



ABBREVIATIONS

GENERAL	
AADT	ANNUAL AVERAGE DAILY TRAFFIC
ABAN	ABANDON
AC	ASBESTOS CEMENT
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
LDCC	LOW-DENSITY CELLULAR CONCRETE
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
PCR	PEDESTRIAN CURB RAMP
P.G.L.	PROFILE GRADE LINE
PI	POINT OF INTERSECTION
POC	POINT ON CURVE
POT	POINT ON TANGENT
PRC	POINT OF REVERSE CURVATURE
PROJ	PROJECT
PROP	PROPOSED
PSB	PLANTABLE SOIL BORROW
PT	POINT OF TANGENCY
PVC	POINT OF VERTICAL CURVATURE
PVI	POINT OF VERTICAL INTERSECTION
PVT	POINT OF VERTICAL TANGENCY
PVMT	PAVEMENT
PWW	PAVED WATER WAY

ABBREVIATIONS (cont.)

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

TRAFFIC SIGNAL

CAB.	CABINET
CCVE	CLOSED CIRCUIT VIDEO EQUIPMENT
DW	STEADY DON'T WALK
FDW	FLASHING DON'T WALK
FR	FLASHING CIRCULAR RED
FRL	FLASHING RED LEFT ARROW
FRR	FLASHING RED RIGHT ARROW
FY	FLASHING CIRCULAR 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

GENERAL SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
		JERSEY BARRIER ON BRIDGE OR JERSEY BARRIER
		CATCH BASIN
		CATCH BASIN CURB INLET
		FLAG POLE
		GAS PUMP
		MAIL BOX
		POST SQUARE
		POST CIRCULAR
		WELL
		ELECTRIC HANDHOLE
		FENCE GATE POST
		GAS GATE
		BORING HOLE
		MONITORING WELL
		TEST PIT
		HYDRANT
		LIGHT POLE
		COUNTY BOUND
		GPS POINT
		CABLE MANHOLE
		DRAINAGE MANHOLE
		ELECTRIC MANHOLE
		GAS MANHOLE
		MISC MANHOLE
		SEWER MANHOLE
		TELEPHONE MANHOLE
		WATER MANHOLE
		MASSACHUSETTS HIGHWAY BOUND
		MONUMENT
		STONE BOUND
		TOWN OR CITY BOUND
		TRAVERSE OR TRIANGULATION STATION
		TROLLEY POLE OR GUY POLE
		TRANSMISSION POLE
		UTILITY POLE W/ FIREBOX
		UTILITY POLE WITH DOUBLE LIGHT
		UTILITY POLE W / 1 LIGHT
		UTILITY POLE
		BUSH
		TREE
		STUMP
		SWAMP / MARSH
		WATER GATE
		PARKING METER
		SIGN AND POST
		SIGN AND POST (2 POSTS)
		OVERHEAD CABLE/WIRE
		CURBING
		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
		SEDIMENT CONTROL BARRIER
		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
		BRICK PAVER STRIP

PAVEMENT MARKINGS SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
		PAVEMENT ARROW - WHITE
		LEGEND "ONLY" - WHITE
		12" STOP LINE
		CROSSWALK
		4" SOLID WHITE LINE
		4" SOLID YELLOW LINE
		4" BROKEN WHITE LINE (10' LINE SEGMENT, 30' GAP)
		4" DOTTED WHITE LINE (3' LINE SEGMENT, 9' GAP)
		4" DOTTED WHITE LINE EXTENSION (2' LINE SEGMENT, 6' GAP)
		4" DOTTED YELLOW LINE EXTENSION (2' LINE SEGMENT, 6' GAP)
		4" DOUBLE YELLOW LINE

TRAFFIC SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
		CONTROLLER PHASE ACTUATED
		TRAFFIC SIGNAL HEAD (SIZE AS NOTED)
		WIRE LOOP DETECTOR (6' x 6' TYP UNLESS OTHERWISE SPECIFIED)
		360° VIDEO DETECTION CAMERA
		MICROWAVE DETECTOR
		PEDESTRIAN PUSH BUTTON, SIGN (DIRECTIONAL ARROW AS SHOWN) AND SADDLE
		EMERGENCY PREEMPTION CONFIRMATION STROBE LIGHT
		VEHICULAR SIGNAL HEAD
		VEHICULAR SIGNAL HEAD, OPTICALLY PROGRAMMED
		FLASHING BEACON
		PEDESTRIAN SIGNAL HEAD, (TYPE AS NOTED OR AS SPECIFIED)
		RAILROAD SIGNAL
		SIGNAL POST AND BASE (ALPHA-NUMERIC DESIGNATION NOTED)
		MAST ARM, SHAFT AND BASE (ARM LENGTH AS NOTED)
		HIGH MAST POLE OR TOWER
		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

PROJECT: IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET

DESIGN SUBMISSION: 85% DESIGN

DRAWING TITLE: PLAN SYMBOLS AND ABBREVIATIONS

PREPARED FOR: CITY OF FRAMINGHAM DEPARTMENT OF PUBLIC WORKS  
110 WESTERN AVENUE  
FRAMINGHAM, MA 01702

PREPARED BY: Green International Affiliates, Inc.  
100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876

SCALE: AS NOTED  
DATE: 6/4/2024  
PROJECT NO. 20034

DESIGNED BY: JL  
DRAWN BY: MPC  
CHECKED BY: HP

SHEET NO. 2 OF 89

NO.	DATE	REVISIONS
1		

**GENERAL NOTES**

1. THE WORK UNDER THIS PROJECT INCLUDES BUT IS NOT LIMITED TO PAVEMENT MICROMILLING AND RESURFACING, FULL DEPTH ROADWAY RECONSTRUCTION, SIDEWALK CONSTRUCTION, INSTALLATION OF DRAINAGE STRUCTURES AND PIPES, PLACEMENT OF PAVEMENT MARKINGS, PROTECTION OF EXISTING UTILITIES TO REMAIN, GRADING, REPLACEMENT OF TRAFFIC SIGNALS, INSTALLATION OF TRAFFIC SIGNS, AND TRAFFIC MAINTENANCE DURING CONSTRUCTION.
2. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ALL CONFLICTS BETWEEN THE EXISTING UTILITIES AND PROPOSED WORK. THE ENGINEER RESERVES THE RIGHT TO MODIFY THE DESIGN TO REALIGN PIPING AND STRUCTURE LOCATIONS AND INVERTS TO SUIT ACTUAL FIELD CONDITIONS ENCOUNTERED AT NO ADDITIONAL COST TO THE CITY.
3. ALL EXISTING STREET NAME, REGULATORY, GUIDE, AND WARNING SIGNS, INCLUDING POSTS, WITHIN THE LIMITS OF WORK ARE TO BE RETAINED UNLESS OTHERWISE NOTED.
4. THE CONTRACTOR SHALL RETAIN AND PROTECT ALL CURBS, FENCES, WALLS, TREES, SHRUBS, POSTS, LANDSCAPE FEATURES, AND OTHER MISCELLANEOUS ITEMS WITHIN ABUTTING PROPERTIES UNLESS OTHERWISE NOTED. WHEN RETAINING THOSE ITEMS IS NOT PRACTICAL IN THE OPINION OF THE ENGINEER, THE CONTRACTOR SHALL REMOVE, STOCKPILE, PROTECT AND RESET THE ITEMS. THE CONTRACTOR SHALL REPLACE ITEMS DAMAGED DURING REMOVAL, STOCKPILING, OR RESETTING DUE TO NEGLIGENCE, CARELESSNESS, OR MISHANDLING WITH EQUIVALENT NEW ITEMS AT NO COST TO THE CITY.
5. CONTRACTOR SHALL NOT PARK OR STORE CONSTRUCTION EQUIPMENT, MATERIALS OR VEHICLES UNDER THE DRIPLINE OF ANY TREE.
6. THE CONTRACTOR SHALL PROVIDE ALL SAFETY CONTROL (SIGNS, REFLECTORIZED DRUMS, ETC) FOR CONSTRUCTION OPERATIONS IN ACCORDANCE WITH THE TRAFFIC MANAGEMENT PLANS INCLUDED HEREIN AND THE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
7. ALL LANDSCAPED AREAS BETWEEN THE PROPOSED EDGE OF PAVEMENT AND SLOPE LIMITS, INCLUDING BUT NOT LIMITED TO LAWNS, BARK MULCH, PLANTING BEDS, ETC., SHALL BE REPLACED IN KIND.
8. THE CONTRACTOR SHALL INSTALL ALL EROSION CONTROL MEASURES PRIOR TO THE START OF WORK.
9. ALL UTILITIES AND THEIR APPURTENANCES SHALL BE RETAINED AND PROTECTED UNLESS OTHERWISE NOTED.
10. THE CONTRACTOR SHALL NOT WORK BEYOND THE LINES SHOWN ON THE PLANS AS PROPOSED SLOPE LIMITS, UNLESS APPROVED BY THE ENGINEER.
11. THE CONTRACTOR SHALL TRANSITION THE CURB TO MATCH THE EXISTING CONDITIONS AT THE LIMITS OF WORK WHERE NEW CURB IS PROPOSED OR EXISTING CURB IS RESET.
12. ALL CURB, CURB INLET AND CURB CORNER REMOVAL SHOULD BE INCLUDED UNDER ITEM 594.
13. SAWCUTTING OF ASPHALT PAVEMENT AND PORTLAND CEMENT CONCRETE SHALL BE INCIDENTAL TO OTHER CONTRACT ITEMS.

**SURVEY PLAN NOTES**

1. THE EXISTING CONDITIONS SHOWN ON THIS BASE MAP ARE THE RESULT OF AN ON THE GROUND INSTRUMENT SURVEY PERFORMED BETWEEN JANUARY 18, 2017 AND JUNE 22, 2017 BY GREEN INTERNATIONAL AFFILIATES, INC.
2. THIS DRAWING WAS PREPARED SOLELY FOR AND IS INTENDED FOR THE WORK ASSOCIATED WITH THIS PROJECT. THE USE OR REUSE OF THESE DRAWINGS FOR OTHER PURPOSES OR BY PARTIES NOT DIRECTLY CONTRACTED TO THIS PROJECT IS PROHIBITED WITHOUT PRIOR WRITTEN PERMISSION FROM THE CITY OF FRAMINGHAM.
3. HORIZONTAL DATUM IN MASSACHUSETTS STATE PLANE COORDINATE SYSTEM NAD83. VERTICAL DATUM IS NORTH AMERICAN VERTICAL DATUM OF 1929 (NGVD29).

**UTILITY NOTES**

1. THE CONTRACTOR IS HEREBY MADE AWARE THAT EXISTING UTILITIES, INCLUDING BUT NOT LIMITED TO EXISTING WATER, SEWER AND DRAIN PIPES; DRAINAGE AND SEWER STRUCTURES; GAS LINES, COMMUNICATION LINES AND UTILITY POLES, MAY NEED TO BE PROTECTED AND/OR SHORED UP DURING THE CONSTRUCTION OF THE PROPOSED IMPROVEMENTS UNDER THIS PROJECT. THE COST OF THE WORK REQUIRED FOR THE PROTECTION, MAINTENANCE AND SUPPORT OF THESE OR OTHER EXISTING ABOVE GROUND OR UNDERGROUND UTILITIES IN THE VICINITY OF THE PROPOSED WORK SHALL NOT BE PAID FOR SEPARATELY BUT SHALL BE CONSIDERED INCIDENTAL TO THE WORK UNDER THIS CONTRACT.
2. THIS PLAN WAS PREPARED IN CONFORMANCE WITH AMERICAN SOCIETY OF CIVIL ENGINEERS STANDARD C/ASCE 38-02 "STANDARD GUIDELINE FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA", QL"C". REFER TO UTILITY QUALITY LEVEL INFORMATION INDEX. ACCURACY OF UTILITY LOCATIONS IS NOT GUARANTEED.
3. BELOW GROUND STRUCTURES, UNLESS DIMENSIONED, ARE SYMBOLIC ONLY.
4. PRIOR TO THE START OF ANY WORK ON THE SITE, THE CONTRACTOR SHALL VERIFY THE ACTUAL LOCATION OF ALL UTILITIES, SHOWN OR NOT SHOWN ON THIS PLAN. CONTACT DIG-SAFE AT 1-888-344-7233 (1-888-DIG-SAFE) AT LEAST 72 HOURS PRIOR TO THE START OF EXCAVATION AND CONTACT THE FRAMINGHAM DEPARTMENT OF PUBLIC WORKS AT 508-532-6050 AT LEAST 48 HOURS PRIOR TO THE START OF WORK.
5. ALL SANITARY MANHOLE FRAMES AND COVERS CALLED FOR ADJUSTMENT, BUT IN THE OPINION OF THE ENGINEER ARE DAMAGED, SHALL BE REMOVED AND STACKED. THE CONTRACTOR SHALL INSTALL NEW SEWER MANHOLE FRAMES AND COVERS TO FINISHED GRADE. THE CONTRACTOR SHALL DELIVER THE STACKED FRAMES AND COVERS TO THE LOCATION DESIGNATED BY THE CITY. FRAMES AND COVERS DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPLACED WITH NEW FRAMES AND COVERS AT NO ADDITIONAL COST TO THE CITY.

**UTILITY QUALITY LEVEL INDEX**

UTILITY QUALITY LEVEL INFORMATION INDEX (SEE ASCE/CI 38-02):

**UTILITY QUALITY LEVEL A:**  
PRECISE HORIZONTAL AND VERTICAL LOCATION OF UTILITIES OBTAINED BY THE ACTUAL EXPOSURE (OR VERIFICATION OF PREVIOUSLY EXPOSED AND SURVEYED UTILITIES) AND SUBSEQUENT MEASUREMENT OF SUBSURFACE UTILITIES, USUALLY AT A SPECIFIC POINT. MINIMALLY INTRUSIVE EXCAVATION EQUIPMENT IS TYPICALLY USED TO MINIMIZE THE POTENTIAL FOR UTILITY DAMAGE. A PRECISE HORIZONTAL AND VERTICAL LOCATION, AS WELL AS OTHER UTILITY ATTRIBUTES, IS SHOWN ON PLAN DOCUMENTS. ACCURACY IS TYPICALLY SET TO 15-MM VERTICAL AND TO APPLICABLE HORIZONTAL SURVEY AND MAPPING ACCURACY AS DEFINED OR EXPECTED BY THE PROJECT OWNER. INFORMATION IS ONLY VALID WITHIN THE VISIBLE LIMITS OF THE TEST HOLE.

**UTILITY QUALITY LEVEL B:**  
INFORMATION OBTAINED THROUGH THE APPLICATION OF APPROPRIATE SURFACE GEOPHYSICAL METHODS TO DETERMINE THE EXISTENCE AND APPROXIMATE HORIZONTAL POSITION OF SUBSURFACE UTILITIES. QUALITY LEVEL B DATA SHOULD BE REPRODUCIBLE BY SURFACE GEOPHYSICS AT ANY POINT OF THEIR DEPICTION. THIS INFORMATION IS SURVEYED TO APPLICABLE TOLERANCES DEFINED BY THE PROJECT AND REDUCED ONTO PLAN DOCUMENTS.

**UTILITY QUALITY LEVEL C:**  
INFORMATION OBTAINED BY SURVEYING AND PLOTTING VISIBLE ABOVE-GROUND UTILITY FEATURES AND BY USING PROFESSIONAL JUDGMENT IN CORRELATING THIS INFORMATION TO QUALITY LEVEL D INFORMATION.

**UTILITY QUALITY LEVEL D:**  
INFORMATION DERIVED FROM EXISTING RECORDS OR ORAL RECOLLECTIONS.

**DRAINAGE NOTES**

1. ALL REINFORCED CONCRETE (RCP) PIPE SHALL BE CLASS III UNLESS OTHERWISE NOTED.
2. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ALL CONFLICTS BETWEEN THE EXISTING UTILITIES AND THE PROPOSED WORK. AT LEAST 48-HOURS NOTICE MUST BE PROVIDED. THE ENGINEER RESERVES THE RIGHT TO MODIFY THE DESIGN TO REALIGN THE PIPE AND STRUCTURE LOCATIONS AND INVERTS TO SUIT ACTUAL FIELD CONDITIONS ENCOUNTERED AT NO ADDITIONAL COST TO THE CITY.
3. ALL OFFSETS TO THE CATCH BASINS ARE TO THE CENTER BACK OF THE GRATE. THE LOCATION AND ORIENTATION OF THE BELOW GRADE STRUCTURE SHALL BE FIELD COORDINATED BY THE CONTRACTOR TO AVOID CONFLICTS WITH EXISTING UTILITIES.
4. ALL EXISTING AND PROPOSED CATCH BASINS SHALL BE PROTECTED FROM SEDIMENT INUNDATION DURING ALL CONSTRUCTION ACTIVITIES.
5. ALL EXISTING DRAIN PIPES UNDER THE PROPOSED ROAD OR SIDEWALK SHALL BE RETAINED UNLESS OTHERWISE NOTED. IF THE EXISTING PIPE IS TO BE REMOVED OR ABANDONED AND IT EXTENDS OUTSIDE THE PROPOSED ROADWAY OR SIDEWALK LIMIT IT SHALL BE CUT AND CAPPED AT THE RESPECTIVE LIMIT AT NO ADDITIONAL COST. REMOVAL AND DISPOSAL OF THESE PIPES ARE INCIDENTAL TO THE DRAINAGE ITEMS.
6. ALL PROPOSED CATCH BASINS SHALL BE DEEP SUMP CATCH BASINS WITH HOOD.
7. DRAINAGE ELEVATIONS ARE PROVIDED FOR DESIGN PURPOSES ONLY. THE CONTRACTOR SHALL VERIFY BY TEST PIT, THE LOCATIONS OF EXISTING UTILITIES WHICH MAY CONFLICT WITH THE PROPOSED DRAINAGE DESIGN. FIELD ADJUSTMENTS WILL BE MADE AS APPROVED OR AS REQUIRED BY THE ENGINEER. ONLY AFTER THE CONTRACTOR VERIFIES ELEVATIONS FOR CONSTRUCTABILITY OF THE DRAINAGE SYSTEM SHALL ANY STRUCTURES BE ORDERED. ANY FIELD ADJUSTMENTS TO DRAIN LINE UP TO A DEPTH OF 5 FEET SHALL BE INCLUDED IN THE COST OF THE PIPE.
8. ALL SINGLE GRATE CATCH BASINS AND DRAIN MANHOLE STRUCTURES ARE ECCENTRIC, UNLESS OTHERWISE NOTED.
9. USE FLAT TOP SLAB MANHOLE AND CATCH BASIN WHERE NEEDED.
10. ALL EXISTING NON-BICYCLE GRATES SHALL BE REPLACED WITH BICYCLE SAFE GRATES.
11. ABANDONED PIPES GREATER THAN 6 INCHES IN DIAMETER SHALL BE FILLED WITH LDCC.
12. THE CONTRACTOR SHALL MAINTAIN DRAINAGE WITHIN CLOSED SYSTEM DURING NON-WORK HOURS SINCE SOME OF THE DRAINAGE IS BEING REPLACED IN THE SAME LOCATION AS THE EXISTING PIPE.

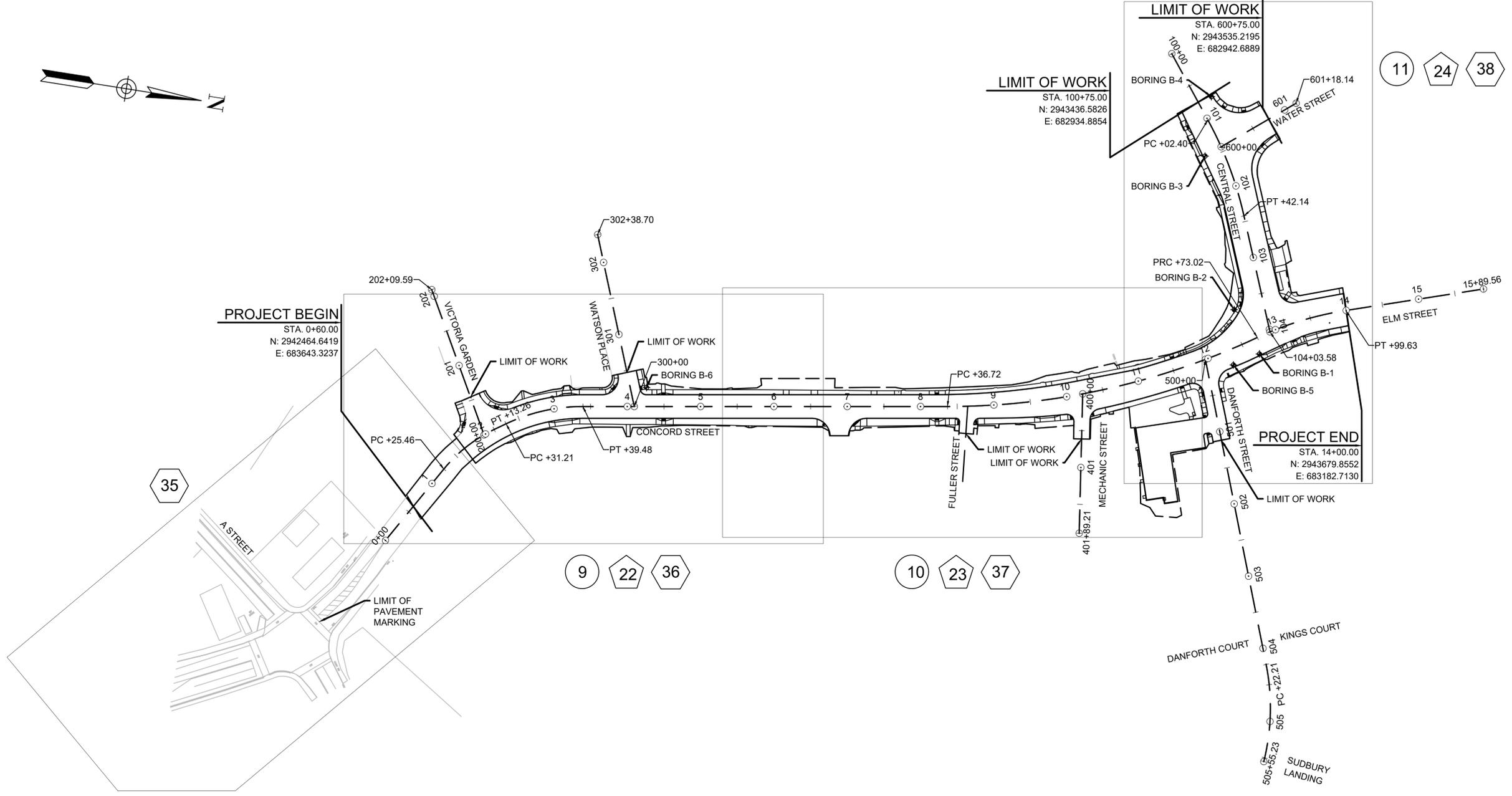
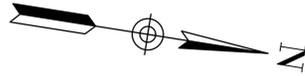
**ASBESTOS AND WASTE MANAGEMENT PROTOCOLS**

1. THE HANDLING OF ALL ASBESTOS AND WASTE MATERIALS SHALL BE IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL REQUIREMENTS AND INDUSTRY BEST PRACTICES. THE CITY HAS DEVELOPED AN ASBESTOS STANDARD OPERATING PROCEDURE FOR ASBESTOS CEMENT PIPE THAT HAS BEEN APPROVED BY THE COMMONWEALTH OF MASSACHUSETTS.
2. THE CONTRACTOR SHALL FOLLOW THE ASBESTOS AND WASTE MANAGEMENT GUIDANCE THAT IS INCLUDED IN THE CONTRACT DOCUMENTS.

