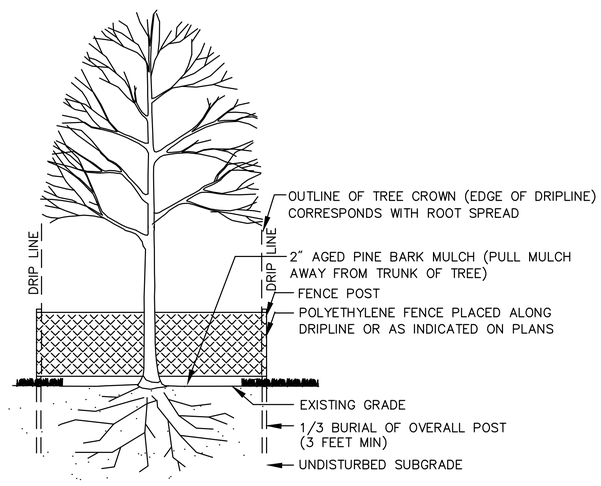
DECIDUOUS TREE PLANTING IN SLOPE

SCALE: N.T.S.



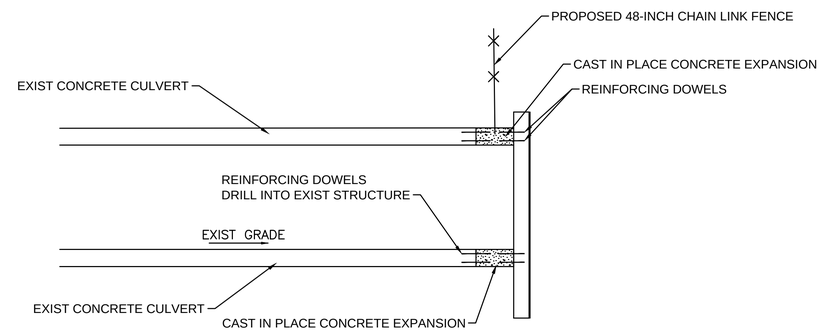
CATCH BASIN TYPE II

SCALE: N.T.S. DWG: DRIVE-03 DATE: JUNE 2013



INDIVIDUAL TREE PROTECTION

SCALE: N.T.S. DWG: LADET-02 DATE: OCTOBER 2009



SIDE VIEW

CULVERT EXPANSION

SCALE: N.T.S. DWG: DRIVE-03 DATE: JUNE 2013

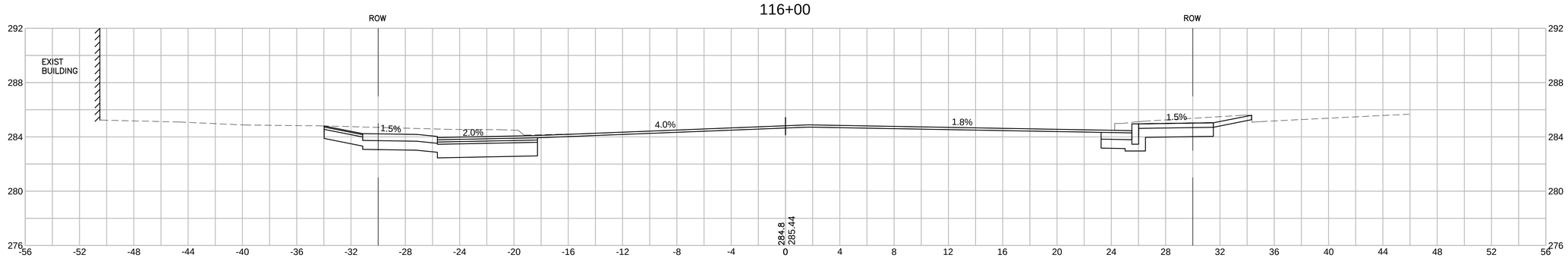
604810_HD(DET).DWG Plotted on 1-Oct-2015 11:41 AM

MARLBOROUGH
ROUTE 85 (MAPLE ST)