PROJECT: IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET		
DESIGN SUBMISSION: 85% DESIGN		
DRAWING TITLE: GENERAL NOTES		
PREPARED FOR: CITY OF FRAMINGHAM DEPARTMENT OF PUBLIC WORKS 110 WESTERN AVENUE FRAMINGHAM, MA 01702		
PREPARED BY:  Green International Affiliates, Inc. 100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876		
SCALE: AS NOTED	DESIGNED BY: JL	SHEET NO. 3 OF 89
DATE: 6/4/2024	DRAWN BY: MPC	
PROJECT NO. 20034	CHECKED BY: HP	

NO.	DATE	REVISIONS
1		

C:\Bentley\Engineering\Projects\2024\20034\20034.dwg - General Notes - Job Project: 6/17/2024 4:48 AM



- LEGEND**
- (X) CONSTRUCTION PLANS
  - (X) DRAINAGE & UTILITY PLANS
  - (X) SIGN & STRIPING PLANS

11 24 38

9 22 36

10 23 37

PROJECT: IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET

DESIGN SUBMISSION: 85% DESIGN

DRAWING TITLE: KEY PLAN

PREPARED FOR:  
 CITY OF FRAMINGHAM  
 DEPARTMENT OF PUBLIC WORKS  
 110 WESTERN AVENUE  
 FRAMINGHAM, MA 01702

PREPARED BY:  
 **Green International Affiliates, Inc.**  
 100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876

SCALE: AS NOTED	DESIGNED BY: JL	SHEET NO. <b>4</b> OF <b>89</b>
DATE: 6/4/2024	DRAWN BY: MPC	
PROJECT NO. 20034	CHECKED BY: HP	

NO.	DATE	REVISIONS

V:\land\Engineering\Projects\20034\050524\Key Plan.dwg P:\user\jlp\dwg\07172024 8:48 AM

<b>Northern Drill Service, Inc.</b>				Client: Green International Affiliates, Inc.		Boring #	
130 East Main Street, Northborough, MA 01532				Project: CENTRAL ST MAST ARMS		B-1	
TEL 508-393-6900 FAX 508-393-6901				Location: CENTRAL ST, FRAMINGHAM, MA		Page 1 OF 1	
File #:				CASING	SAMPLER	CORE BARREL	
Date Started: 5/18/2021				TYPE	HW	S/S	
Date Completed: 5/18/2021				SIZE	4"	2"	
Driller: JUSTIN STEVENS				HAMMER		140	
Site Rep.:				FALL		30"	
				Ground Water level:		8'	
<b>SAMPLE</b>					<b>Strata</b>		
<b>No.</b>	<b>Depth</b>	<b>Pen. In.</b>	<b>Rec. In.</b>	<b>Blows/6"</b>	<b>Change</b>	<b>SAMPLE DESCRIPTION</b>	
S-1	5' - 2.5'	24"	10"	10-12-8-7		S-1: Medium dense brown coarse sand, some medium to coarse gravel, trace fine sand.	
S-2	4' - 6'	24"	9"	8-7-6-6		S-2: Medium dense, tan coarse sand, little medium gravel, trace fine sand.	
S-3	9' - 11'	24"	13"	6-13-30-26		S-3: Dense, brown coarse sand, some medium to coarse gravel trace fine sand.	
S-4	14' - 16'	24"	11"	22-14-21-22		S-4: Dense, gray fine sand, some medium to coarse gravel. Some coarse sand, trace silt. -glacial till-	
S-5	19' - 21'	24"	10"	23-20-21-18		S-5: Dense, gray fine sand, some medium to coarse gravel, trace fine gravel, trace silt. -glacial till-	
S-6	23' - 25'	17"	11"	26-38-100/5"		S-6: Very dense, gray, fine sand, some silt, some medium to coarse gravel. -glacial till-	
				Bottom of Exploration =		25'	
				Asphalt=		6"	

Cohesionless Density Blows/ft: 0-10 Loose 10-30 Medium-Dense 30-50 Dense 50+ Very Dense

<b>Northern Drill Service, Inc.</b>				Client: Green International Affiliates, Inc.		Boring #	
130 East Main Street, Northborough, MA 01532				Project: CENTRAL ST MAST ARMS		B-2	
TEL 508-393-6900 FAX 508-393-6901				Location: CENTRAL ST, FRAMINGHAM, MA		Page 1 OF 1	
File #:				CASING	SAMPLER	CORE BARREL	
Date Started: 5/19/2021				TYPE	HW	S/S	
Date Completed: 5/19/2021				SIZE	4"	2"	
Driller: JUSTIN STEVENS				HAMMER		140	
Site Rep.:				FALL		30"	
				Ground Water level:		14'	
<b>SAMPLE</b>					<b>Strata</b>		
<b>No.</b>	<b>Depth</b>	<b>Pen. In.</b>	<b>Rec. In.</b>	<b>Blows/6"</b>	<b>Change</b>	<b>SAMPLE DESCRIPTION</b>	
S-1	5' - 2.5'	24"	8"	10-7-5-6		S-1: Medium dense fine sand, some coarse sand, some medium to coarse gravel.	
S-2	4' - 6'	24"	15"	18-22-24-22	Boulder	S-2: Dense tan coarse sand and small to medium gravel, trace fine sand. 7' encountered large boulder 7'-8.5'	
S-3	9' - 11'	24"	13"	27-43-48-37		S-3: Very dense medium to coarse gravel, some coarse sand, trace fine sand, trace silt.	
S-4	14' - 16'	24"	9"	17-25-21-15		S-4: Dense, gray fine and coarse sand some medium to coarse gravel, trace silt.	
S-5	19' - 21'	24"	14"	16-19-26-24		S-5: Dense, gray fine sand, some medium to coarse gravel, trace silt. Glacial Till-	
S-6	23' - 25'	24"	9"	33-30-38-25		S-6: Very Dense, gray coarse sand and some medium to coarse gravel, some fine sand, trace silt. glacial till-	
				Bottom of Exploration =		25"	
				Concrete Sidewalk =		4"	

Cohesionless Density Blows/ft: 0-10 Loose 10-30 Medium-Dense 30-50 Dense 50+ Very Dense

PROJECT: IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET

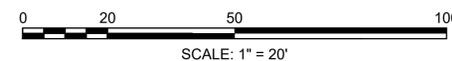
DESIGN SUBMISSION: 85% DESIGN

DRAWING TITLE: BORING LOG 1

PREPARED FOR:  
 CITY OF FRAMINGHAM  
 DEPARTMENT OF PUBLIC WORKS  
 110 WESTERN AVENUE  
 FRAMINGHAM, MA 01702

PREPARED BY:  
 **Green International Affiliates, Inc.**  
 100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876

SCALE: AS NOTED	DESIGNED BY: JL	SHEET NO. <b>5 OF 89</b>
DATE: 6/4/2024	DRAWN BY: CW	
PROJECT NO. 20034	CHECKED BY: JM	



NO.	DATE	REVISIONS

<b>Northern Drill Service, Inc.</b>				Client: Green International Affiliates, Inc.		Boring #	
130 East Main Street, Northborough, MA 01532				Project: CENTRAL ST MAST ARMS		B-3	
TEL 508-393-6900 FAX 508-393-6901				Location: CENTRAL ST, FRAMINGHAM, MA		Page 1 OF 1	
File #:				CASING	SAMPLER	CORE BARREL	
Date Started: 5/17/2021				TYPE	HW	S/S	
Date Completed: 5/17/2021				SIZE	4"	2"	
Driller: JUSTIN STEVENS				HAMMER		140	
Site Rep.:				FALL		30"	
Ground Water level:				3'			
SAMPLE				Blows/6"	Strata Change	SAMPLE DESCRIPTION	
No.	Depth	Pen. In.	Rec. In.				
S-1	5' - 2.5'	24"	13"	10-7-6-11		S-1: Medium Dense, gray fine sand, some medium to coarse gravel, some coarse sand, trace silt.	
S-2	4' - 6'	24"	18"	10-12-14-13		S-2: Medium dense gray fine sand, some medium to coarse gravel, trace silt. - glacial till -	
S-3	9' - 11'	24"	5"	15-22-34-23		S-3: Very dense gray fine sand, some coarse sand, some medium to coarse gravel, trace silt. - glacial till -	
S-4	14' - 16'	24"	15"	46-42-44-33		S-4: Very dense gray fine sand, some medium gravel, some silt. Glacial till-	
S-5	19' - 19.7'	9"	7"	32-100/3"		S-5: Very dense gray fine sand, some medium gravel, some silt.	
				Drilled 2' into rock 19.7'-21.9'			
				Bottom of Exploration = 21.9'			
				Asphalt= 6"			

Cohesionless Density Blows/ft: 0-10 Loose 10-30 Medium-Dense 30-50 Dense 50+ Very Dense

<b>Northern Drill Service, Inc.</b>				Client: Green International Affiliates, Inc.		Boring #	
130 East Main Street, Northborough, MA 01532				Project: CENTRAL ST MAST ARMS		B-4	
TEL 508-393-6900 FAX 508-393-6901				Location: CENTRAL ST, FRAMINGHAM, MA		Page 1 OF 1	
File #:				CASING	SAMPLER	CORE BARREL	
Date Started: 5/17/2021				TYPE	HW	S/S	
Date Completed: 5/17/2021				SIZE	4"	2"	
Driller: JUSTIN STEVENS				HAMMER		140	
Site Rep.:				FALL		30"	
Ground Water level:				4'			
SAMPLE				Blows/6"	Strata Change	SAMPLE DESCRIPTION	
No.	Depth	Pen. In.	Rec. In.				
S-1	5' - 2.5'	24"	10"	11-18-26-31		S-1: Dense tan coarse sand, some medium to coarse gravel, trace fine sand.	
S-2	4' - 6'	24"	4"	9-10-6-1		S-2: Medium dense black coarse and fine sand, some medium to coarse gravel, trace silt.	
S-3	9' - 9.8'	10"	6"	23-100/4"		S-3: Very dense gray, coarse sand, some fine sand, some medium gravel, some silt. - glacial till -	
				10'			
				Encountered rock at 10', drilled 2' into rock. Terminated boring at 12'.			
				Bottom of Exploration = 12'			
				Asphalt= 7"			

Cohesionless Density Blows/ft: 0-10 Loose 10-30 Medium-Dense 30-50 Dense 50+ Very Dense

PROJECT: IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET

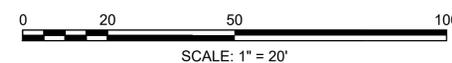
DESIGN SUBMISSION: 85% DESIGN

DRAWING TITLE: BORING LOG 2

PREPARED FOR:  
 CITY OF FRAMINGHAM  
 DEPARTMENT OF PUBLIC WORKS  
 110 WESTERN AVENUE  
 FRAMINGHAM, MA 01702

PREPARED BY:  
 **Green International Affiliates, Inc.**  
 100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876

SCALE: AS NOTED	DESIGNED BY: JL	SHEET NO. <b>6 OF 89</b>
DATE: 6/4/2024	DRAWN BY: CW	
PROJECT NO. 20034	CHECKED BY: JM	



NO.	DATE	REVISIONS

<b>Northern Drill Service, Inc.</b>				Client: Green International Affiliates, Inc.		Boring #	
130 East Main Street, Northborough, MA 01532				Project: CENTRAL ST MAST ARMS		B-5	
TEL 508-393-6900 FAX 508-393-6901				Location: CENTRAL ST, FRAMINGHAM, MA		Page 1 OF 1	
File #:				CASING	SAMPLER	CORE BARREL	
Date Started: 5/18/2021				TYPE	HW	S/S	_____
Date Completed: 5/18/2021				SIZE	4"	2"	_____
Driller: JUSTIN STEVENS				HAMMER	_____	140	_____
Site Rep.:				FALL	_____	30"	_____
				Ground Water level:		10'	
SAMPLE				Blows/6"	Strata Change	SAMPLE DESCRIPTION	
No.	Depth	Pen. In.	Rec. In.				
S-1	5' - 2.5'	24"	12"	15-11-9-6		S-1: Medium dense, brown coarse sand some fine sand, some small to medium gravel.	
S-2	4' - 6'	24"	10"	4-5-7-11		S-2: Medium dense tan coarse sand, some medium to coarse gravel, trace fine sand.	
S-3	9' - 11'	24"	11"	32-36-31-18		S-3: Very dense gray coarse gravel and coarse sand, some fine sand, trace silt.	
S-4	14' - 16'	24"	16"	16-12-7-5		S-4: Medium dense gray fine silty sand, some small to medium gravel, little coarse sand.	
S-5	19' - 21'	24"	14"	23-28-31-25		S-5: Very dense, gray fine silty sand, some medium coarse gravel, trace coarse sand.	
S-6	23' - 25'	24"	12"	26-29-30-51		S-6: Very dense, gray fine silty sand, some small coarse gravel, little coarse sand. - glacial till -	
				Bottom of Exploration = 25'			
				ASPHALT= 6"			

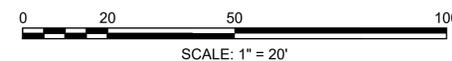
Cohesionless Density Blows/ft: 0-10 Loose 10-30 Medium-Dense 30-50 Dense 50+ Very Dense

<b>Northern Drill Service, Inc.</b>				Client: Green International Affiliates, Inc.		Boring #	
33 Talbot Rd, Northborough, MA 01532				Project: Framingham Traffic Signal		B-6	
TEL 508-393-6900 FAX 508-393-6901				Location: Watson Place @ Concord St, Framingham, MA		Page 1 OF 1	
File #:				CASING	SAMPLER	CORE BARREL	
Date Started: 5/15/2024				TYPE	HW	S/S	NX
Date Completed: 5/15/2024				SIZE	4"	2"	_____
Driller: Zachary Nader				HAMMER	_____	140	_____
Site Rep.: N/A				FALL	_____	30"	_____
Northing: 2942753.6799				Elevation:		130.32	
Easting: 683434.5899				Ground Water level:		12'	
SAMPLE				Blows/6"	Strata Change	SAMPLE DESCRIPTION	
No.	Depth	Pen. In.	Rec. In.				
S-1	0-2'			VACTOR		S-1: Brown, fine sand, trace fine gravel.	
S-2	2'-4'			VACTOR		S-2: Tan, fine sand and fine to medium gravel, some coarse sand.	
S-3	5'-7'	24"	18"	2-3-3-3		S-3: Loose, tan, fine, silty sand, trace coarse sand.	
S-4	9'-11'	24"	12"	3-4-2-3		S-4: Loose, wet, tan, fine silty sand, trace coarse sand.	
S-5	14'-16'	24"	12"	7-8-7-9		S-5: Medium dense, wet, gray, fine silty sand.	
S-6	19'-21'	24"	16"	4-3-2-4		S-6: Loose, wet, tan, fine silty sand.	
S-7	24'-26'	24"	18"	5-6-5-9		S-7: Medium dense, wet, tan, fine sand.	
				Bottom of Exploration= 26'			

Cohesionless Density Blows/ft: 0-10 Loose 10-30 Medium-Dense 30-50 Dense 50+ Very Dense

PROJECT: IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET	
DESIGN SUBMISSION: 85% DESIGN	
DRAWING TITLE: BORING LOG 3	
PREPARED FOR: CITY OF FRAMINGHAM DEPARTMENT OF PUBLIC WORKS 110 WESTERN AVENUE FRAMINGHAM, MA 01702	

PREPARED BY:  Green International Affiliates, Inc. 100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876	
SCALE: AS NOTED	DESIGNED BY: JL
DATE: 6/4/2024	DRAWN BY: CW
PROJECT NO. 20034	CHECKED BY: JM
SHEET NO. 7 OF 89	



NO.	DATE	REVISIONS

# PAVEMENT NOTES

**PROPOSED FULL DEPTH PAVEMENT**

TOP COURSE: 3" SUPERPAVE SURFACE COURSE - 12.5 (SSC-12.5)  
 PLACED IN TWO EQUAL COURSES OVER ASPHALT EMULSION FOR TACK COAT (RS-1)

INTERMEDIATE COURSE: 5" SUPERPAVE INTERMEDIATE COURSE 19.0 (SIC-19.0)  
 PLACED IN TWO EQUAL COURSES OVER ASPHALT EMULSION FOR TACK COAT (RS-1)

SUBBASE: 12" GRAVEL BORROW, TYPE B

**PROPOSED HMA DRIVEWAY AND PARKING LOT**

SURFACE: 1.5" SUPERPAVE SURFACE COURSE - 9.5 (SSC-9.5) OVER  
 2.5" SUPERPAVE SURFACE COURSE - 12.5 (SSC-12.5)

SUBBASE: 8" GRAVEL BORROW, TYPE B

**PROPOSED HMA WALKWAYS**

SURFACE: 1.25" SUPERPAVE SURFACE COURSE - 12.5 (SSC-12.5) OVER  
 1.75" SUPERPAVE SURFACE COURSE - 12.5 (SSC-12.5)

SUBBASE: 8" GRAVEL BORROW, TYPE B

**PROPOSED CEMENT CONCRETE SIDEWALK/WHEELCHAIR RAMP**

SURFACE: 4" CEMENT CONCRETE SIDEWALK OR 6" CEMENT CONCRETE PEDESTRIAN  
 CURB RAMP OVER

SUBBASE: 8" GRAVEL BORROW, TYPE B

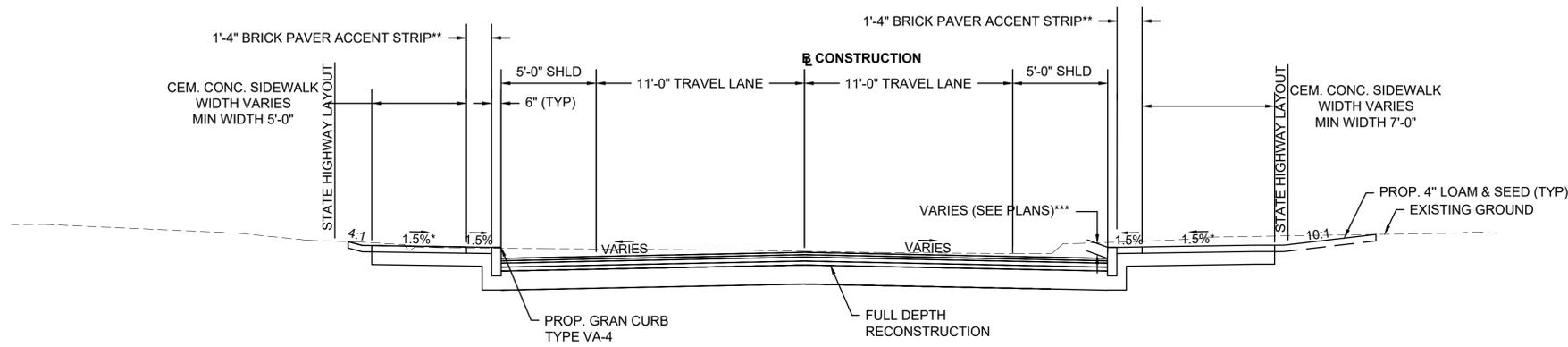
**PROPOSED PAVEMENT MICROMILLING & RESURFACING**

MILLING: 1.5" PAVEMENT MICROMILLING

SURFACE: 1.5" SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5)  
 OVER ASPHALT EMULSION FOR TACK COAT (RS-1)

**NOTE**

TACK COAT SHALL BE APPLIED BETWEEN PAVEMENT LAYERS AT A RATE OF  
 0.06 TO 0.08 GALLONS PER SQUARE YARD AND ON MILLED SURFACES AT A  
 RATE OF 0.07 TO 0.09 GALLONS PER SQUARE YARD.



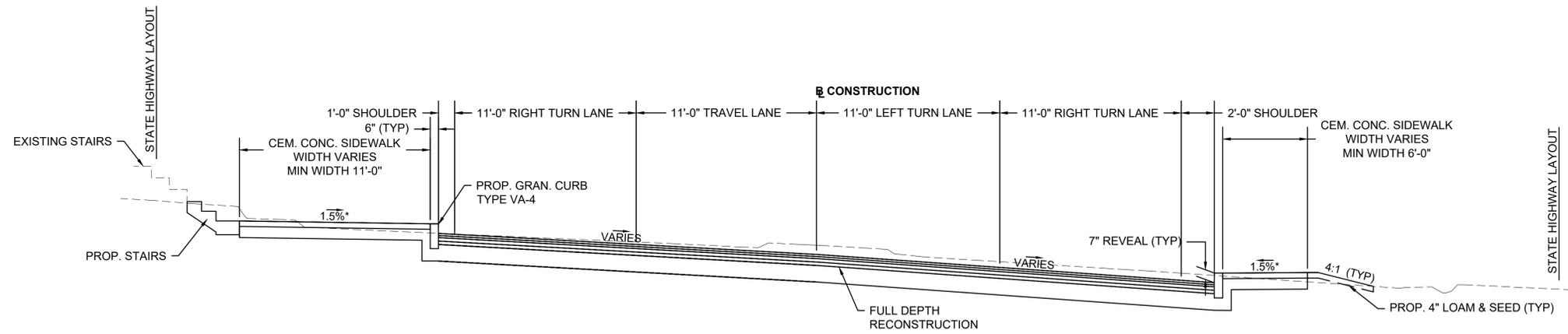
**CONCORD/ELM STREET**

SCALE: 1"=4'  
 STA: 1+65 - 14+00

\*TOLERANCE FOR CONSTRUCTION = +/-0.5%

\*\*BRICK PAVER ACCENT STRIP STA. 1+88 - 2+89 RT,  
 STA. 2+41 - 3+06 LT, STA. 3+35 - 4+39 RT, STA. 3+35 - 3+71 LT,  
 STA. 4+34 - 4+40 LT, STA. 4+62 - 6+13 LT, STA. 4+62 - 6+59 RT,  
 STA. 7+27 - 8+12 RT, STA. 8+86 - 9+53 RT, STA. 9+87 - 9+97 RT,  
 STA. 10+48 - 11+48 RT, STA. 13+41 - 13+95 LT

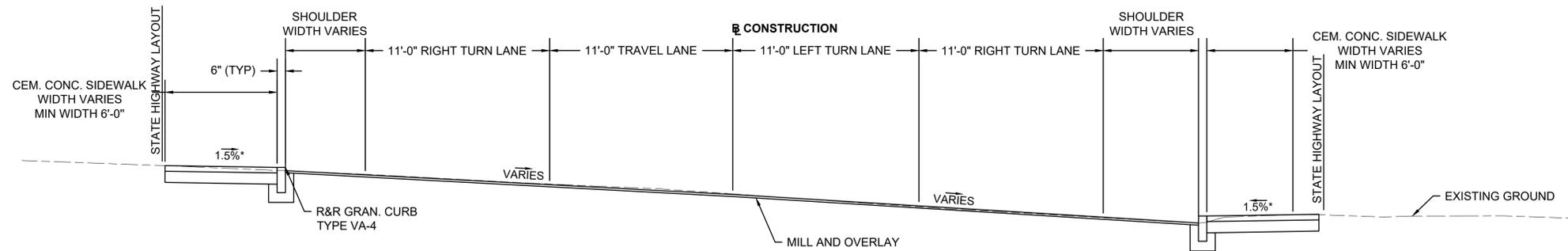
\*\*\*CURB REVEAL TO BE 7" EXCEPT AS NOTED ON PLANS.



**CENTRAL STREET**

SCALE: 1"=4'  
 STA: 103+70 - 104+00

\*TOLERANCE FOR CONSTRUCTION = +/-0.5%



**CENTRAL STREET**

SCALE: 1"=4'  
 STA: 100+75 - 103+70

\*TOLERANCE FOR CONSTRUCTION = +/-0.5%

NO.	DATE	REVISIONS
1		

PROJECT: IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET

DESIGN SUBMISSION: 85% DESIGN

DRAWING TITLE: TYPICAL SECTIONS

PREPARED FOR: CITY OF FRAMINGHAM DEPARTMENT OF PUBLIC WORKS  
 110 WESTERN AVENUE  
 FRAMINGHAM, MA 01702

PREPARED BY: **Green International Affiliates, Inc.**  
 100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876

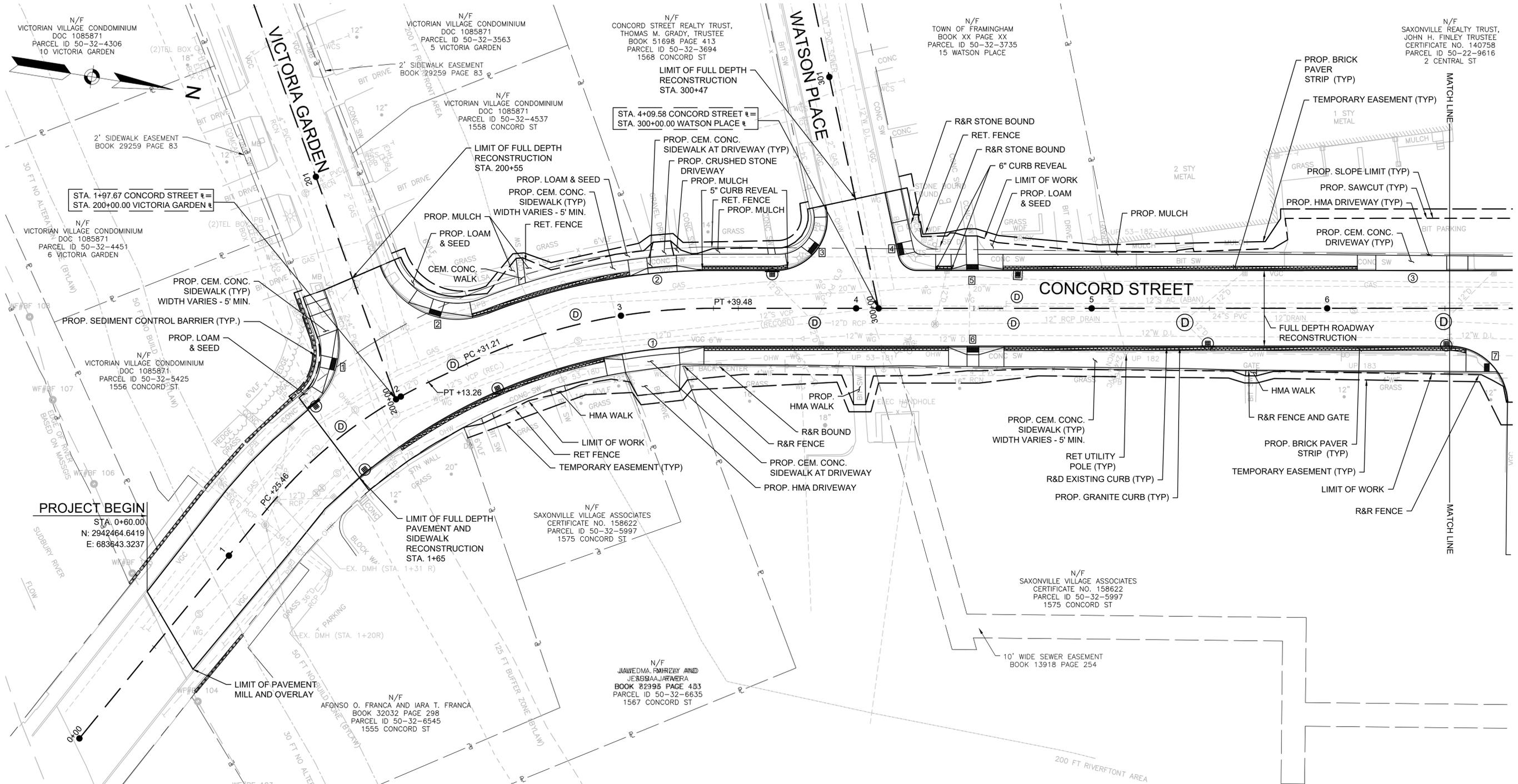
SCALE: AS NOTED      DESIGNED BY: JL

DATE: 6/4/2024      DRAWN BY: MPC

PROJECT NO. 20034      CHECKED BY: HP

SHEET NO. 8 OF 89

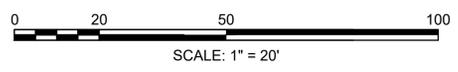
W:\Road\Engineering\Projects\2024\06\04\10034\10034\_Typical Sections.dwg Printed: 6/11/2024 8:49 AM



**PROJECT BEGIN**  
 STA. 0+60.00  
 N: 2942464.6419  
 E: 683643.3237

STA. 4+09.58 CONCORD STREET =  
 STA. 300+00.00 WATSON PLACE =

STA. 1+97.67 CONCORD STREET =  
 STA. 200+00.00 VICTORIA GARDEN =



CONTINUED ON SHEET NO. 10

PROJECT: **IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET**

DESIGN SUBMISSION: **85% DESIGN**

DRAWING TITLE: **CONSTRUCTION PLAN 1**

PREPARED FOR:  
 **CITY OF FRAMINGHAM**  
 DEPARTMENT OF PUBLIC WORKS  
 110 WESTERN AVENUE  
 FRAMINGHAM, MA 01702

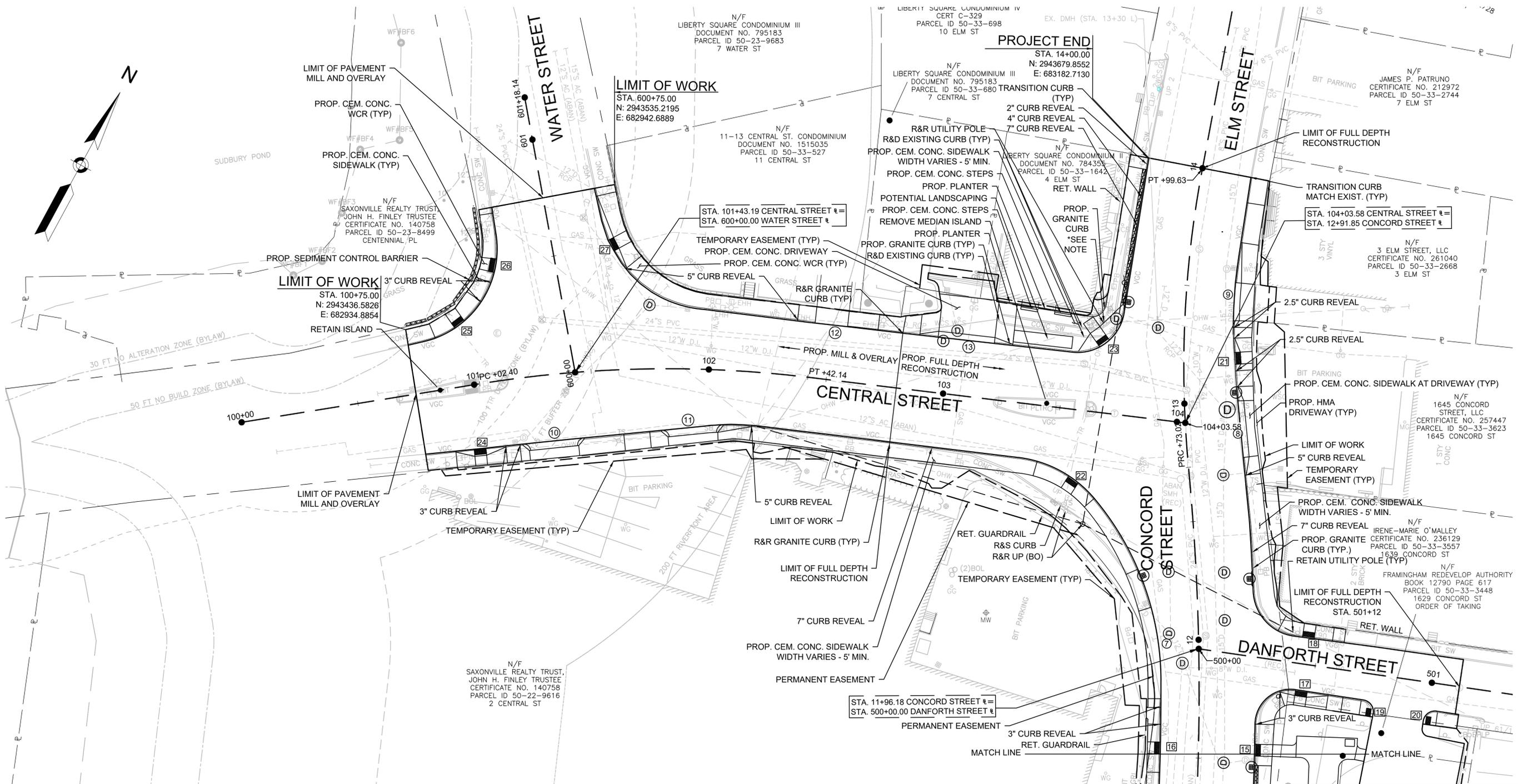
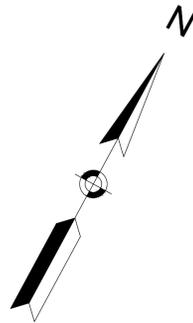
PREPARED BY:  
 **Green International Affiliates, Inc.**  
 100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876

SCALE: AS NOTED	DESIGNED BY: JL	SHEET NO. <b>9</b> OF <b>89</b>
DATE: 6/4/2024	DRAWN BY: MPC	
PROJECT NO. 20034	CHECKED BY: HP	

NO.	DATE	REVISIONS
1		

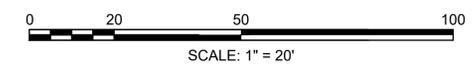
C:\Users\jgarcia\OneDrive\Documents\2024\06\04\20240604\CONCORD\Drawings\Plan\101.dwg, 6/17/2024, 8:58 AM





\*NOTE: UTILITY POLE AT STA. 13+31.50 LT ELEVATION TO BE 6" LOWER THAN EXISTING. COORDINATION WITH UTILITY COMPANIES REQUIRED.

CONTINUED ON SHEET NO. 10



PROJECT: IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET

DESIGN SUBMISSION: 85% DESIGN

DRAWING TITLE: CONSTRUCTION PLAN 3

PREPARED FOR: CITY OF FRAMINGHAM DEPARTMENT OF PUBLIC WORKS  
110 WESTERN AVENUE  
FRAMINGHAM, MA 01702

PREPARED BY: Green International Affiliates, Inc.  
100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876

SCALE: AS NOTED  
DATE: 6/4/2024  
PROJECT NO. 20034

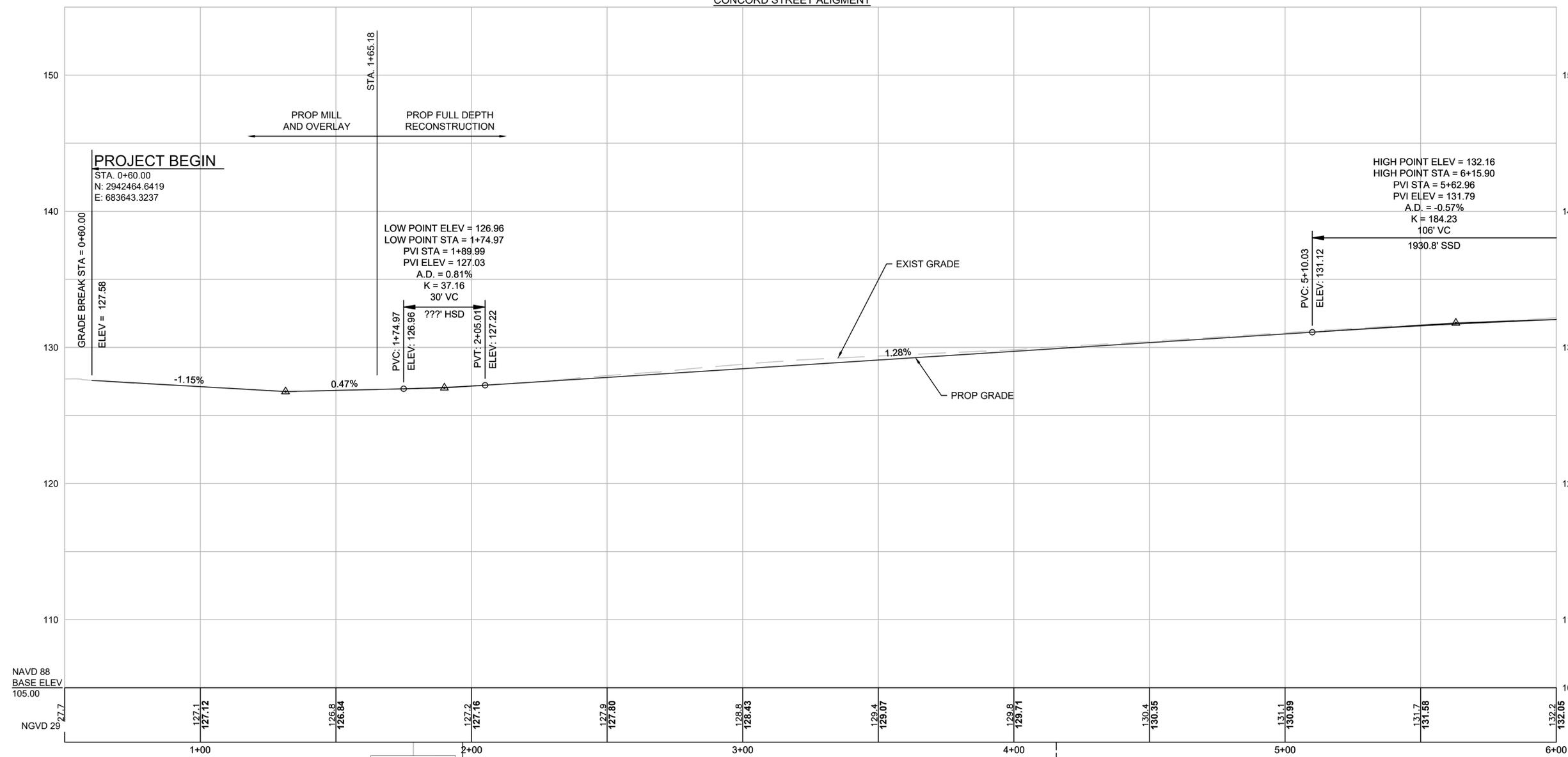
DESIGNED BY: JL  
DRAWN BY: MPC  
CHECKED BY: HP

SHEET NO. 11 OF 89

NO.	DATE	REVISIONS
1		

U:\Shared\Engineering\Projects\2023\20034\DWG\20230604\CONSTRUCTION PLAN 3.DWG (17/06/2024 8:56 AM)

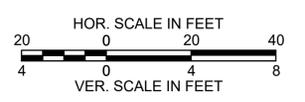
CONCORD STREET ALIGNMENT



Benchmark #1  
 MAG NAIL SET, 1' ABOVE  
 GRADE LPI  
 Elevation = 128.59'  
 Sta. 1+78.58, 30.56' LT

STA. 1+97.67 CONCORD STREET @ =  
 STA 200+00.00 VICTORIA GARDEN @

STA. 4+09.58 CONCORD STREET @ =  
 STA 300+00.00 WATSON PLACE @



CONTINUED ON  
 SHEET NO. 13

PROJECT: IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET

DESIGN SUBMISSION: 85% DESIGN

DRAWING TITLE: CONSTRUCTION PROFILES - 1

PREPARED FOR: CITY OF FRAMINGHAM  
 DEPARTMENT OF PUBLIC WORKS  
 110 WESTERN AVENUE  
 FRAMINGHAM, MA 01702

PREPARED BY: Green International Affiliates, Inc.  
 100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876

SCALE: AS NOTED  
 DATE: 6/4/2024  
 PROJECT NO. 20034

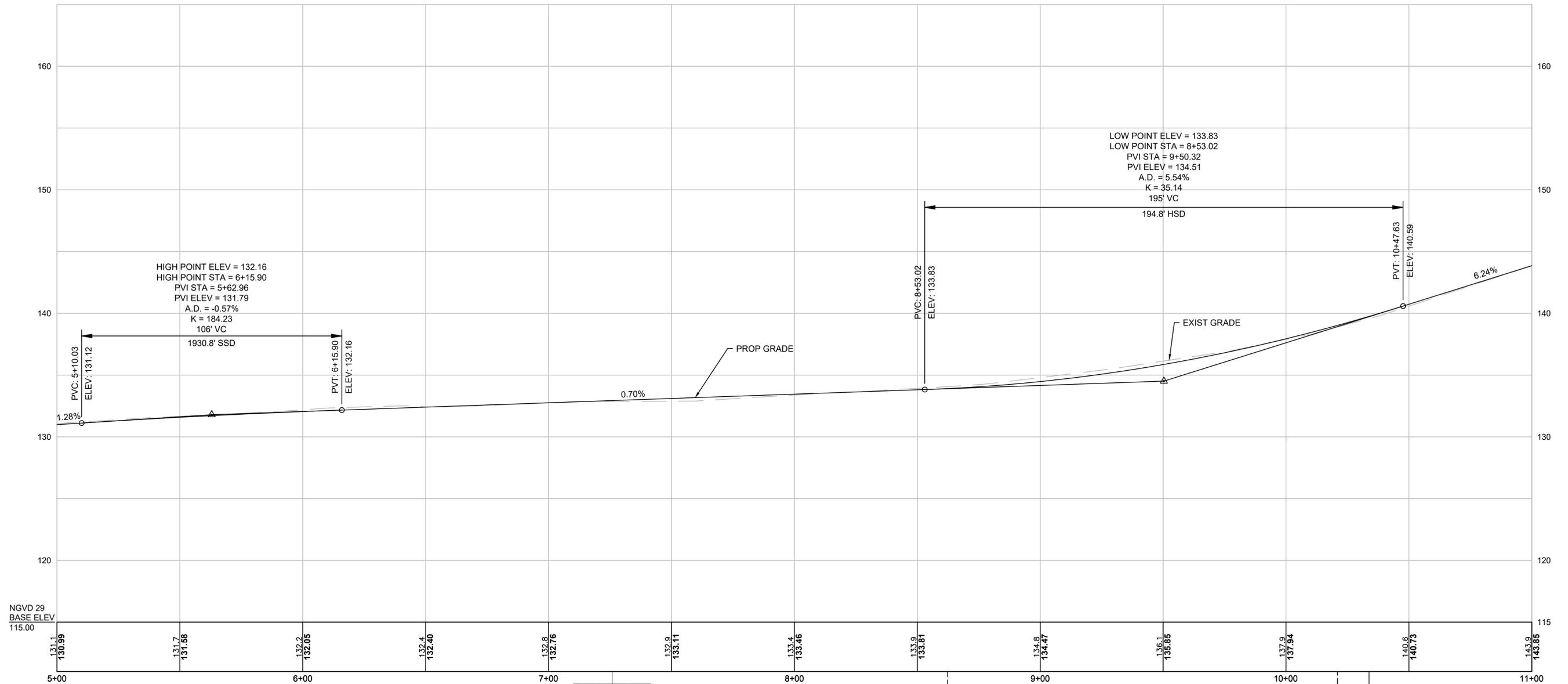
DESIGNED BY: JL  
 DRAWN BY: MPC  
 CHECKED BY: HP

SHEET NO. 12 OF 89

NO.	DATE	REVISIONS

W:\Shared\Engineering\Projects\20034\CONCORD STREET\Drawings\Profile.dwg Printed: 6/17/2024 8:50 AM

CONCORD STREET ALIGNMENT



CONTINUED ON SHEET NO. 12

CONTINUED ON SHEET NO. 14

NGVD 29  
BASE ELEV  
115.00

Benchmark #2  
MAG NAIL SET, 1' ABOVE  
GRADE LIP  
Elevation = 133.76'  
Sta. 7+25.96, 20.37' RT

Benchmark #3  
RR SPIKE END, 1' ABOVE  
GRADE LIP  
Elevation = 138.45'  
Sta. 10+33.78, 28.32' RT

STA. 8+64.33 CONCORD STREET @ =  
STA 700+00.00 FULLER STREET @

STA. 10+22.21 CONCORD STREET @ =  
STA 400+00.00 MECHANIC STREET @

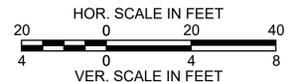
PROJECT: IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET

DESIGN SUBMISSION: 85% DESIGN

DRAWING TITLE: CONSTRUCTION PROFILES - 2

PREPARED FOR: CITY OF FRAMINGHAM  
DEPARTMENT OF PUBLIC WORKS  
110 WESTERN AVENUE  
FRAMINGHAM, MA 01702

PREPARED BY: **Green International Affiliates, Inc.**  
100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876



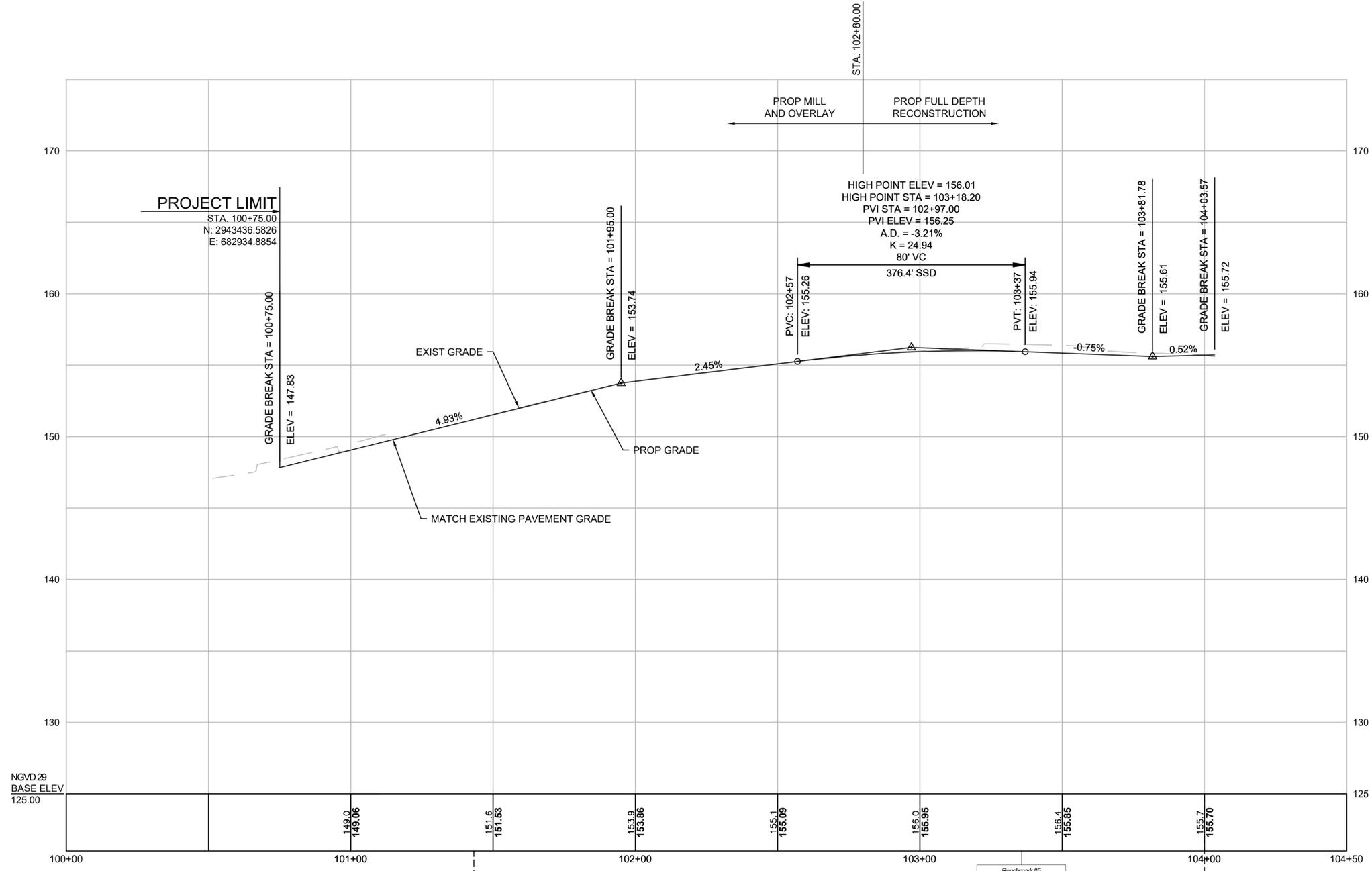
NO.	DATE	REVISIONS

SCALE: AS NOTED	DESIGNED BY: JL	SHEET NO. <b>13</b> OF <b>89</b>
DATE: 6/4/2024	DRAWN BY: MPC	
PROJECT NO. 20034	CHECKED BY: HP	

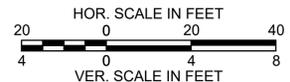
U:\Shared\Engineering\Projects\2024\20034\CONCORD ST Profiles.dwg Printed: 6/17/2024 8:50 AM



CENTRAL STREET ALIGNMENT



CONTINUED ON  
SHEET NO. 14



**PROJECT: IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET**  
 DESIGN SUBMISSION:  
**85% DESIGN**  
 DRAWING TITLE:  
**CONSTRUCTION PROFILES - 4**  
 PREPARED FOR:  

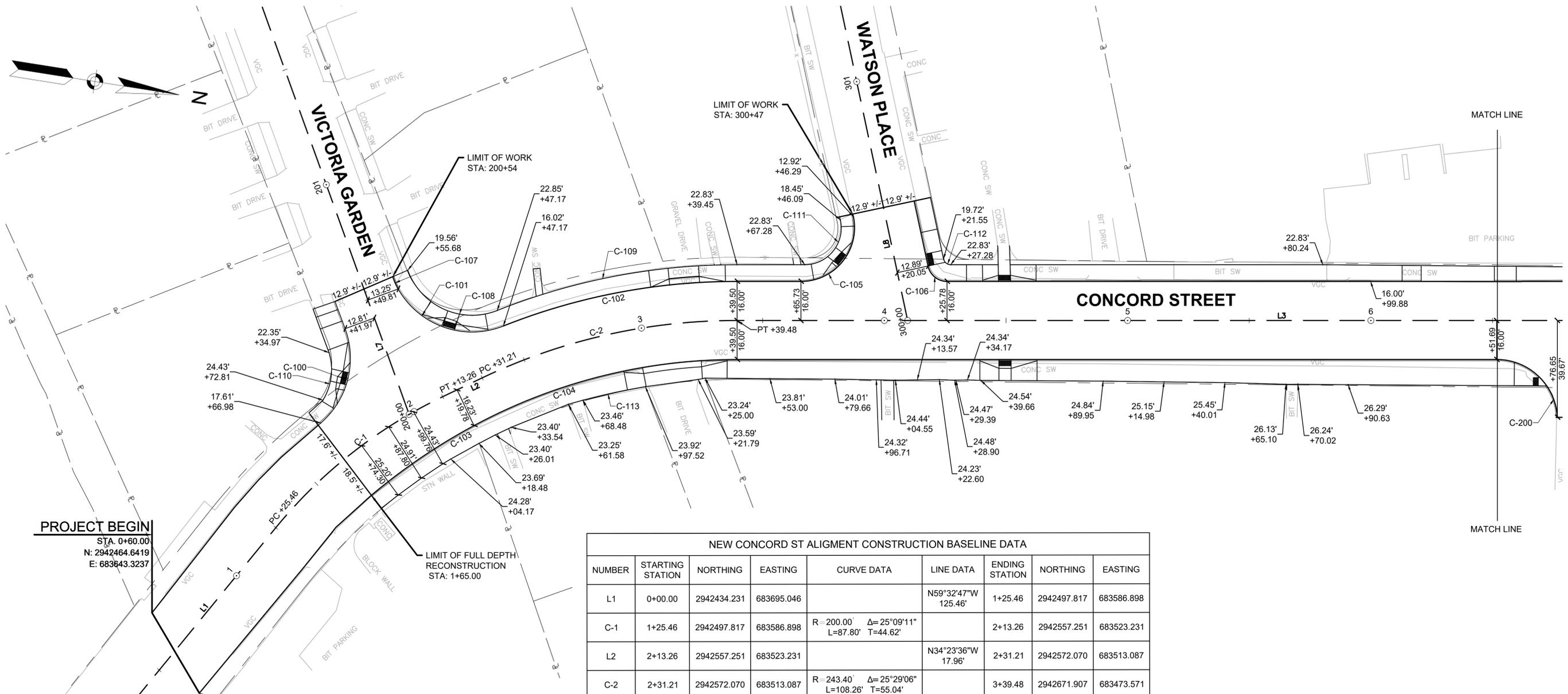
**CITY OF FRAMINGHAM**  
 DEPARTMENT OF PUBLIC WORKS  
 110 WESTERN AVENUE  
 FRAMINGHAM, MA 01702  
 PREPARED BY:  

**Green International Affiliates, Inc.**  
 100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876

SCALE: AS NOTED	DESIGNED BY: JL	SHEET NO. 15 OF 89
DATE: 6/4/2024	DRAWN BY: MPC	
PROJECT NO. 20034	CHECKED BY: HP	

NO.	DATE	REVISIONS

W:\Standard\Engineering\Projects\2024\20034\20034.dwg (17/2024) 8:50 AM



**PROJECT BEGIN**  
 STA. 0+60.00  
 N: 2942464.6419  
 E: 683643.3237

Curve #	Delta	Radius	Length
C-100	69°30'28"	35.00	42.46
C-101	81°45'57"	35.00	49.95
C-102	21°40'42"	260.00	98.37
C-103	11°41'20"	250.00	51.00
C-104	28°17'51"	228.00	112.61
C-105	101°58'10"	22.00	39.15
C-106	77°52'01"	8.00	10.87
C-107	10°32'02"	30.00	5.52
C-108	91°22'00"	28.17	44.92
C-109	21°39'54"	266.92	100.93
C-110	48°29'09"	23.89	20.22
C-111	103°00'43"	15.00	26.97
C-112	78°42'15"	2.97	4.09
C-113	5°28'48"	274.10	26.22