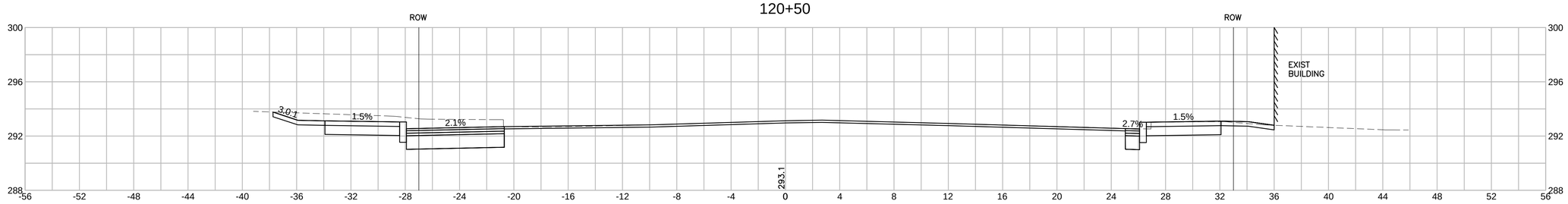
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	52	53
PROJECT FILE NO. 604810			

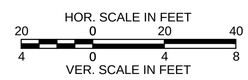
CRITICAL CROSS SECTIONS

116+00



120+50





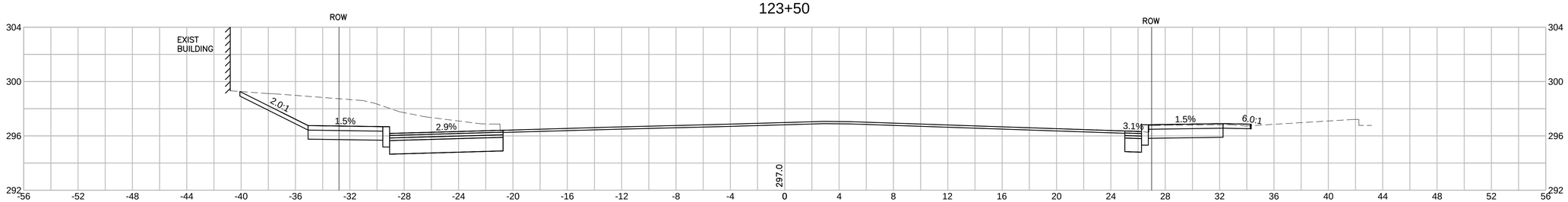
604810_HD(XSECT-CRIT).DWG Plotted on 1-Oct-2015 11:41 AM

MARLBOROUGH
ROUTE 85 (MAPLE ST)

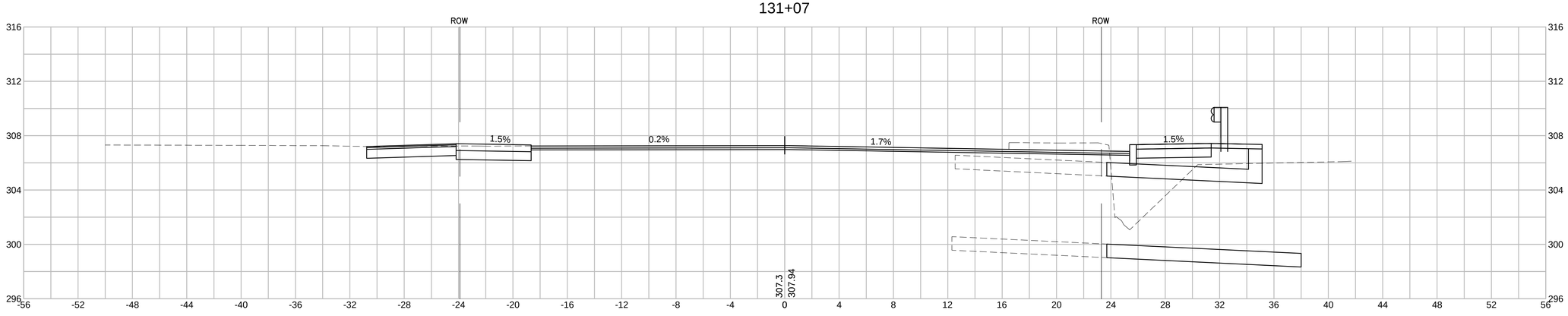
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	53	53
PROJECT FILE NO. 604810			

CRITICAL CROSS SECTIONS

123+50



131+07



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

604810_HD(XSECT-CRIT).DWG Plotted on 1-Oct-2015 11:42 AM