NEW CONCORD ST ALIGNMENT CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L1	0+00.00	2942434.231	683695.046		N59°32'47"W 125.46'	1+25.46	2942497.817	683586.898
C-1	1+25.46	2942497.817	683586.898	R=200.00' Δ=25°09'11" L=87.80' T=44.62'		2+13.26	2942557.251	683523.231
L2	2+13.26	2942557.251	683523.231		N34°23'36"W 17.96'	2+31.21	2942572.070	683513.087
C-2	2+31.21	2942572.070	683513.087	R=243.40' Δ=25°29'06" L=108.26' T=55.04'		3+39.48	2942671.907	683473.571
L3	3+39.48	2942671.907	683473.571		N8°57'18"W 497.24'	8+36.72	2943163.087	683396.171

VICTORIA GARDENS ALIGNMENT CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L7	200+00.00	2942544.743	683532.529		S61°08'29"W 209.59'	202+09.59	2942443.587	683348.971

WATSON PL ALIGNMENT CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L8	300+00.00	2942741.150	683462.660		S68°57'42"W 238.70'	302+38.70	2942655.459	683239.871

PROJECT: **IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET**

DESIGN SUBMISSION: **85% DESIGN**

DRAWING TITLE: **CURB TIE PLAN 1**

PREPARED FOR: **CITY OF FRAMINGHAM DEPARTMENT OF PUBLIC WORKS**  
 110 WESTERN AVENUE  
 FRAMINGHAM, MA 01702

PREPARED BY: **Green International Affiliates, Inc.**  
 100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876

SCALE: AS NOTED  
 DATE: 6/4/2024  
 PROJECT NO. 20034

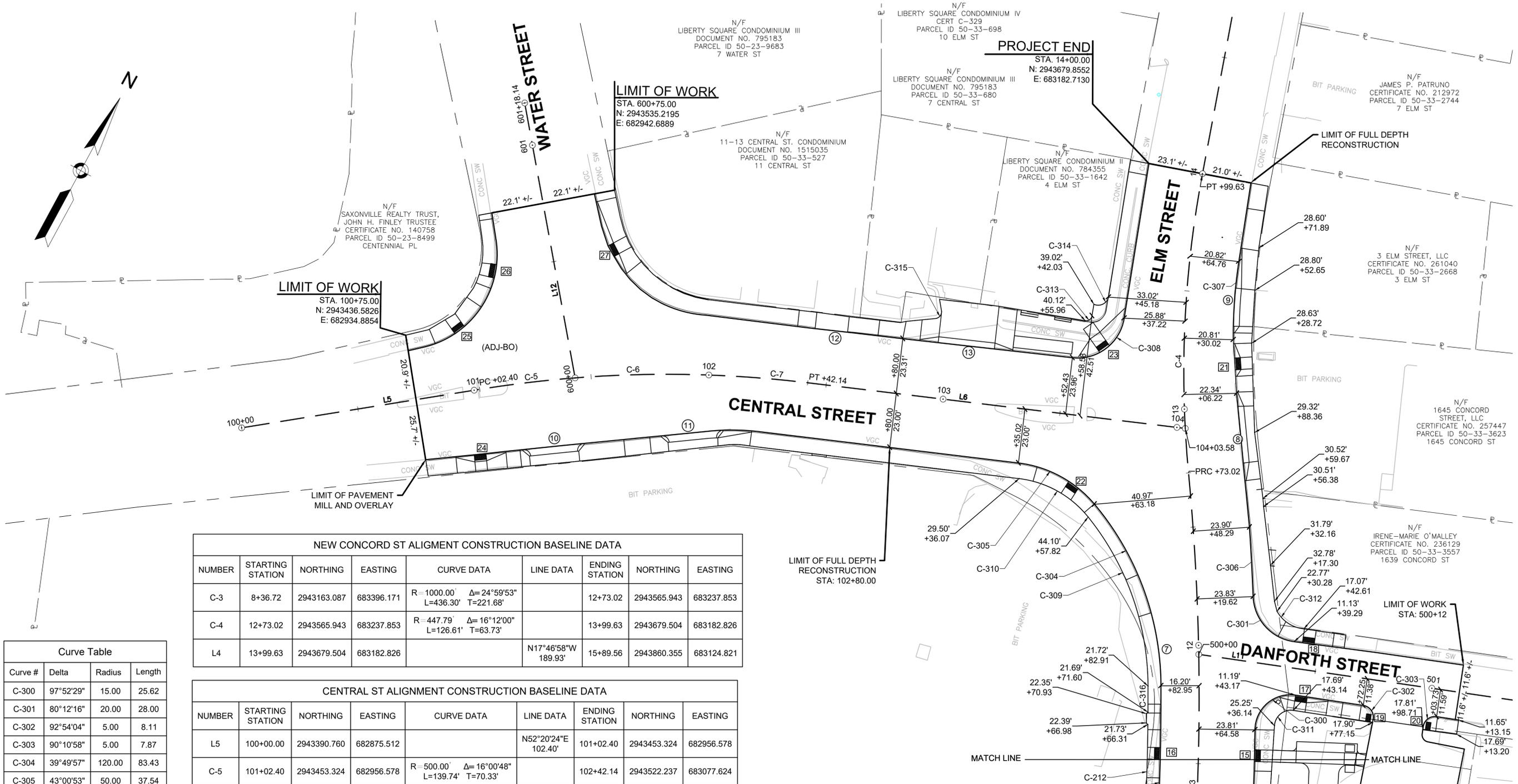
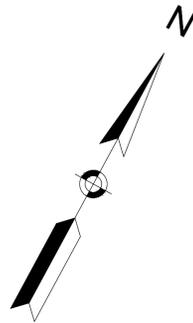
DESIGNED BY: JL  
 DRAWN BY: MPC  
 CHECKED BY: HP

SHEET NO. **16** OF **89**

NO.	DATE	REVISIONS
1		

W:\Shared\Engineering\Projects\20034\CONCORD\_Curb Tie Plan.dwg Printed: 6/17/2024 8:58 AM





Curve #	Delta	Radius	Length
C-300	97°52'29"	15.00	25.62
C-301	80°12'16"	20.00	28.00
C-302	92°54'04"	5.00	8.11
C-303	90°10'58"	5.00	7.87
C-304	39°49'57"	120.00	83.43
C-305	43°00'53"	50.00	37.54
C-306	1°33'43"	1077.00	29.36
C-307	9°15'53"	205.00	33.15
C-308	87°12'51"	20.00	30.44
C-309	38°38'45"	114.50	77.23
C-310	44°12'05"	44.50	34.33
C-311	94°40'34"	7.00	11.57
C-312	55°17'19"	14.64	14.13
C-313	90°11'57"	2.50	3.94
C-314	99°48'08"	4.51	7.85
C-315	84°24'07"	2.91	4.29
C-316	0°37'00"	1031.50	11.10

NEW CONCORD ST ALIGNMENT CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
C-3	8+36.72	2943163.087	683396.171	R=1000.00' Δ=24°59'53" L=436.30' T=221.68'		12+73.02	2943565.943	683237.853
C-4	12+73.02	2943565.943	683237.853	R=447.79' Δ=16°12'00" L=126.61' T=63.73'		13+99.63	2943679.504	683182.826
L4	13+99.63	2943679.504	683182.826		N17°46'58"W 189.93'	15+89.56	2943860.355	683124.821

CENTRAL ST ALIGNMENT CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L5	100+00.00	2943390.760	682875.512		N52°20'24"E 102.40'	101+02.40	2943453.324	682956.578
C-5	101+02.40	2943453.324	682956.578	R=500.00' Δ=16°00'48" L=139.74' T=70.33'		102+42.14	2943522.237	683077.624
C-6	101+02.40	2943453.324	682956.578	R=500.00' Δ=16°00'48" L=139.74' T=70.33'		102+42.14	2943522.237	683077.624
C-7	101+02.40	2943453.324	682956.578	R=500.00' Δ=16°00'48" L=139.74' T=70.33'		102+42.14	2943522.237	683077.624
L6	102+42.14	2943522.237	683077.624		N68°21'12"E 161.43'	104+03.58	2943581.786	683227.671

WATER ST ALIGNMENT CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L12	600+00.00	2943476.899	682989.845		N38°57'29"W 118.14'	601+18.14	2943568.765	682915.565

DANFORTH ST ALIGNMENT CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L11	500+00.00	2943500.618	683278.281		N69°43'54"E 422.21'	504+22.21	2943646.878	683674.346

PROJECT: IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET

DESIGN SUBMISSION: 85% DESIGN

DRAWING TITLE: CURB TIE PLAN 3

PREPARED FOR: CITY OF FRAMINGHAM DEPARTMENT OF PUBLIC WORKS  
110 WESTERN AVENUE  
FRAMINGHAM, MA 01702

PREPARED BY: Green International Affiliates, Inc.  
100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876

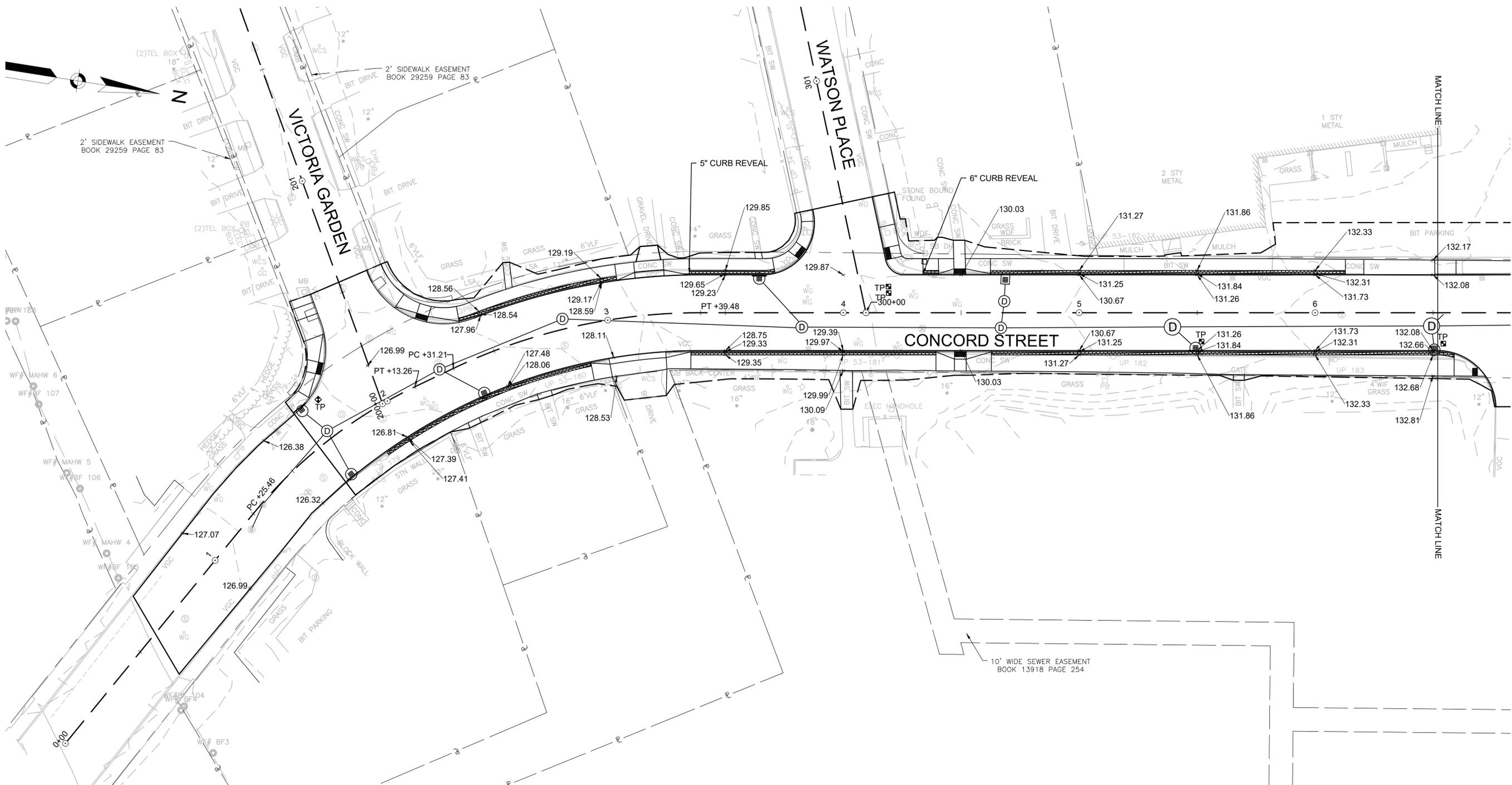
SCALE: AS NOTED  
DATE: 6/4/2024  
PROJECT NO. 20034

DESIGNED BY: JL  
DRAWN BY: MPC  
CHECKED BY: HP

SHEET NO. 18 OF 89

NO.	DATE	REVISIONS
1		

W:\Shared\Engineering\Projects\2023\20034\DWG\316\316.dwg  
 User: jlp  
 Date: 6/4/2024 10:11:16 AM



CONTINUED ON SHEET NO. 18

CONTINUED ON SHEET NO. 20

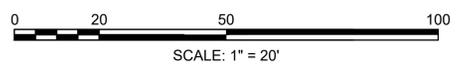
PROJECT: IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET

DESIGN SUBMISSION: 85% DESIGN

DRAWING TITLE: GRADING PLAN 1

PREPARED FOR:  
 CITY OF FRAMINGHAM  
 DEPARTMENT OF PUBLIC WORKS  
 110 WESTERN AVENUE  
 FRAMINGHAM, MA 01702

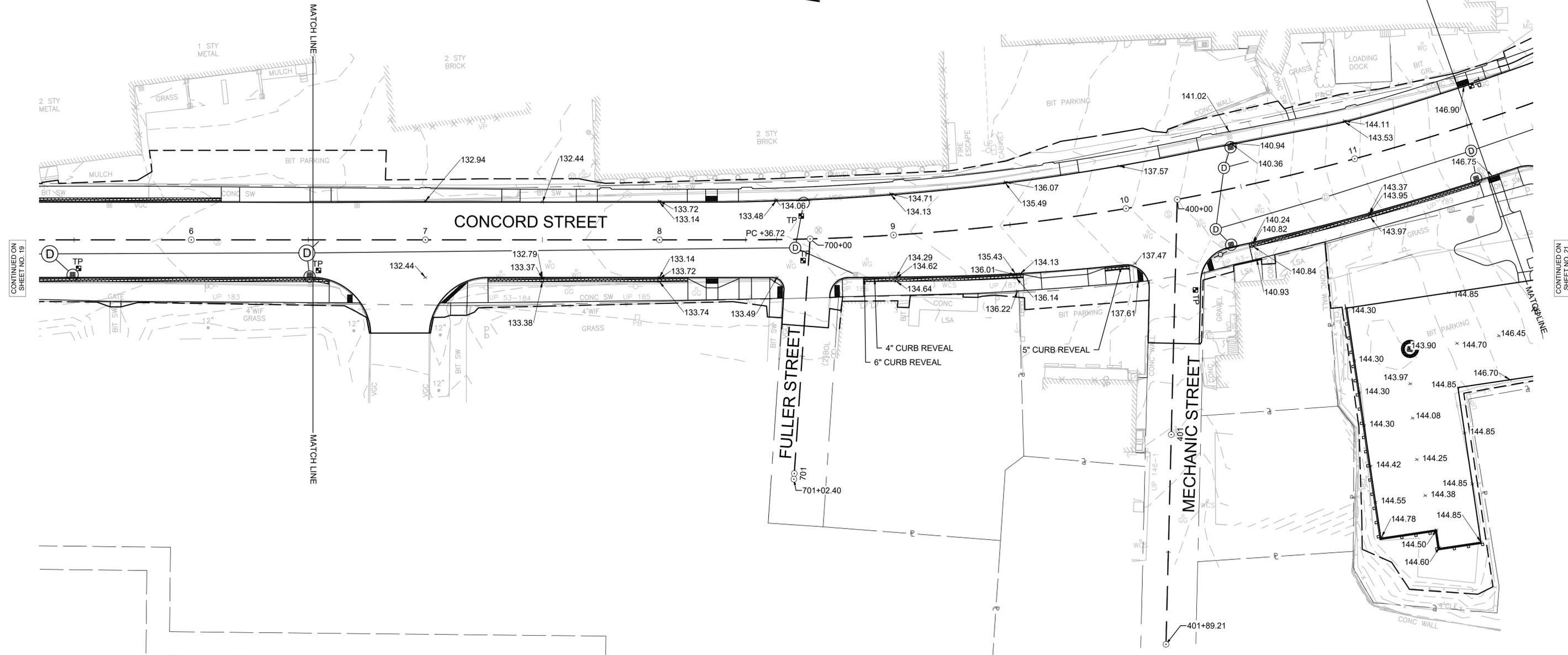
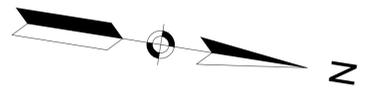
PREPARED BY:  
 **Green International Affiliates, Inc.**  
 100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876



NO.	DATE	REVISIONS
1		

SCALE: AS NOTED	DESIGNED BY: JL	SHEET NO. <b>19</b> OF <b>89</b>
DATE: 6/4/2024	DRAWN BY: CW	
PROJECT NO. 20034	CHECKED BY: JL	

W:\Shared\Engineering\Projects\20034\20034.dwg 11:51:11 AM 6/11/2024 8:57 AM



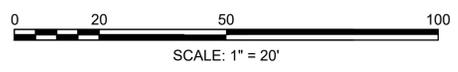
CONTINUED ON SHEET NO. 19

CONTINUED ON SHEET NO. 21

PROJECT:	IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET
DESIGN SUBMISSION:	85% DESIGN
DRAWING TITLE:	GRADING PLAN 2
PREPARED FOR:	CITY OF FRAMINGHAM DEPARTMENT OF PUBLIC WORKS 110 WESTERN AVENUE FRAMINGHAM, MA 01702

PREPARED BY:  

**Green International Affiliates, Inc.**  
 100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876

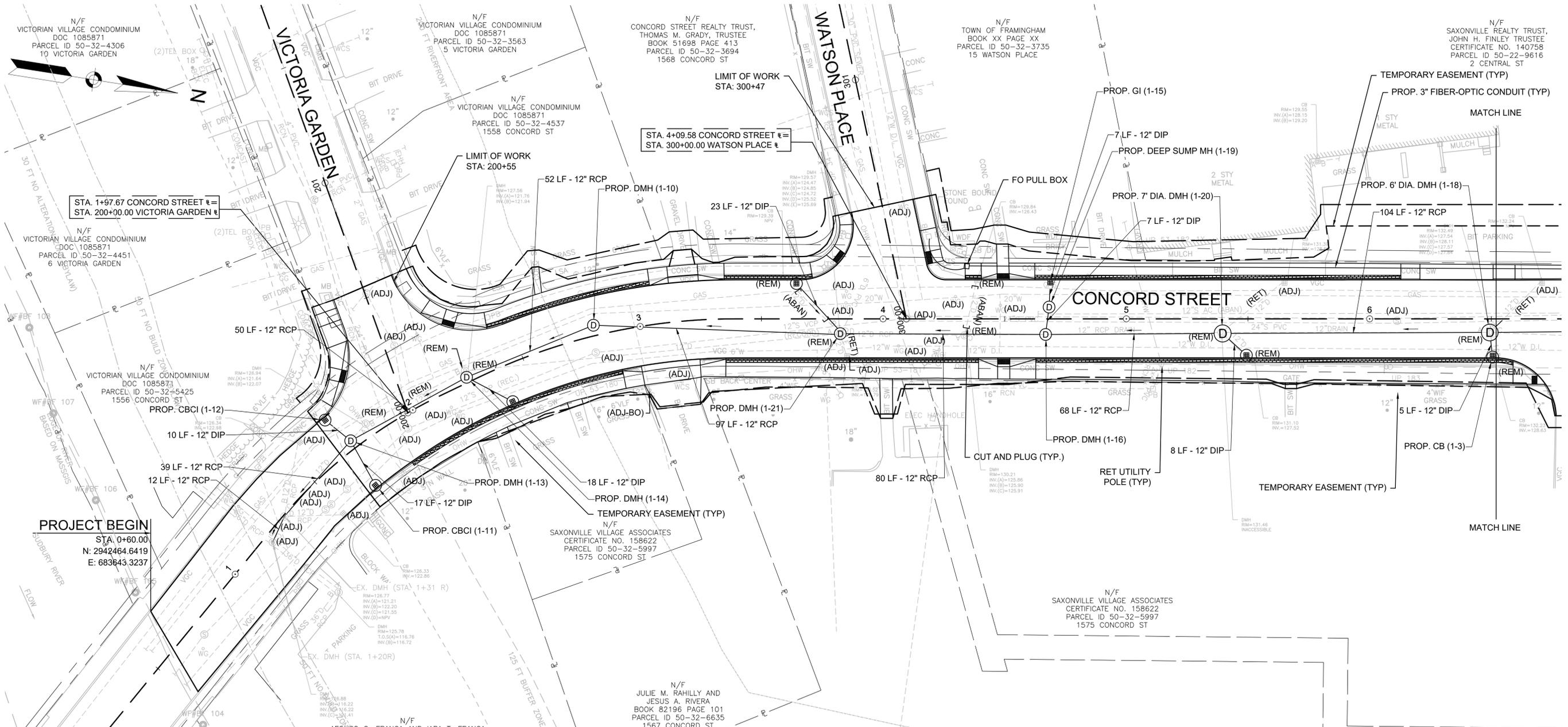


NO.	DATE	REVISIONS
1		

SCALE: AS NOTED	DESIGNED BY: JL	SHEET NO. <b>20</b> OF <b>89</b>
DATE: 6/4/2024	DRAWN BY: CW	
PROJECT NO. 20034	CHECKED BY: JL	

W:\Shared\Engineering\Projects\20034\20034.dwg 11:51:00 AM 6/11/2024 8:51 AM



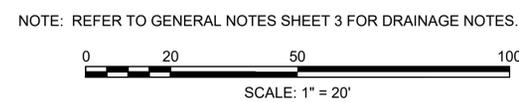


CONTINUED ON SHEET NO. 23

**PROJECT BEGIN**  
 STA. 0+60.00  
 N: 2942464.6419  
 E: 683643.3237

**DRAINAGE STRUCTURE TABLE**

NAME/TYPE	STATION	OFFSET	RIM ELEV.	INV. ELEV. IN	INV. ELEV. OUT	REMARKS
PROP. CBCI (1-11)	1+68.75	17.2 RT	126.59		I=123.60' (PROP. DMH (1-13))	
PROP. CBCI (1-12)	1+68.96	16.6 LT	126.60		I=123.70' (PROP. DMH (1-13))	
PROP. DMH (1-13)	1+71.95	3.5 LT	126.88	I=123.60' (PROP. CBCI (1-12)) I=123.40' (PROP. CBCI (1-11)) I=121.70' (PROP. DMH (1-14))	I=121.60' (EX. DMH (STA. 1+31 R))	
PROP. DMH (1-14)	2+25.72	2.2 LT	128.33	I=123.00' (PROP. DMH (1-10)) I=124.00' (PROP. CBCI (1-8))	I=122.90' (PROP. DMH (1-13))	
PROP. CBCI (1-8)	2+39.08	14.9 RT	127.36		I=124.30' (PROP. DMH (1-14))	
PROP. DMH (1-10)	2+81.42	4.3 LT	127.93	I=123.60' (PROP. DMH (1-21))	I=123.50' (PROP. DMH (1-14))	
PROP. CBCI (1-7)	3+64.38	14.4 LT	129.38		I=126.00' (PROP. DMH (1-21))	
PROP. DMH (1-21)	3+82.42	6.1 RT	130.13	I=125.80' (PROP. CBCI (1-7)) I=125.00' (PROP. DMH (1-16))	I=124.47' (PROP. DMH (1-10))	
PROP. DMH (1-16)	4+66.82	6.4 RT	130.44	I=127.10' (PROP. DEEP SUMP MH (1-19)) I=126.10' (PROP. 7' DIA. DMH (1-20))	I=126.00' (PROP. DMH (1-21))	
PROP. DEEP SUMP MH (1-19)	4+68.24	4.8 LT	130.49	I=127.30' (PROP. GI (1-15))	I=127.20' (PROP. DMH (1-16))	DEEP SUMP
PROP. 7' DIA. DMH (1-20)	5+39.57	6.0 RT	131.35	I=126.75' (PROP. 6' DIA. DMH (1-18)) I=128.00' (PROP. CB (1-4))	I=126.65' (PROP. DMH (1-16))	7' DIA.
PROP. CB (1-4)	5+49.33	14.9 RT	131.28		I=128.20' (PROP. 7' DIA. DMH (1-20))	
PROP. CB (1-3)	6+50.54	15.6 RT	132.10		I=129.64' (PROP. 6' DIA. DMH (1-18))	



**PROJECT:** IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET

**DESIGN SUBMISSION:** 85% DESIGN

**DRAWING TITLE:** DRAINAGE AND UTILITY PLAN 1

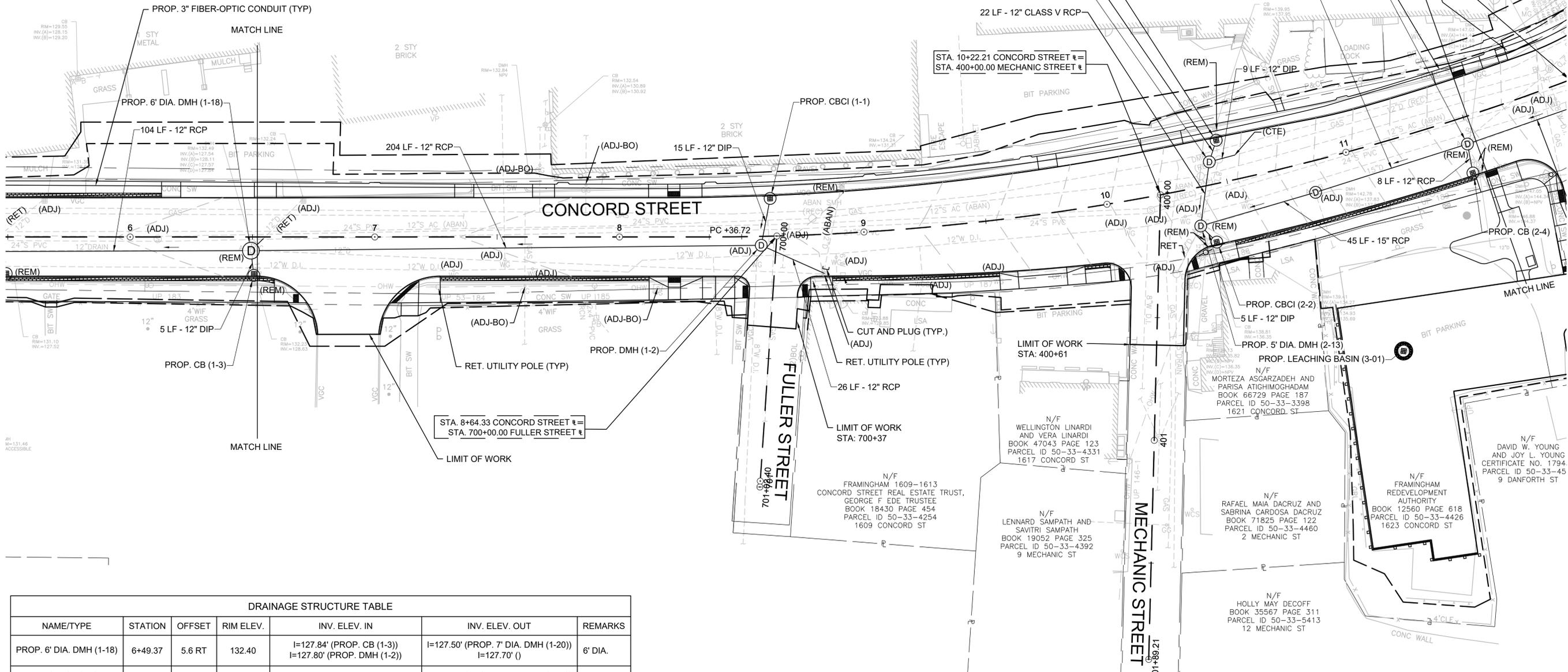
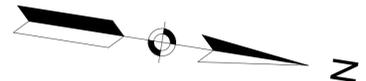
**PREPARED FOR:** CITY OF FRAMINGHAM  
 DEPARTMENT OF PUBLIC WORKS  
 110 WESTERN AVENUE  
 FRAMINGHAM, MA 01702

**PREPARED BY:** Green International Affiliates, Inc.  
 100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876

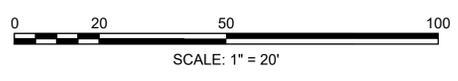
SCALE: AS NOTED	DESIGNED BY: SS/HG	SHEET NO. <b>22</b> OF <b>89</b>
DATE: 6/4/2024	DRAWN BY: HG	
PROJECT NO. 20034	CHECKED BY: SS	

NO.	DATE	REVISIONS
1		

N/F  
SAXONVILLE REALTY TRUST,  
JOHN H. FINLEY TRUSTEE  
CERTIFICATE NO. 140758  
PARCEL ID 50-22-9616  
2 CENTRAL ST



DRAINAGE STRUCTURE TABLE						
NAME/TYPE	STATION	OFFSET	RIM ELEV.	INV. ELEV. IN	INV. ELEV. OUT	REMARKS
PROP. 6' DIA. DMH (1-18)	6+49.37	5.6 RT	132.40	I=127.84' (PROP. CB (1-3)) I=127.80' (PROP. DMH (1-2))	I=127.50' (PROP. 7' DIA. DMH (1-20)) I=127.70' ( )	6' DIA.
PROP. CB (1-3)	6+50.54	15.6 RT	132.10		I=129.64' (PROP. 6' DIA. DMH (1-18))	
PROP. DMH (1-2)	8+57.89	3.6 RT	134.58	I=130.25' (PROP. CBI (1-1)) I=129.55' (EX. CB (STA. 8+81 R))	I=129.40' (PROP. 6' DIA. DMH (1-18))	
PROP. CBI (1-1)	8+61.97	15.4 LT	134.83		I=130.50' (PROP. DMH (1-2))	
PROP. 5' DIA. DMH (2-13)	10+35.85	15.6 RT	140.33	I=135.57' (PROP. DMH (2-3)) I=136.00' (PROP. CBI (2-2)) I=134.93' (EX. DMH (STA. 10+82 R))	I=134.27' (EXIST 15' DRAIN)	5' DIA.
PROP. CBI (2-2)	10+40.87	23.3 RT	140.53		I=136.20' (PROP. 5' DIA. DMH (2-13))	
PROP. DMH (2-3)	10+44.52	9.3 LT	141.33	I=137.60' (PROP. CBI (2-1)) I=136.03' ( )	I=136.00' (PROP. 5' DIA. DMH (2-13))	
PROP. CBI (2-1)	10+49.17	17.3 LT	141.43		I=137.70' (PROP. DMH (2-3))	
PROP. CB (2-4)	11+46.87	22.8 RT	146.32		I=142.90' (PROP. DMH (2-12))	
PROP. DMH (2-12)	11+48.36	10.8 RT	147.03	I=142.80' (PROP. CB (2-4)) I=142.00' (PROP. DMH (2-14))	I=141.43' (EX. DMH (STA. 10+82 R))	



PROJECT: **IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET**

DESIGN SUBMISSION: **85% DESIGN**

DRAWING TITLE: **DRAINAGE AND UTILITY PLAN 2**

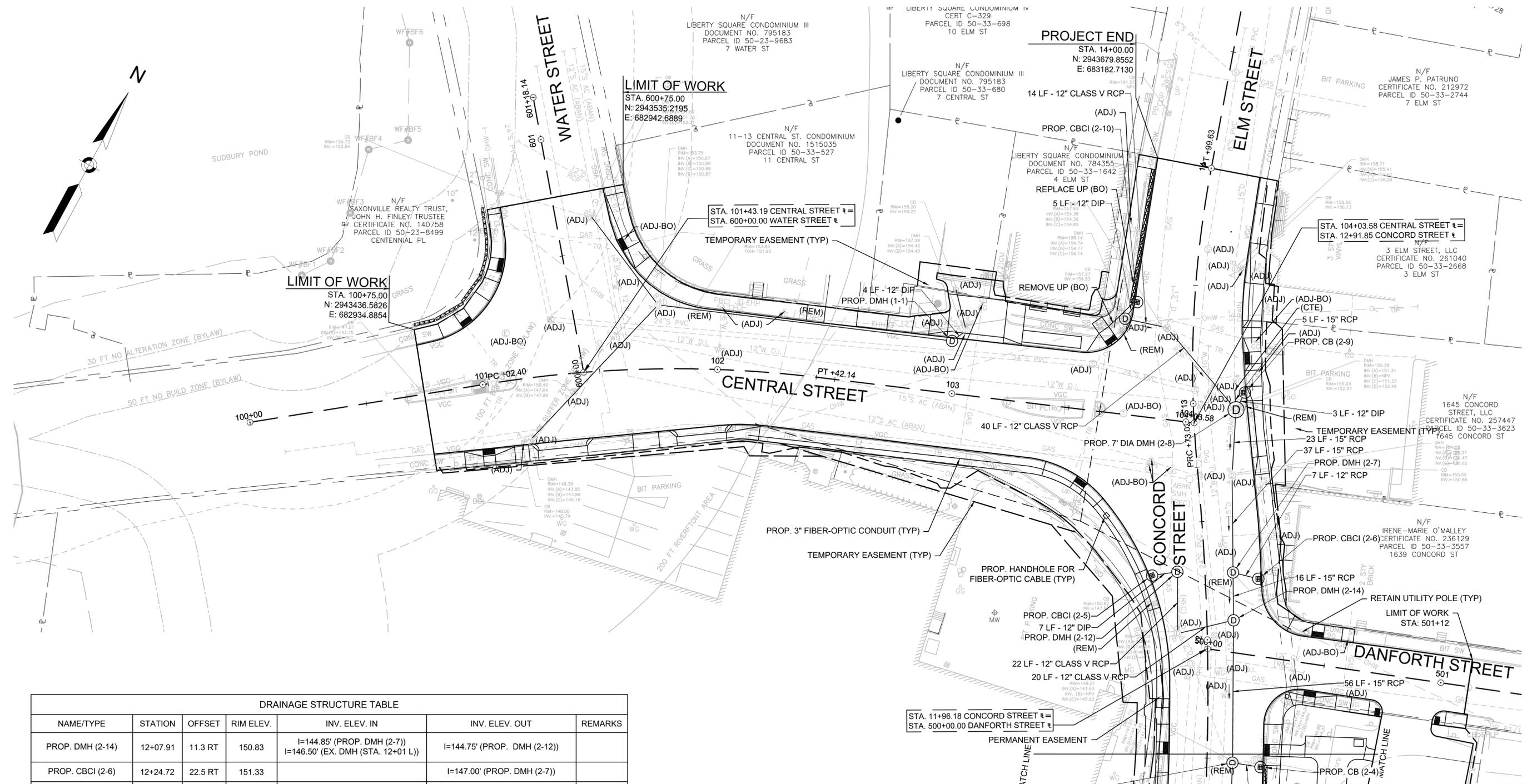
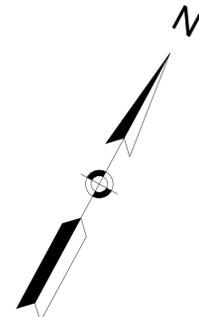
PREPARED FOR:  
 **CITY OF FRAMINGHAM**  
 DEPARTMENT OF PUBLIC WORKS  
 110 WESTERN AVENUE  
 FRAMINGHAM, MA 01702

PREPARED BY:  
 **Green International Affiliates, Inc.**  
 100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876

SCALE: AS NOTED	DESIGNED BY: SS/HG	SHEET NO. <b>23</b> OF <b>89</b>
DATE: 6/4/2024	DRAWN BY: HG	
PROJECT NO. 20034	CHECKED BY: SS	

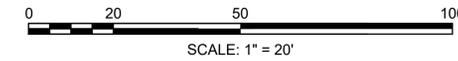
NO.	DATE	REVISIONS
1		

W:\Shared\Engineering\Projects\2023\05\44\4410502.dwg (P) 6/17/2024 8:52 AM  
 User: jharrington



DRAINAGE STRUCTURE TABLE						
NAME/TYPE	STATION	OFFSET	RIM ELEV.	INV. ELEV. IN	INV. ELEV. OUT	REMARKS
PROP. DMH (2-14)	12+07.91	11.3 RT	150.83	I=144.85' (PROP. DMH (2-7)) I=146.50' (EX. DMH (STA. 12+01 L))	I=144.75' (PROP. DMH (2-12))	
PROP. CBCI (2-6)	12+24.72	22.5 RT	151.33		I=147.00' (PROP. DMH (2-7))	
PROP. DMH (2-7)	12+27.87	11.9 RT	151.60	I=146.90' (PROP. CBCI (2-6)) I=148.40' (EX. DMH (STA. 12+67 R))	I=146.00' (PROP. DMH (2-14))	
PROP. CBCI (2-5)	12+28.29	22.5 LT	152.83		I=148.50' (PROP. DMH (2-12))	
PROP. DMH (2-12)	12+29.37	11.7 LT	151.67	I=148.30' (PROP. CBCI (2-5))	I=147.00' (EX. DMH (STA. 12+01 L))	
PROP. 7' DIA DMH (2-8)	12+96.67	18.0 RT	156.60	I=152.50' (PROP. CB (2-9)) I=152.60' (EX. DMH (STA. 13+30 L)) I=151.33' ( )	I=151.00' (EX. DMH (STA. 12+67 R))	7' DIA.
PROP. CB (2-9)	13+04.12	22.1 RT	156.93		I=152.60' (PROP. 7' DIA DMH (2-8))	
PROP. CBCI (2-10)	13+41.54	24.3 LT	158.32		I=155.20' (EX. DMH (STA. 13+33 L))	
PROP. DMH (1-1)	102+97.45	22.1 LT	158.23	I=153.90' (EX. DMH (STA. 103+03 L))	I=153.60' (EX. DMH (STA. 101+75 L))	

\*NOTE: UTILITY POLE AT STA. 13+31.50 LT ELEVATION TO BE 6" LOWER THAN EXISTING. COORDINATION WITH UTILITY COMPANIES REQUIRED.



CONTINUED ON SHEET NO. 23

**PROJECT: IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET**

DESIGN SUBMISSION:  
**85% DESIGN**

**DRAWING TITLE: DRAINAGE AND UTILITY PLAN 3**

PREPARED FOR:  

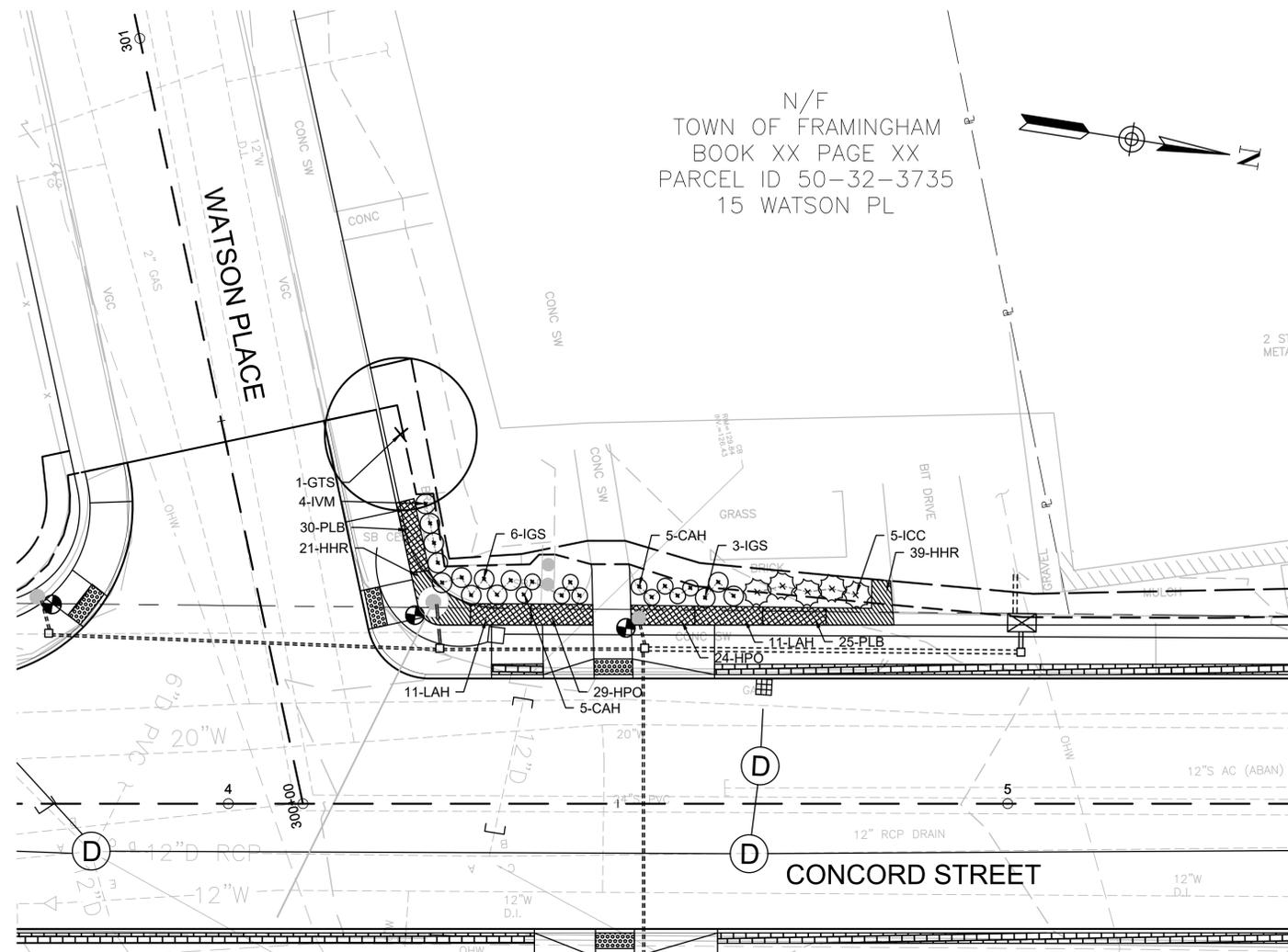
**CITY OF FRAMINGHAM**  
 DEPARTMENT OF PUBLIC WORKS  
 110 WESTERN AVENUE  
 FRAMINGHAM, MA 01702

PREPARED BY:  

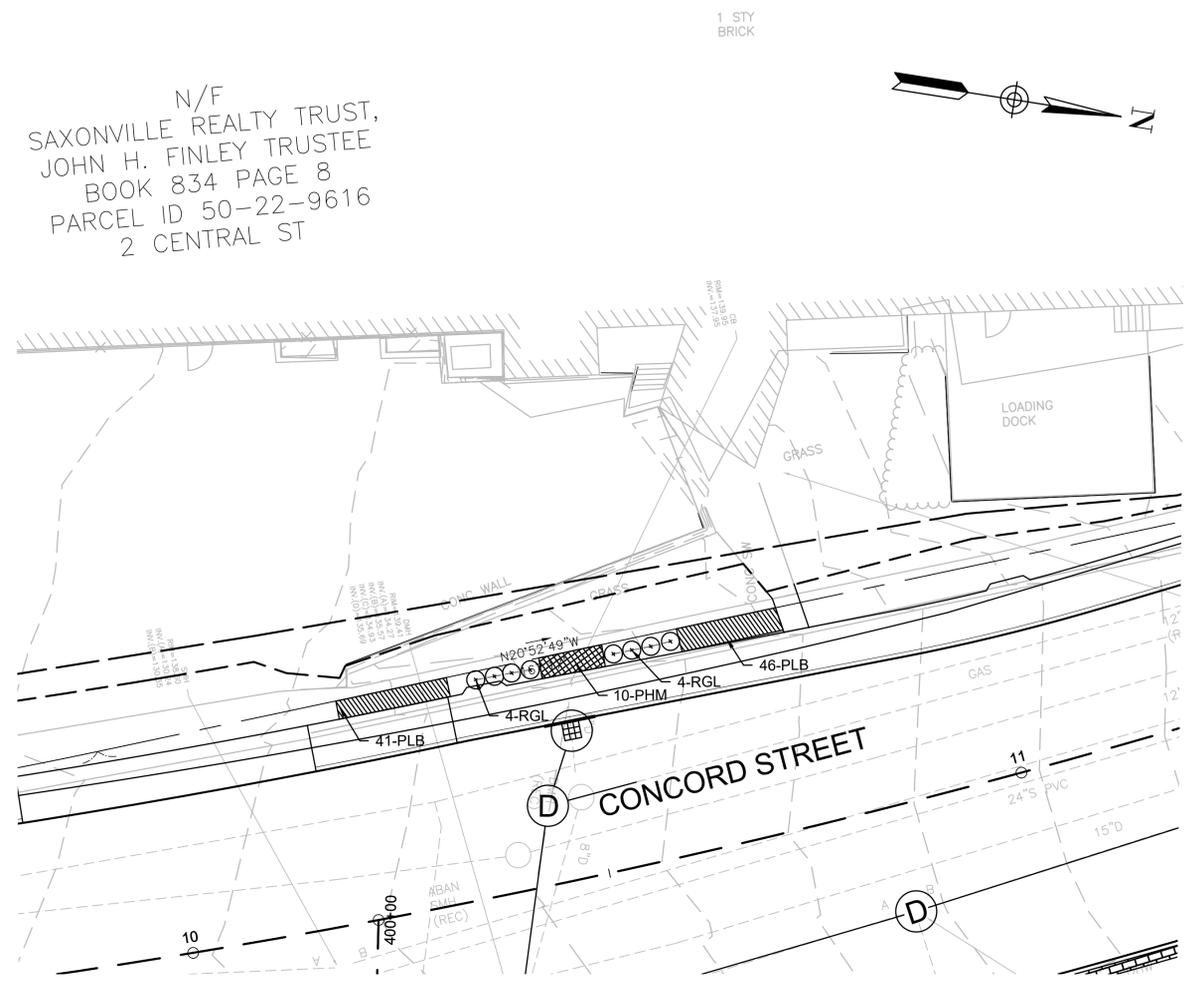
**Green International Affiliates, Inc.**  
 100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876

SCALE: AS NOTED	DESIGNED BY: HG/SS	SHEET NO. <b>24</b> OF <b>89</b>
DATE: 6/4/2024	DRAWN BY: HG	
PROJECT NO. 20034	CHECKED BY: SS	

NO.	DATE	REVISIONS
1		

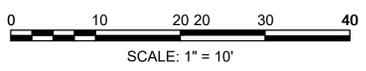
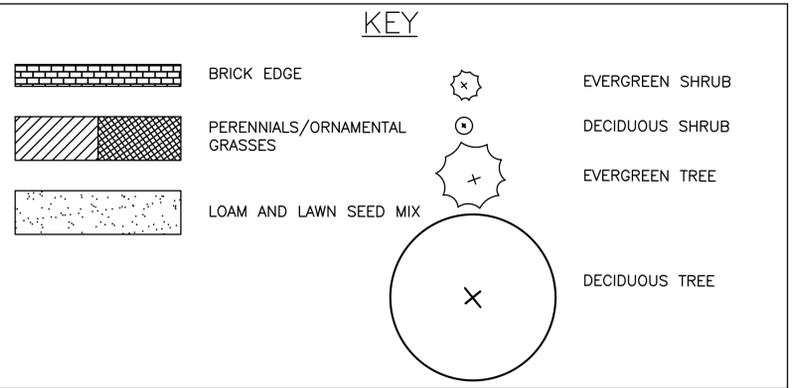


**1** LANDSCAPE PLAN 1 - CORNER CONCORD STREET AND WATSON PLACE STREET  
SCALE: 1"=10'



**2** LANDSCAPE PLAN 2 - CONCORD STREET  
SCALE: 1"=10'

PLANT LIST - SHEET 1						
KEY	DECIDUOUS TREES	COMMON NAME	QTY	SIZE	ROOT	REMARKS/SPACING
GTS	DECIDUOUS TREES	GLEDTISIA TRICANTHOS SHADEMASTER	1	2-2.5" CAL	B&B	AS SHOWN
<b>DECIDUOUS SHRUBS</b>						
CAH	DECIDUOUS SHRUBS	CLETHRA ALNIFOLIA 'CRYSTALINA'	10	18-24" SPREAD	#3 CONTAINER	18" O.C.
IGS	DECIDUOUS SHRUBS	ILEX GLABRA 'SHAMROCK'	9	18-24" SPREAD	#3 CONTAINER	2' O.C.
NM	DECIDUOUS SHRUBS	ITEA VIRGINIANA 'MERLOT'	4	2-3' HT	#3 CONTAINER	30" O.C.
RGL	DECIDUOUS SHRUBS	RHUS AROMATICA 'GRO LOW'	8	18-24" SPREAD	#3 CONTAINER	2.5' OC
<b>EVERGREEN SHRUBS</b>						
ICC	EVERGREEN SHRUBS	ILEX CRENATA 'SOFT TOUCH'	5	18-24" SPREAD	#5 CONTAINER	24" O.C.
<b>PERENNIALS AND ORNAMENTAL GRASSES</b>						
HHR	PERENNIALS AND ORNAMENTAL GRASSES	HEMEROCALLIS 'HAPPY RETURNS'	60	#1 CONTAINER	#1 CONTAINER	10" O.C.
HPO	PERENNIALS AND ORNAMENTAL GRASSES	HEMEROCALLIS 'PURPLE DE ORO'	53	#1 CONTAINER	#1 CONTAINER	10" O.C.
LAH	PERENNIALS AND ORNAMENTAL GRASSES	LAVANDULA ANGUSTIFOLIA 'HICOTE'	22	#1 CONTAINER	#1 CONTAINER	18" O.C.
PLB	PERENNIALS AND ORNAMENTAL GRASSES	PENNISETUM ALOPECUROIDES 'LITTLE BUNNY'	142	#1 CONTAINER	#1 CONTAINER	10" O.C.
PHM	PERENNIALS AND ORNAMENTAL GRASSES	PANICUM VIRGATUM 'HEAVY METAL'	10	#1 CONTAINER	#1 CONTAINER	18" O.C.



PROJECT: IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET

DESIGN SUBMISSION: 85% DESIGN

DRAWING TITLE: LANDSCAPE PLAN 1

PREPARED FOR: CITY OF FRAMINGHAM, DEPARTMENT OF PUBLIC WORKS, 110 WESTERN AVENUE, FRAMINGHAM, MA 01702

PREPARED BY: Green International Affiliates, Inc., 100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876

SCALE: AS NOTED

DATE: 6/4/2024

PROJECT NO. 20034

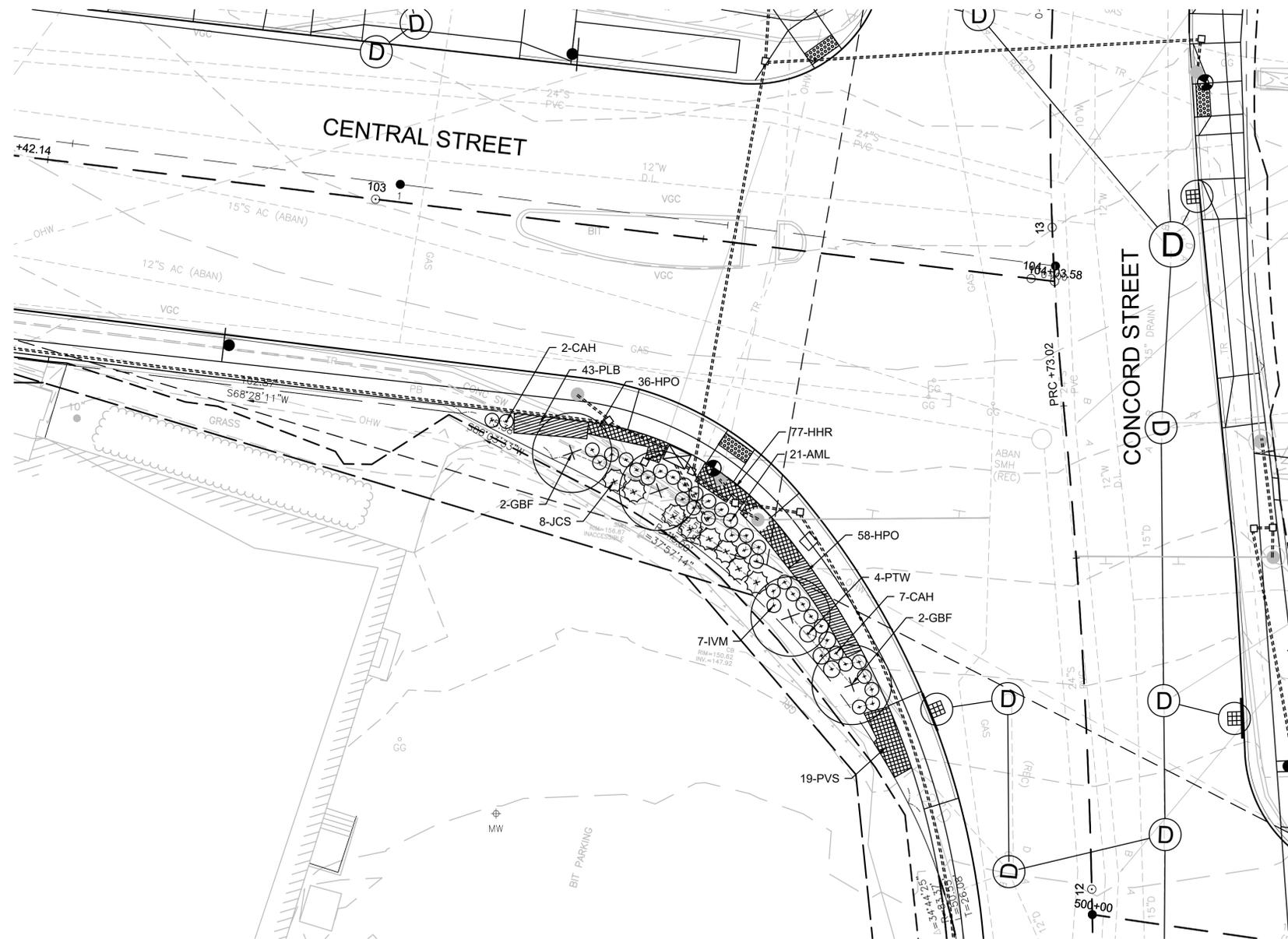
DESIGNED BY: JL

DRAWN BY: YLZ/MPC

CHECKED BY: TB

SHEET NO. 25 OF 89

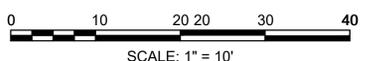
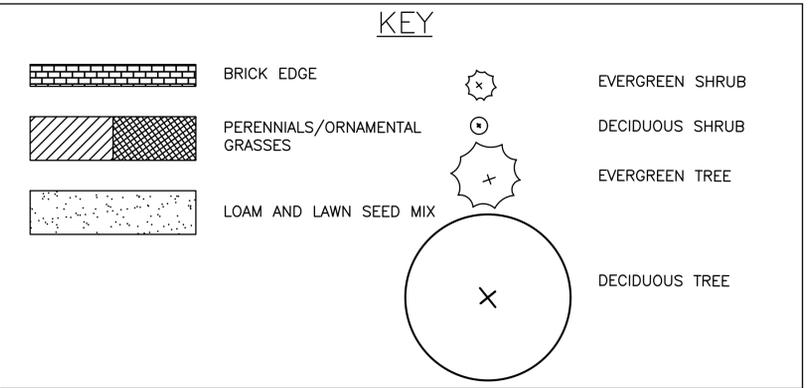
NO.	DATE	REVISIONS
1		



**3** LANDSCAPE PLAN 3 - CORNER CONCORD STREET AND CENTRAL STREET  
SCALE: 1"=10'

**PLANT LIST - SHEET 2**

KEY	DECIDUOUS TREES	COMMON NAME	QTY	SIZE	ROOT	REMARKS/SPACING
GBF	GINKGO BILOBA 'FASTIGIATA' GOLD SPIRE	GOLD SPIRE GINKGO	4	2-2.5" CAL	B&B	AS SHOWN
<b>DECIDUOUS SHRUBS</b>						
AML	ARONIA MELANOCARPA 'LOWSCAPE MOUND'	LOWSCAPE MOUND CHOKEBERRY	21	18-24" SPREAD	#3 CONTAINER	18" O.C.
CAH	CLETHRA ALNIFOLIA 'CRYSTALLINA'	SUGARTINA SUMMERSWEET	9	18-24" SPREAD	#3 CONTAINER	2' O.C.
IVM	ITEA VIRGINIANA 'MERLOT'	MERLOT VIRGINIA SWEETSPIRE	7	2-3' HT	#3 CONTAINER	30" O.C.
PTW	PHYSOCARPUS OPULIFOLIUS 'TINY WINE'	TINY WINE DWARF NINEBARK	4	2-3' HT	#3 CONTAINER	2.5' O.C.
<b>EVERGREEN SHRUBS</b>						
JCS	JUNIPERUS CHINENSIS 'SEA GREEN'	SEA GREEN JUNIPER	8	2.5-3' SPREAD	#5 CONTAINER	3' O.C.
<b>PERENNIALS AND ORNAMENTAL GRASSES</b>						
HHR	HEMEROCALLIS 'HAPPY RETURNS'	HAPPY RETURNS DAYLILY	77	#1 CONTAINER	#1 CONTAINER	10" O.C.
HPO	HEMEROCALLIS 'PURPLE DE ORO'	PURPLE DE ORO DAYLILY	94	#1 CONTAINER	#1 CONTAINER	10" O.C.
PLB	PENNISETUM ALOPECUROIDES 'LITTLE BUNNY'	LITTLE BUNNY FOUNTAIN GRASS	43	#1 CONTAINER	#1 CONTAINER	10" O.C.
PVS	PANICUM VIRGATUM 'SHENANDOAH'	SHENANDOAH SWITCH GRASS	19	#1 CONTAINER	#1 CONTAINER	18" O.C.



PROJECT: IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET

DESIGN SUBMISSION: 85% DESIGN

DRAWING TITLE: LANDSCAPE PLAN 2

PREPARED FOR: CITY OF FRAMINGHAM DEPARTMENT OF PUBLIC WORKS  
110 WESTERN AVENUE  
FRAMINGHAM, MA 01702

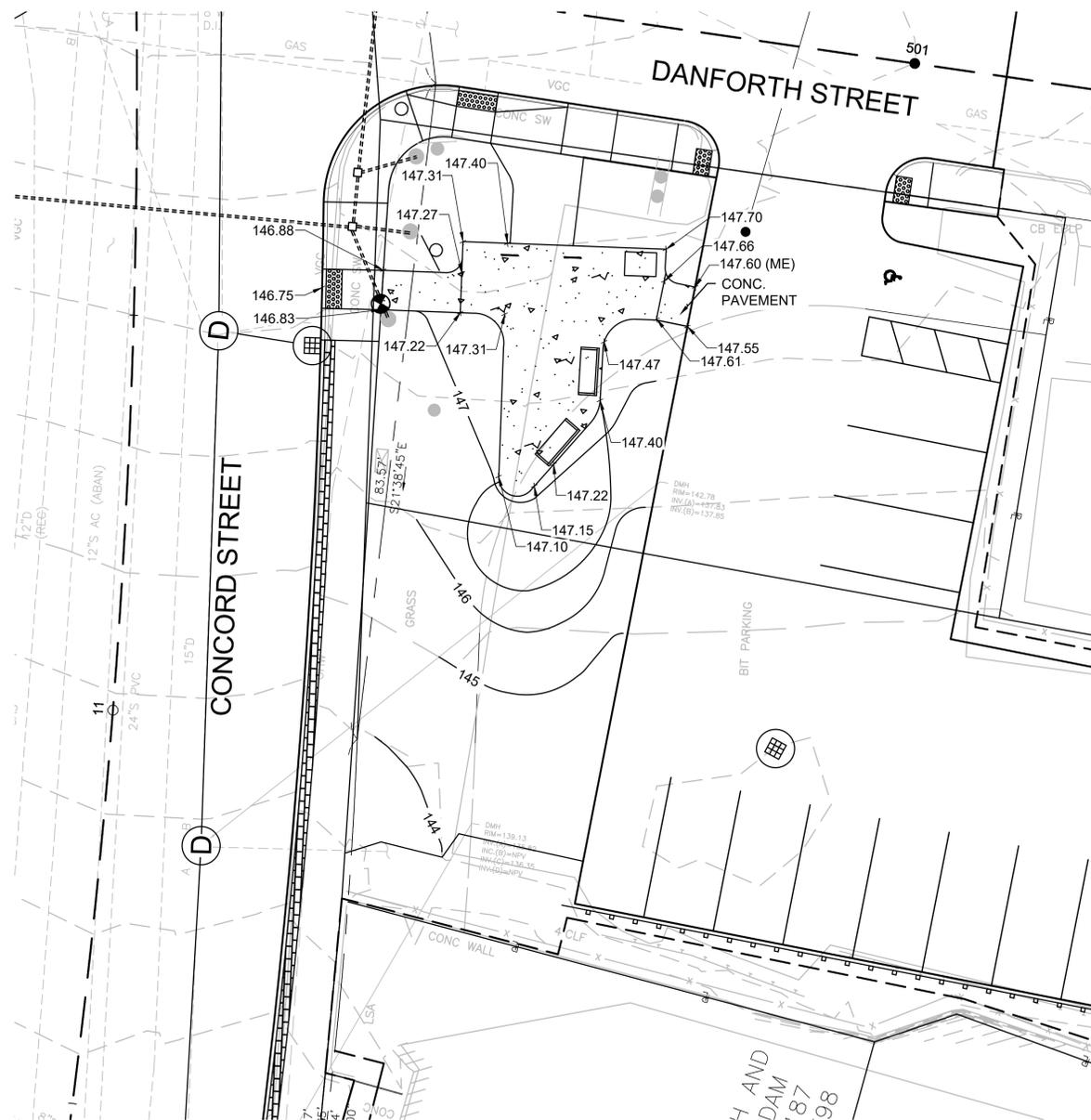
PREPARED BY: Green International Affiliates, Inc.  
100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876

SCALE: AS NOTED  
DATE: 6/4/2024  
PROJECT NO. 20034

DESIGNED BY: JL  
DRAWN BY: YLZ/MPC  
CHECKED BY: TB

SHEET NO. 26 OF 89

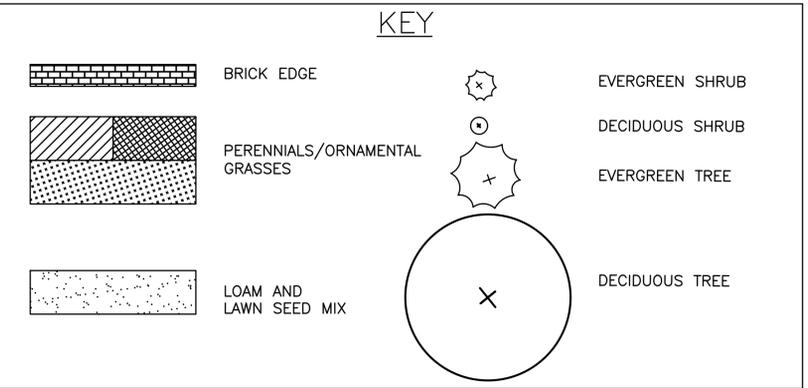
NO.	DATE	REVISIONS
1		



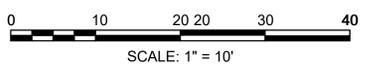
**4** LAYOUT AND GRADING PLAN - CORNER CONCORD STREET AND DANFORTH STREET  
SCALE: 1"=10'



**5** MATERIALS AND LANDSCAPE PLAN 4 - CORNER CONCORD STREET AND DANFORTH STREET  
SCALE: 1"=10'



PLANT LIST - SHEET 3						
KEY	DECIDUOUS TREES	COMMON NAME	QTY	SIZE	ROOT	REMARKS/SPACING
AMC	AMELANCHIER X GRANDIFLORA 'AUTUMN BRILLIANCE'	AUTUMN BRILLIANCE SERVICEBERRY	4	5-6' HT MULTI-STEMMED	B&B	AS SHOWN
BN	BETULA NIGRA 'HERITAGE'	HERITAGE RIVER BIRCH	3	2-2.5" CAL	B&B	AS SHOWN
QR	QUERCUS RUBRA	NORTHERN RED OAK	1	2-2.5" CAL	B&B	AS SHOWN
EVERGREEN TREES						
TON	THUJA OCCIDENTALIS 'NIGRA'	DARK AMERICAN ARBORVITAE	3	6-7'	B&B	AS SHOWN
DECIDUOUS SHRUBS						
CAH	CLETHRA ALNIFOLIA 'CRYSTALINA'	SUGARTINA SUMMERSWEET	6	18-24" SPREAD	#3 CONTAINER	2' O.C.
FMA	FOTHERGILLA 'MOUNT AIRY'	MOUNT AIRY FOTHERGILLA	4	3-4' HT	#7 CONTAINER	4' O.C.
IVM	ITEA VIRGINIANA 'MERLOT'	MERLOT VIRGINIA SWEETSPIRE	9	2-3' HT	#3 CONTAINER	30" O.C.
PTW	PHYSOCARPUS OPULIFOLIUS 'TINY WINE'	TINY WINE DWARF NINEBARK	8	2-3' HT	#3 CONTAINER	2.5' O.C.
EVERGREEN SHRUBS						
ICC	ILEX CRENATA 'SOFT TOUCH'	SOFT TOUCH COMPACT JAPANESE HOLLY	12	18-24" SPREAD	#5 CONTAINER	24" O.C.
PERENNIALS AND ORNAMENTAL GRASSES						
HHR	HEMEROCALLIS 'HAPPY RETURNS'	HAPPY RETURNS DAYLILY	18	#1 CONTAINER	#1 CONTAINER	10" O.C.
HPO	HEMEROCALLIS 'PURPLE DE ORO'	PURPLE DE ORO DAYLILY	17	#1 CONTAINER	#1 CONTAINER	10" O.C.
HSD	HEMEROCALLIS 'STELLA D'ORO'	STELLA D'ORO DAYLILY	8	#1 CONTAINER	#1 CONTAINER	15" O.C.
LAH	LAVANDULA ANGUSTIFOLIA 'HICOTE'	HIDCOTE LAVENDER	21	#1 CONTAINER	#1 CONTAINER	18" O.C.
PHM	PANICUM VIRGATUM 'HEAVY METAL'	HEAVY METAL SWITCH GRASS	5	#1 CONTAINER	#1 CONTAINER	18" O.C.



PROJECT: **IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET**

DESIGN SUBMISSION: **85% DESIGN**

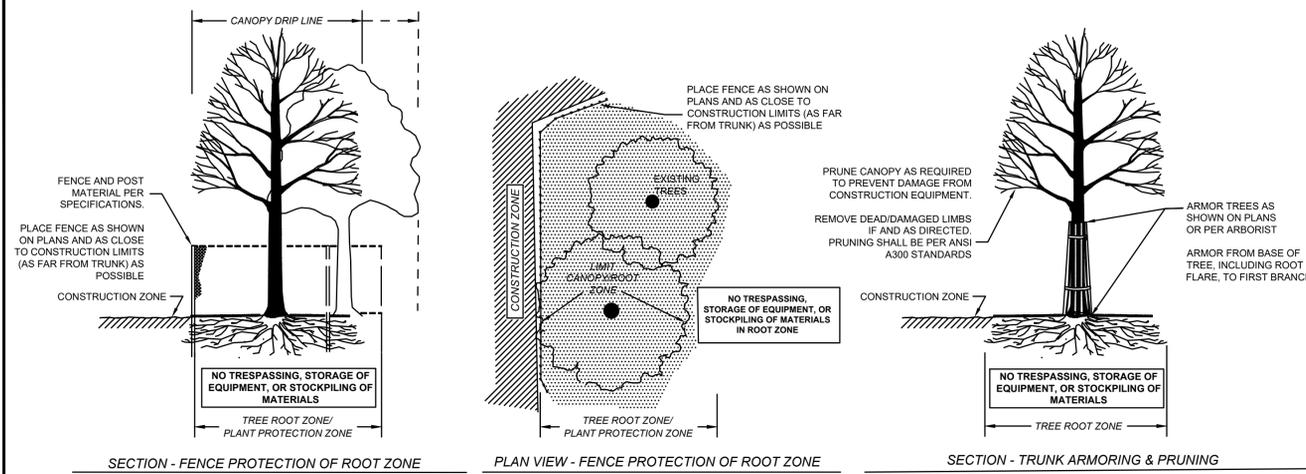
DRAWING TITLE: **LANDSCAPE PLAN 3**

PREPARED FOR: **CITY OF FRAMINGHAM DEPARTMENT OF PUBLIC WORKS**  
110 WESTERN AVENUE  
FRAMINGHAM, MA 01702

PREPARED BY: **Green International Affiliates, Inc.**  
100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876

SCALE: AS NOTED      DESIGNED BY: JL  
DATE: 6/4/2024      DRAWN BY: YLZ/MPC      SHEET NO. 27 OF 89  
PROJECT NO. 20034      CHECKED BY: TB

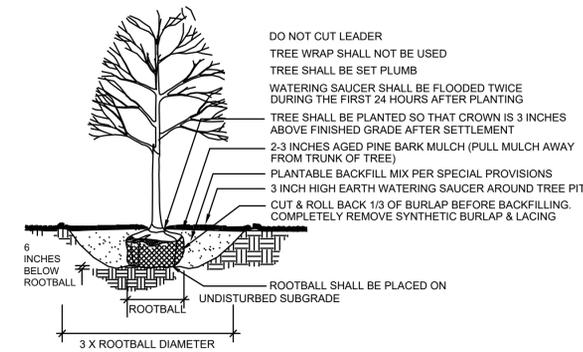
NO.	DATE	REVISIONS
1		



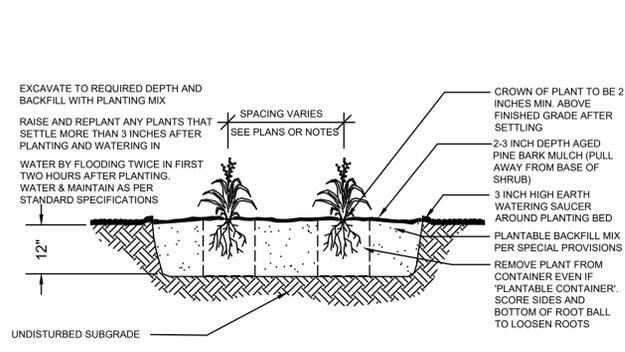
**1 TREE PROTECTION DETAILS**  
NOT TO SCALE

**2 SHRUB, PERENNIAL AND ORNAMENTAL GRASS SPACING DETAIL**  
NOT TO SCALE

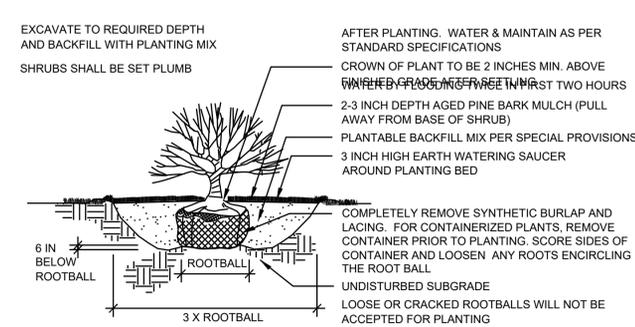
**3 EVERGREEN TREE PLANTING**  
NOT TO SCALE



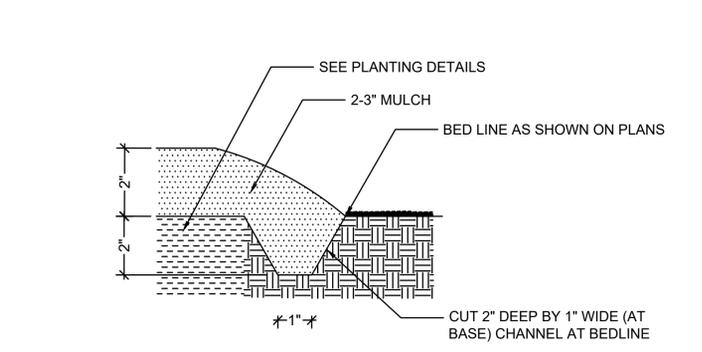
**4 TREE PLANTING**  
NOT TO SCALE



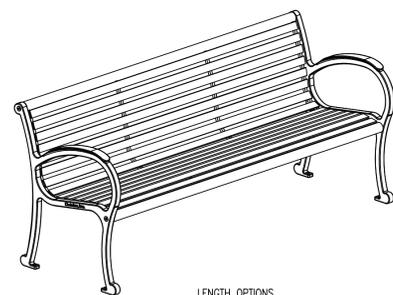
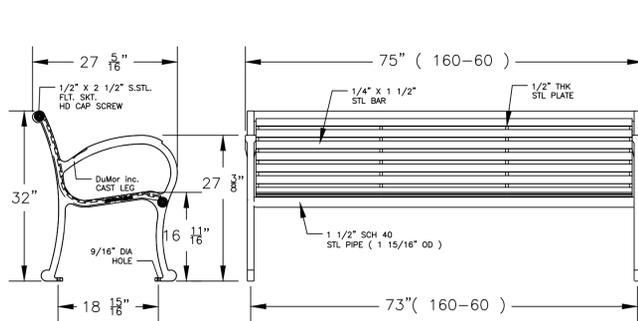
**5 PERENNIAL AND ORNAMENTAL GRASS PLANTING**  
NOT TO SCALE



**6 SHRUB PLANTING**  
NOT TO SCALE

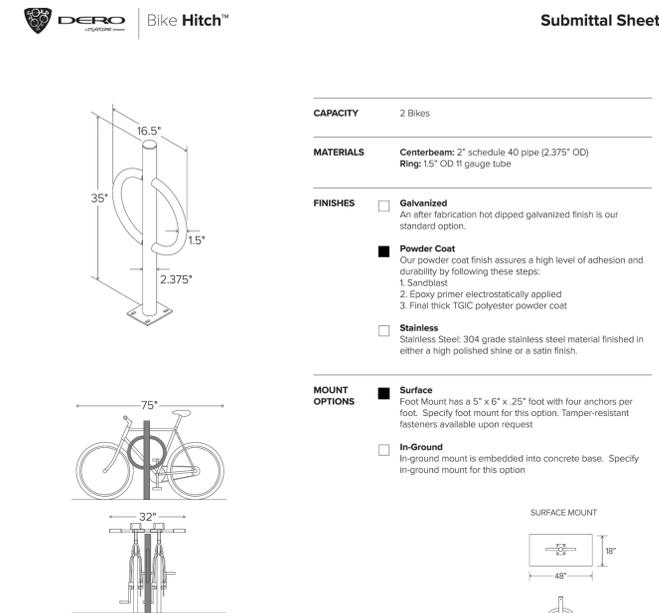


**7 PLANT BED EDGE DETAIL**  
NOT TO SCALE

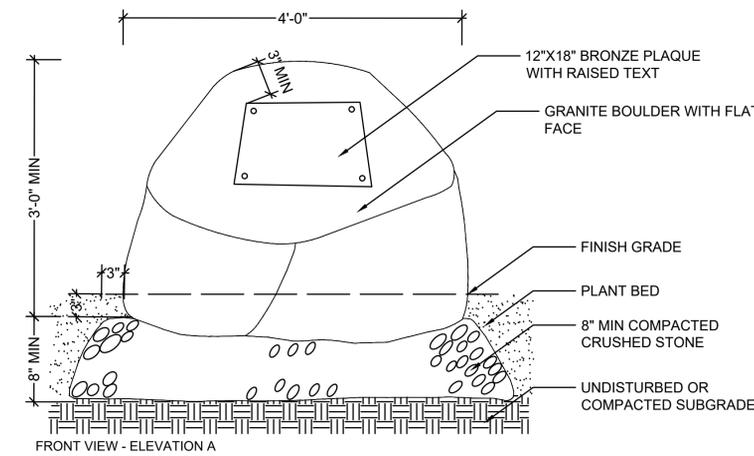


- NOTES**
- 1.) ALL STL MEMBERS COATED W/ ZINC RICH COATING THEN POLYESTER POWDER COATED.
  - 2.) BENCH IS SHIPPED UNASSEMBLED.
  - 3.) 1/2" X 3 3/4" EXPANSION ANCHOR BOLTS PROVIDED.

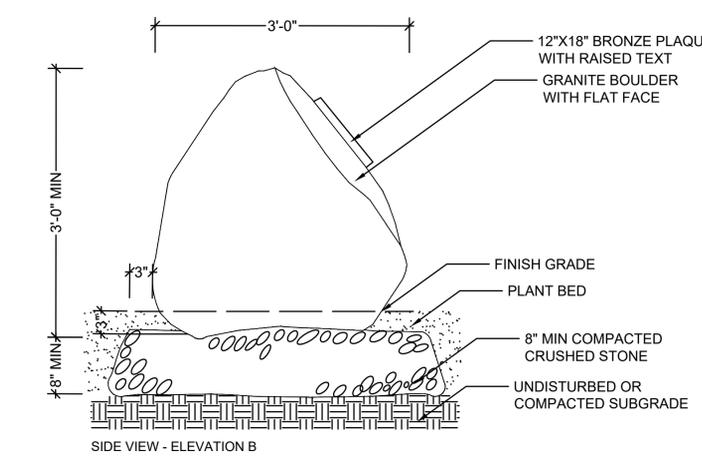
**8 BENCH WITH ARMS**  
NOT TO SCALE



**9 BIKE RACK**  
NOT TO SCALE



**10 BOULDER WITH MEMORIAL PLAQUE**  
1"=1'-0"



PROJECT: **IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET**

DESIGN SUBMISSION: **85% DESIGN**

DRAWING TITLE: **LANDSCAPE DETAILS**

PREPARED FOR: **CITY OF FRAMINGHAM DEPARTMENT OF PUBLIC WORKS**  
110 WESTERN AVENUE  
FRAMINGHAM, MA 01702

PREPARED BY: **Green International Affiliates, Inc.**  
100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876

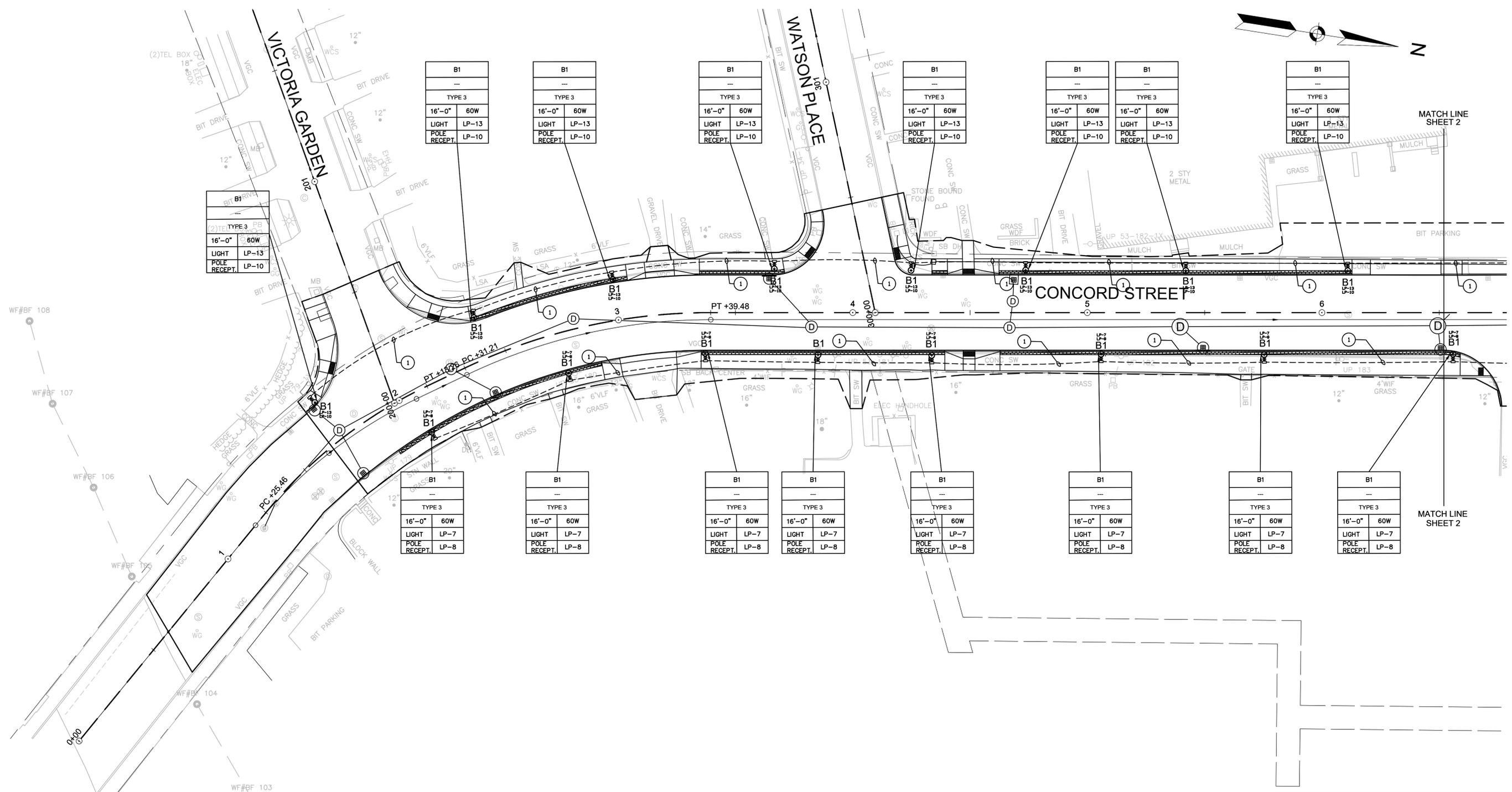
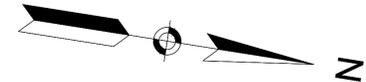
SCALE: AS NOTED  
DATE: 6/4/2024  
PROJECT NO. 20034

DESIGNED BY: JL  
DRAWN BY: MPC  
CHECKED BY: HP

SHEET NO. 28 OF 89

NO.	DATE	REVISIONS
1		





B1	
TYPE 3	
16'-0"	60W
LIGHT	LP-13
POLE RECEPT.	LP-10

B1	
TYPE 3	
16'-0"	60W
LIGHT	LP-13
POLE RECEPT.	LP-10

B1	
TYPE 3	
16'-0"	60W
LIGHT	LP-13
POLE RECEPT.	LP-10

B1	
TYPE 3	
16'-0"	60W
LIGHT	LP-13
POLE RECEPT.	LP-10

B1	
TYPE 3	
16'-0"	60W
LIGHT	LP-13
POLE RECEPT.	LP-10

B1	
TYPE 3	
16'-0"	60W
LIGHT	LP-13
POLE RECEPT.	LP-10

B1	
TYPE 3	
16'-0"	60W
LIGHT	LP-13
POLE RECEPT.	LP-10

B1	
TYPE 3	
16'-0"	60W
LIGHT	LP-13
POLE RECEPT.	LP-10

B1	
TYPE 3	
16'-0"	60W
LIGHT	LP-7
POLE RECEPT.	LP-8

B1	
TYPE 3	
16'-0"	60W
LIGHT	LP-7
POLE RECEPT.	LP-8

B1	
TYPE 3	
16'-0"	60W
LIGHT	LP-7
POLE RECEPT.	LP-8

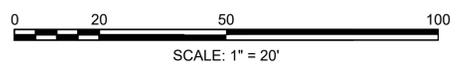
B1	
TYPE 3	
16'-0"	60W
LIGHT	LP-7
POLE RECEPT.	LP-8

B1	
TYPE 3	
16'-0"	60W
LIGHT	LP-7
POLE RECEPT.	LP-8

B1	
TYPE 3	
16'-0"	60W
LIGHT	LP-7
POLE RECEPT.	LP-8

B1	
TYPE 3	
16'-0"	60W
LIGHT	LP-7
POLE RECEPT.	LP-8

B1	
TYPE 3	
16'-0"	60W
LIGHT	LP-7
POLE RECEPT.	LP-8



CONTINUED ON SHEET NO. 24

PROJECT: **IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET**

DESIGN SUBMISSION: **85% DESIGN**

DRAWING TITLE: **LIGHTING PLANS - 1**

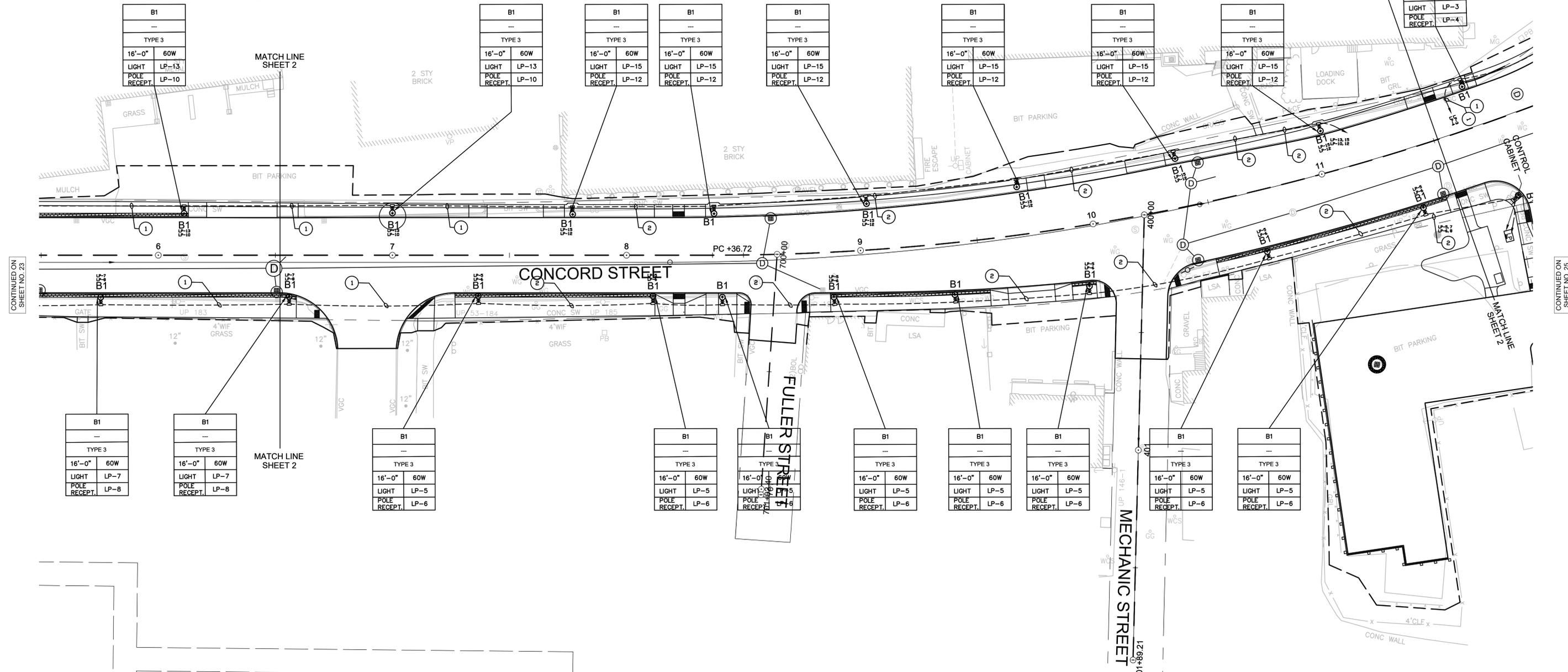
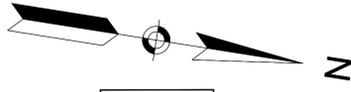
PREPARED FOR:  
 **CITY OF FRAMINGHAM**  
 DEPARTMENT OF PUBLIC WORKS  
 110 WESTERN AVENUE  
 FRAMINGHAM, MA 01702

PREPARED BY:  
 **Green International Affiliates, Inc.**  
 100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876

SCALE: AS NOTED	DESIGNED BY: LAF	SHEET NO. <b>30</b> OF <b>82</b>
DATE: 06/17/2024	DRAWN BY: MC	
PROJECT NO. 20034	CHECKED BY: LAF	

NO.	DATE	REVISIONS
1		

I:\Shared\Engineering\Projects\20034\CONCORD\Lighting\Drawings\110524.dwg Printed: 6/17/2024 11:59 AM



CONTINUED ON SHEET NO. 23

CONTINUED ON SHEET NO. 25

PROJECT: IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET

DESIGN SUBMISSION: 85% DESIGN

DRAWING TITLE: LIGHTING PLANS - 2

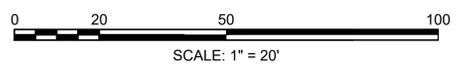
PREPARED FOR:  
 CITY OF FRAMINGHAM  
 DEPARTMENT OF PUBLIC WORKS  
 110 WESTERN AVENUE  
 FRAMINGHAM, MA 01702

PREPARED BY:  
 **Green International Affiliates, Inc.**  
 100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876

SCALE: AS NOTED  
 DATE: 10/7/2021  
 PROJECT NO. 20034

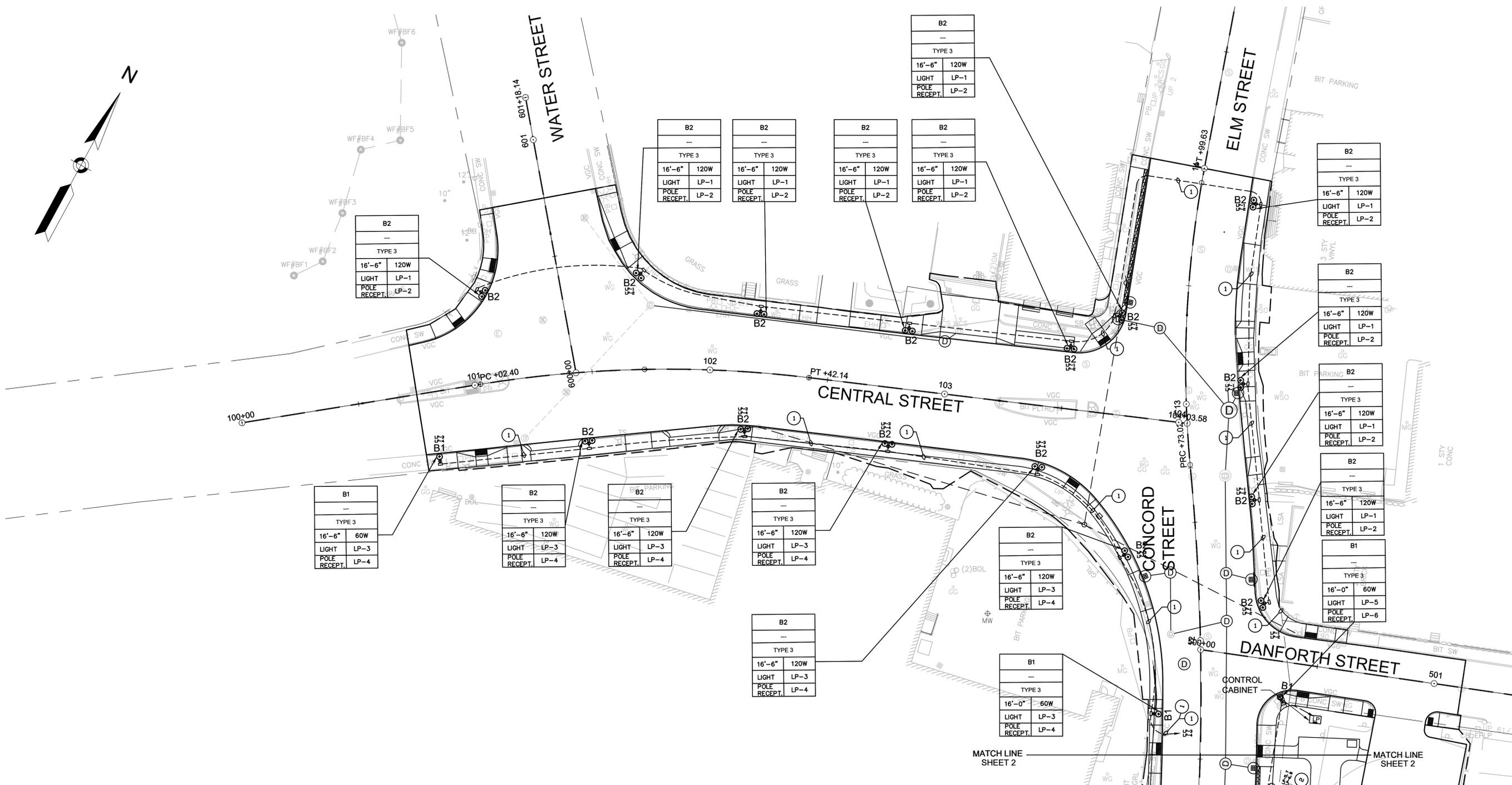
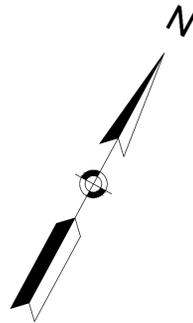
DESIGNED BY: LAF  
 DRAWN BY: MC  
 CHECKED BY: LAF

SHEET NO. 31 OF 82



NO.	DATE	REVISIONS
1		

V:\Shared\Engineering\Projects\20034\20034-010-000.dwg, 10/7/2021, 10:56 AM



B1
---
TYPE 3
16'-6" 60W
LIGHT LP-3
POLE RECEPT. LP-4

B2
---
TYPE 3
16'-6" 120W
LIGHT LP-3
POLE RECEPT. LP-4

B2
---
TYPE 3
16'-6" 120W
LIGHT LP-3
POLE RECEPT. LP-4

B2
---
TYPE 3
16'-6" 120W
LIGHT LP-3
POLE RECEPT. LP-4

B2
---
TYPE 3
16'-6" 120W
LIGHT LP-3
POLE RECEPT. LP-4

B2
---
TYPE 3
16'-6" 120W
LIGHT LP-3
POLE RECEPT. LP-4

B1
---
TYPE 3
16'-0" 60W
LIGHT LP-3
POLE RECEPT. LP-4

B2
---
TYPE 3
16'-6" 120W
LIGHT LP-1
POLE RECEPT. LP-2

B2
---
TYPE 3
16'-6" 120W
LIGHT LP-1
POLE RECEPT. LP-2

B2
---
TYPE 3
16'-6" 120W
LIGHT LP-1
POLE RECEPT. LP-2

B2
---
TYPE 3
16'-6" 120W
LIGHT LP-1
POLE RECEPT. LP-2

B2
---
TYPE 3
16'-6" 120W
LIGHT LP-1
POLE RECEPT. LP-2

B2
---
TYPE 3
16'-6" 120W
LIGHT LP-1
POLE RECEPT. LP-2

B2
---
TYPE 3
16'-6" 120W
LIGHT LP-1
POLE RECEPT. LP-2

B2
---
TYPE 3
16'-6" 120W
LIGHT LP-1
POLE RECEPT. LP-2

B2
---
TYPE 3
16'-6" 120W
LIGHT LP-1
POLE RECEPT. LP-2

B1
---
TYPE 3
16'-0" 60W
LIGHT LP-5
POLE RECEPT. LP-6

\*NOTE: UTILITY POLE ELEVATION TO BE 6" LOWER THAN EXISTING. COORDINATION WITH UTILITY COMPANIES REQUIRED.

CONTINUED ON SHEET NO. 24

PROJECT: IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET

DESIGN SUBMISSION: 85% DESIGN

DRAWING TITLE: LIGHTING PLANS - 3

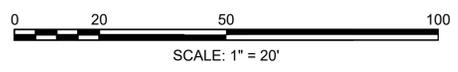
PREPARED FOR: CITY OF FRAMINGHAM DEPARTMENT OF PUBLIC WORKS  
110 WESTERN AVENUE  
FRAMINGHAM, MA 01702

PREPARED BY: Green International Affiliates, Inc.  
100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876

SCALE: AS NOTED  
DATE: 10/7/2021  
PROJECT NO. 20034

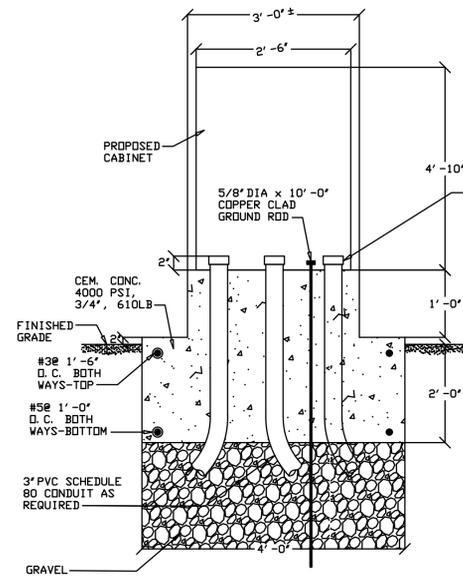
DESIGNED BY: LAF  
DRAWN BY: MC  
CHECKED BY: LAF

SHEET NO. 32 OF 82

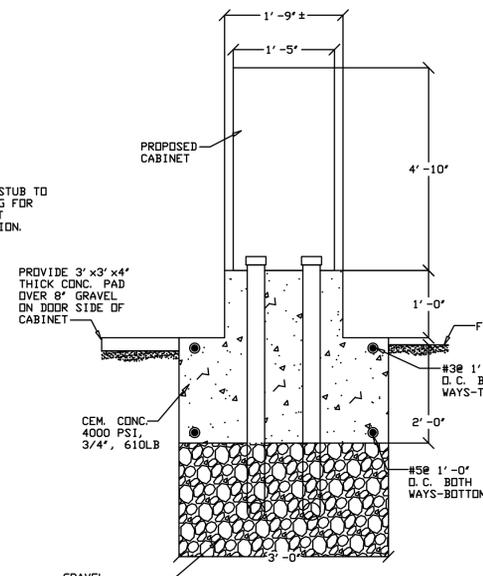


**EA** ENGINEERING ADVANTAGE, INC. 880 MAIN STREET 5TH FLOOR WALTHAM, MASSACHUSETTS 02451 PHONE: (617) 288-3969

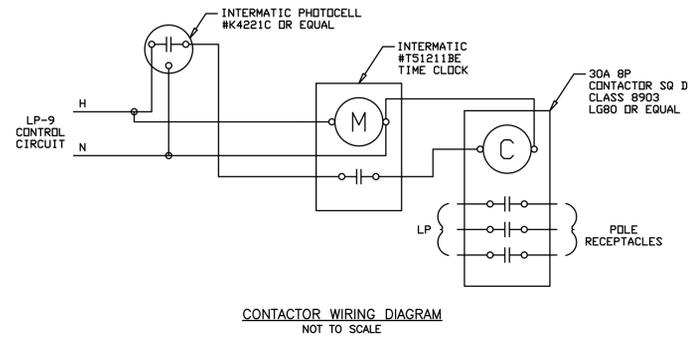
NO.	DATE	REVISIONS
1		



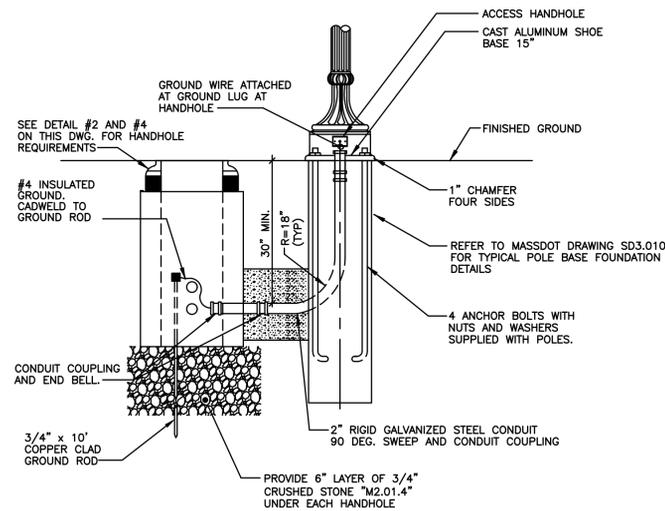
LIGHTING LOAD CENTER FOUNDATION FRONT VIEW NOT TO SCALE



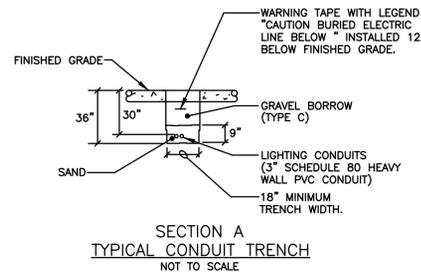
LIGHTING LOAD CENTER FOUNDATION SIDE VIEW NOT TO SCALE



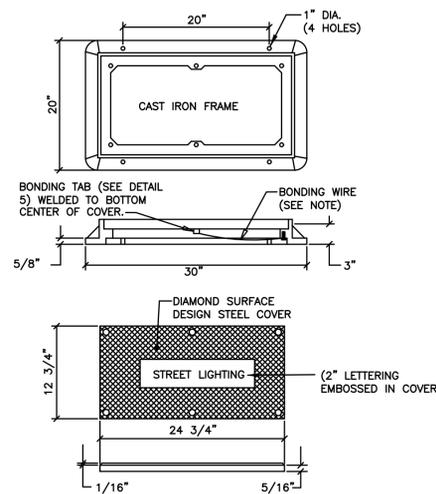
CONTACTOR WIRING DIAGRAM NOT TO SCALE



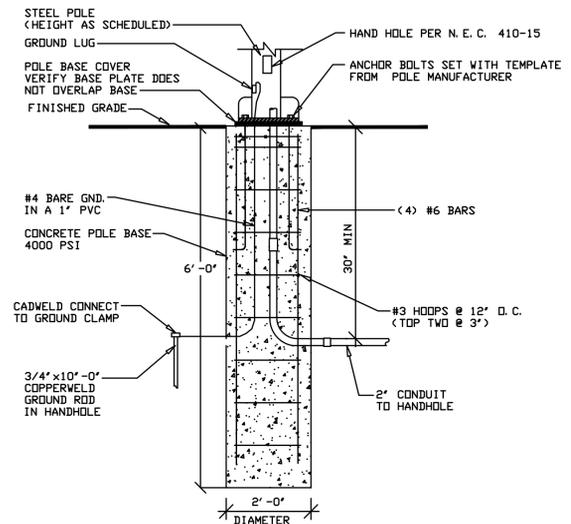
TYPICAL POLE BASE, HANDHOLE AND POLE FOUNDATION NOT TO SCALE



SECTION A TYPICAL CONDUIT TRENCH NOT TO SCALE

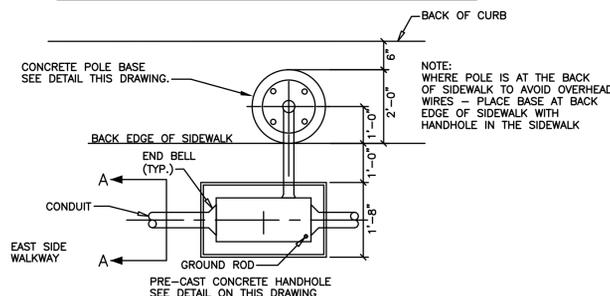


TYPICAL HANDHOLE COVER NOT TO SCALE

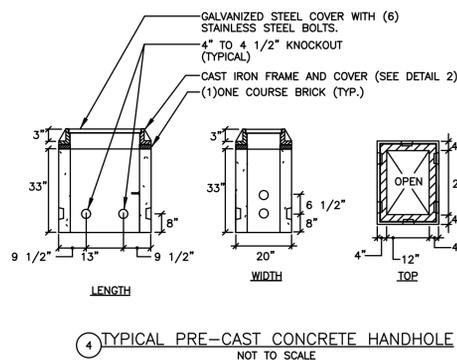


POLE BASE DETAIL NOT TO SCALE

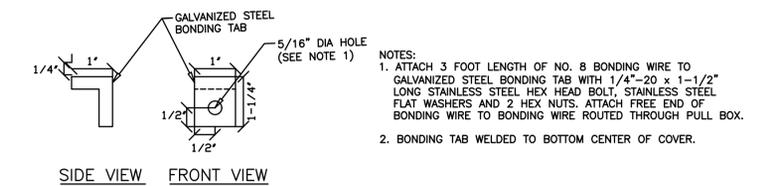
COORDINATE LOCATIONS OF HANDHOLES WITH EXISTING UNDERGROUND PIPING AND UTILITIES



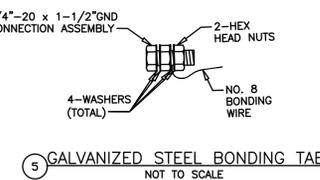
TYPICAL POLE BASE AND HANDHOLE ARRANGEMENT NOT TO SCALE



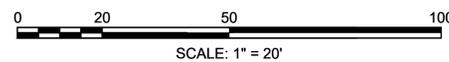
TYPICAL PRE-CAST CONCRETE HANDHOLE NOT TO SCALE



SIDE VIEW FRONT VIEW



GALVANIZED STEEL BONDING TAB NOT TO SCALE



**EA** ENGINEERING ADVANTAGE, INC. 880 MAIN STREET 5TH FLOOR WALTHAM, MASSACHUSETTS 02451 PHONE: (617) 288-3969

PROJECT: **IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET**

DESIGN SUBMISSION: **85% DESIGN**

DRAWING TITLE: **LIGHTING DETAILS - 1**

PREPARED FOR: **CITY OF FRAMINGHAM DEPARTMENT OF PUBLIC WORKS 110 WESTERN AVENUE FRAMINGHAM, MA 01702**

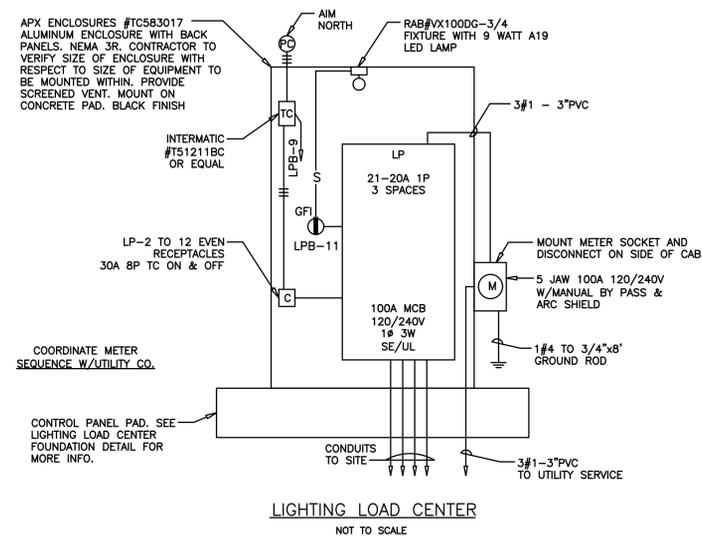
PREPARED BY: **Green International Affiliates, Inc. 100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876**

SCALE: AS NOTED  
 DATE: 6/4/2024  
 PROJECT NO. 20034

DESIGNED BY: LAF  
 DRAWN BY: MC  
 CHECKED BY: LAF

SHEET NO. **33** OF **89**

U:\Shared\Engineering\Projects\2023\20034\DWG\01 Lighting Details.dwg Printed: 6/17/2024 8:53 AM



**PANEL LP SCHEDULE**

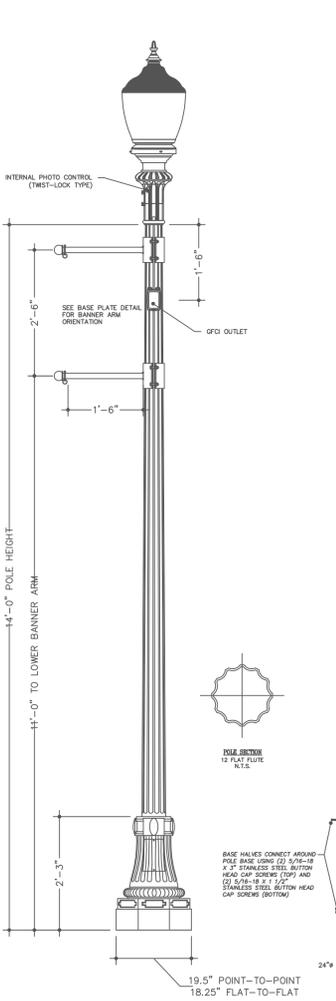
CKT NO	DESCRIPTION	CONNECTED LOAD 10,580 WATTS 44 AMPS				DESCRIPTION	CKT NO
		AMP	WATTS	WATTS	WATTS		
1	6 LIGHT POLES	20	1870	20	1	6 POLE RECEP	2
3	6 LIGHT POLES	20	1870	20	1	6 POLE RECEP	4
5	6 LIGHT POLES	20	1870	20	1	6 POLE RECEP	6
7	6 LIGHT POLES	20	1870	20	1	6 POLE RECEP	8
9	CONTROL CIRCUIT	20	300	20	1	6 POLE RECEP	10
11	CAB. LTG & RECEP	20	1	20	1	6 POLE RECEP	12
13	7 LIGHT POLES	20	1	20	1	SPACE	14
15	7 LIGHT POLES	20	1	20	1	SPACE	16
17	SPARE	20	1	20	1	SPACE	18
19	SPARE	20	1	20	1	SPACE	20
21	SPARE	20	1	20	1	SPACE	22
23	SPARE	20	1	20	1	SPACE	24
TOTAL		280	5330				

**VOLTAGE DROP CALCULATIONS**

% VD = AMPS X DISTANCE (100') X FACTOR /120

CIR#	AMPS	DIST.	WIRE SIZE	% VD
LP-1	6.7	400'	#6	2.2%
LP-3	6.2	500'	#6	2.5%
LP-5	3.5	500'	#6	1.4%
LP-7	3.5	1000'	#6	2.8%
LP-13	3.5	620'	#6	1.8%
LP-15	3.5	1000'	#6	2.8%

- WIRE SCHEDULE**
- ① 4#6 & 1#6GND. - 3" PVC
  - ② 6#6 & 1#6GND. - 3" PVC
  - ⑤ EMPTY - 2" PVC



**LUMINAIRE SPECIFICATIONS**

MANUFACTURER: KING LUMINAIRE  
 CATALOG NO.: K189R-B2AR-III-60(SSL)-1042-120:277-K18-SST-PE  
 OPTICAL SYSTEM: BAFFLED ARRAY ACRYLIC RIPPLED  
 IES CLASS: TYPE III  
 WATTAGE: 60W SOLID STATE LIGHTING  
 LINE VOLTAGE: 120:277V  
 I.P. RATING: IP 65  
 CCT: 4000K  
 POLE ADAPTER: K18 WITH INTERNAL 3-PIN RECEPTACLE & LONG LIFE PHOTOCONTROL  
 FINISH: T.G.I.C. POLYESTER POWDER COAT - GLOSS  
 OPTIONS:  
 • SOLID SPUN TOP  
 • #1 VENTED FINIAL  
 • QUICK DISCONNECT WIRING  
 • 540 JOULE @ 2mS 20kA-8/20uS SURGE PROTECTION

**DRIVER SPECIFICATIONS**

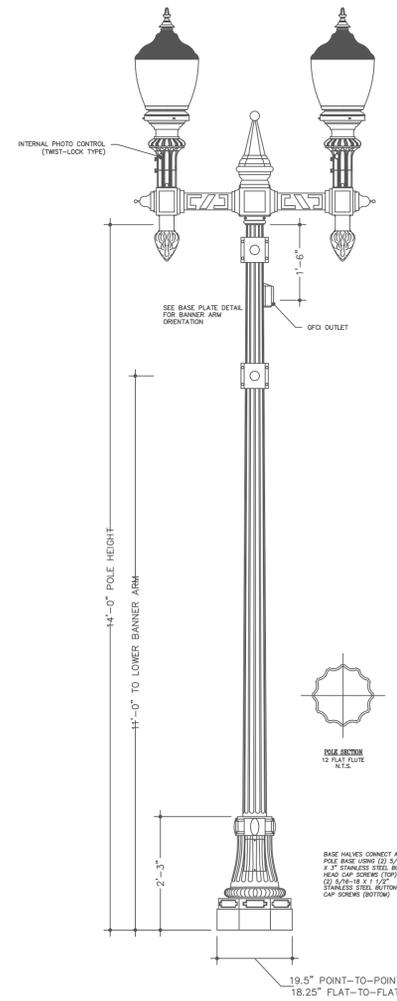
MANUFACTURER: MEANWELL  
 TYPE: ELECTRONIC  
 CATALOG NO.: HLG-100H (DATA SHEET ATTACHED)

**POLE & BASE SPECIFICATIONS**

MANUFACTURER: KING LUMINAIRE  
 CATALOG NO.: K189R-B2AR-III-60(SSL)-1042-120:277-K18-SST-PE  
 BASE: CAST ALUMINUM ALLOY 356 PER ASTM B26  
 SHAFT: "CLAMSHELL" ALUMINUM ALLOY 6063 PER ASTM B221 AND HEAT TREATED TO T6 TEMPER AFTER WELDING. ROUND TAPERED (0.14" PER FT.) - 12 FLAT FLUTE PROFILE - 0.188 WALL THICKNESS  
 TENON: 3 1/2" DIA. x 3" LONG  
 HAND HOLE: 3" x 5" (NOMINAL) COVER SECURED BY (2) 1/4" -20 SS SCREWS  
 ACCESS DOOR: LOCATED OPPOSITE HANDHOLE  
 ANCHOR BOLTS: (4) 3/4" DIA. x 24" L. +3" HOOK. PER ASTM F1554 -07 -Gr55, FULLY HOT DIPPED GALVANIZED PER ASTM A153.  
 BOLT PROJECTION: (1) HEX NUT AND (1) FLAT WASHER  
 GROUND PROVISION: LOCATED INSIDE POLE HANDHOLE  
 FINISH: T.G.I.C. POLYESTER POWDER COAT - GLOSS BLACK  
 OPTIONS:  
 • 20 AMP GFCI OUTLET WITH WEATHERPROOF WHILE IN USE COVER

**BANNER ARM SPECIFICATIONS**

MANUFACTURER: KING LUMINAIRE  
 STYLE: CLAMP-ON  
 MATERIAL: ALUMINUM WITH STAINLESS STEEL HARDWARE  
 FINISH: T.G.I.C. POLYESTER POWDER COAT - GLOSS BLACK



**LUMINAIRE SPECIFICATIONS**

MANUFACTURER: KING LUMINAIRE  
 CATALOG NO.: K199R-B2AR-III-60(SSL)-1042-120:277-K18-SST-PE  
 OPTICAL SYSTEM: BAFFLED ARRAY ACRYLIC RIPPLED  
 IES CLASS: TYPE III  
 WATTAGE: 60W SOLID STATE LIGHTING  
 LINE VOLTAGE: 120:277V  
 I.P. RATING: IP 65  
 CCT: 4000K  
 POLE ADAPTER: K18 WITH INTERNAL 3-PIN RECEPTACLE & LONG LIFE PHOTOCONTROL  
 FINISH: T.G.I.C. POLYESTER POWDER COAT - GLOSS  
 OPTIONS:  
 • SOLID SPUN TOP  
 • #1 VENTED FINIAL  
 • QUICK DISCONNECT WIRING  
 • 540 JOULE @ 2mS 20kA-8/20uS SURGE PROTECTION

**DRIVER SPECIFICATIONS**

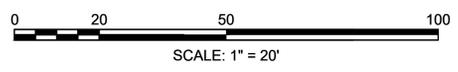
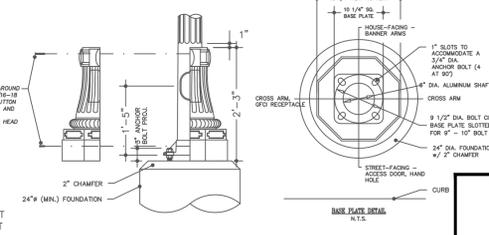
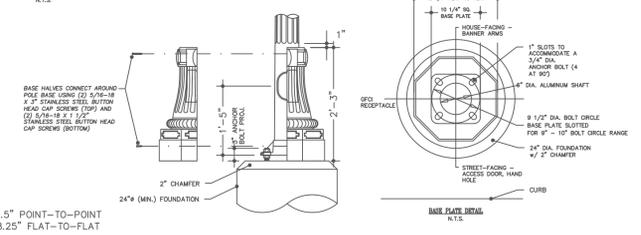
MANUFACTURER: MEANWELL  
 TYPE: ELECTRONIC  
 CATALOG NO.: HLG-100H (DATA SHEET ATTACHED)

**POLE & BASE SPECIFICATIONS**

MANUFACTURER: KING LUMINAIRE  
 CATALOG NO.: K189R-B2AR-III-60(SSL)-1042-120:277-K18-SST-PE  
 BASE: CAST ALUMINUM ALLOY 356 PER ASTM B26  
 SHAFT: "CLAMSHELL" ALUMINUM ALLOY 6063 PER ASTM B221 AND HEAT TREATED TO T6 TEMPER AFTER WELDING. ROUND TAPERED (0.14" PER FT.) - 12 FLAT FLUTE PROFILE - 0.188 WALL THICKNESS  
 TENON: 3 1/2" DIA. x 3" LONG  
 HAND HOLE: 3" x 5" (NOMINAL) COVER SECURED BY (2) 1/4" -20 SS SCREWS  
 ACCESS DOOR: LOCATED OPPOSITE HANDHOLE  
 ANCHOR BOLTS: (4) 3/4" DIA. x 24" L. +3" HOOK. PER ASTM F1554 -07 -Gr55, FULLY HOT DIPPED GALVANIZED PER ASTM A153.  
 BOLT PROJECTION: (1) HEX NUT AND (1) FLAT WASHER  
 GROUND PROVISION: LOCATED INSIDE POLE HANDHOLE  
 FINISH: T.G.I.C. POLYESTER POWDER COAT - GLOSS BLACK  
 OPTIONS:  
 • 20 AMP GFCI OUTLET WITH WEATHERPROOF WHILE IN USE COVER

**BANNER ARM SPECIFICATIONS**

MANUFACTURER: KING LUMINAIRE  
 STYLE: CLAMP-ON  
 MATERIAL: ALUMINUM WITH STAINLESS STEEL HARDWARE  
 FINISH: T.G.I.C. POLYESTER POWDER COAT - GLOSS BLACK



PROJECT: IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET

DESIGN SUBMISSION: 85% DESIGN

DRAWING TITLE: LIGHTING DETAILS - 2

PREPARED FOR: CITY OF FRAMINGHAM DEPARTMENT OF PUBLIC WORKS  
110 WESTERN AVENUE  
FRAMINGHAM, MA 01702

PREPARED BY: Green International Affiliates, Inc.  
100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876

SCALE: AS NOTED

DESIGNED BY: LAF

DATE: 6/4/2024

DRAWN BY: MC

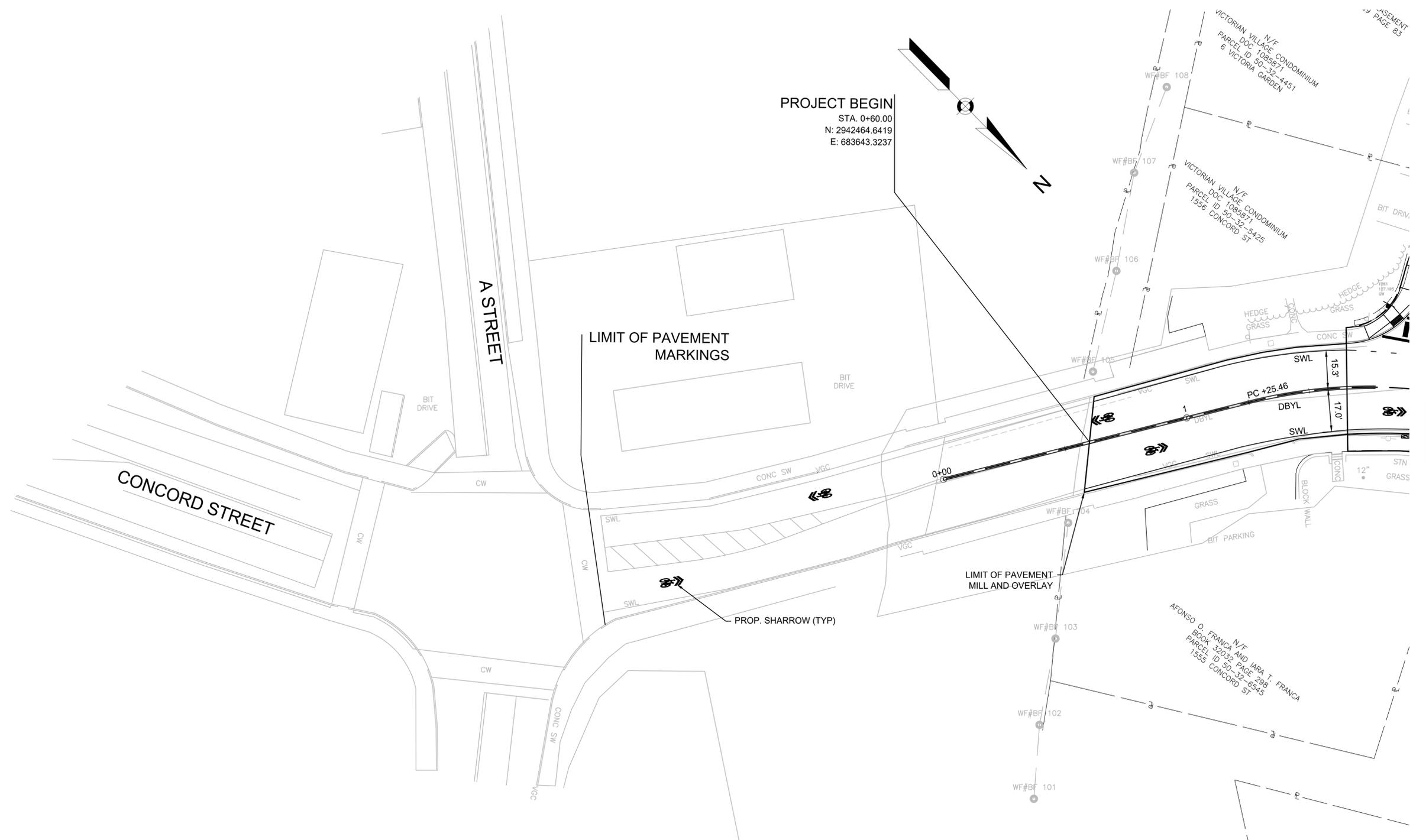
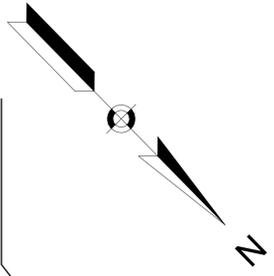
PROJECT NO. 20034

CHECKED BY: LAF

SHEET NO. 34 OF 89

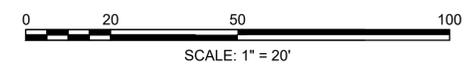
NO.	DATE	REVISIONS
1		

PROJECT BEGIN  
STA. 0+60.00  
N: 2942464.6419  
E: 683643.3237



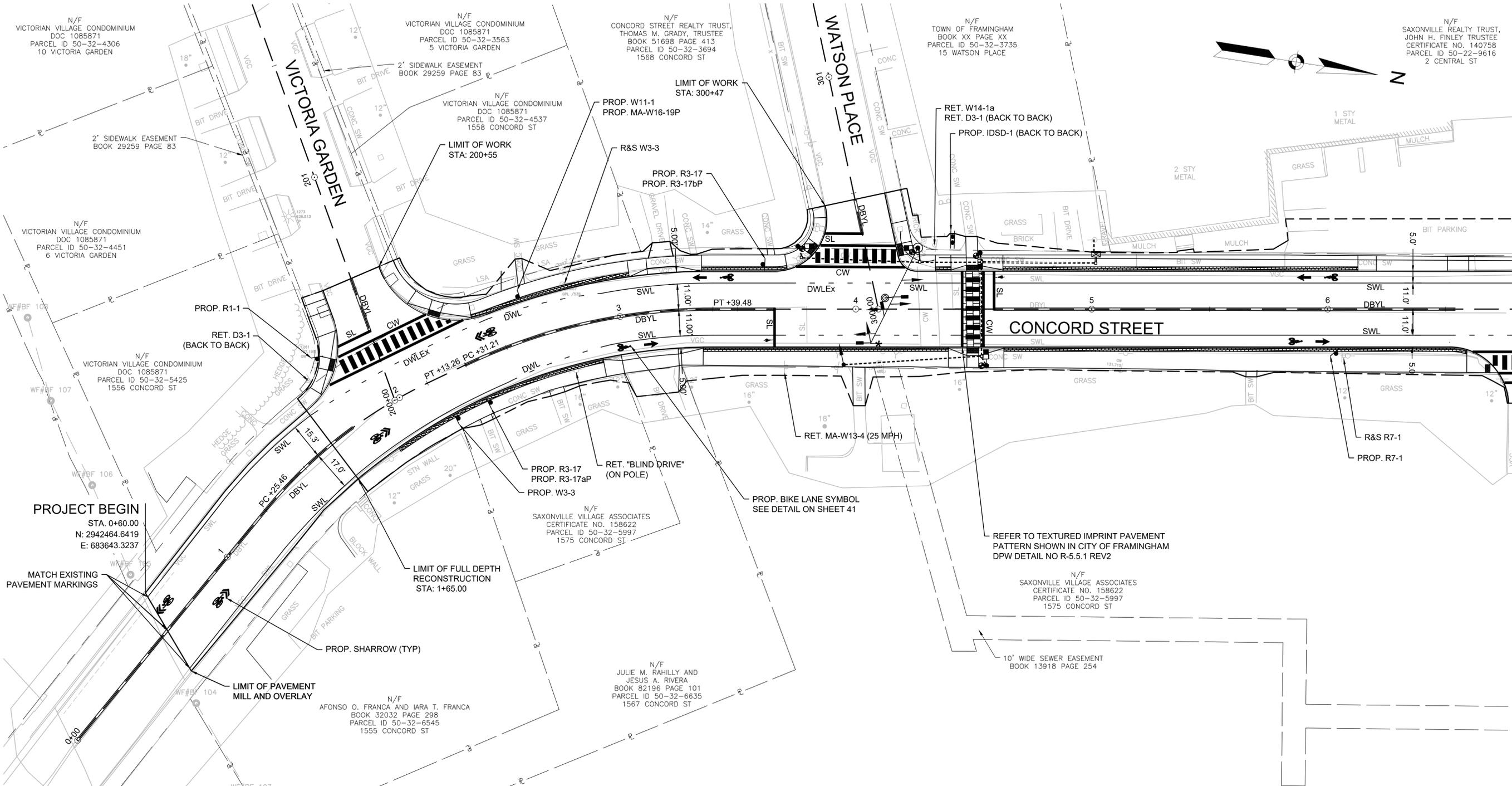
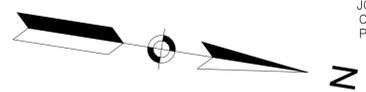
CONTINUED ON  
SHEET NO. 36

PROJECT: IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET		
DESIGN SUBMISSION: 85% DESIGN		
DRAWING TITLE: PAVEMENT MARKING & SIGNING PLAN 1		
PREPARED FOR:  CITY OF FRAMINGHAM DEPARTMENT OF PUBLIC WORKS 110 WESTERN AVENUE FRAMINGHAM, MA 01702		
PREPARED BY:  Green International Affiliates, Inc. 100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876		
SCALE: AS NOTED	DESIGNED BY: MP	SHEET NO. <b>35 OF 89</b>
DATE: 6/4/2024	DRAWN BY: MP	
PROJECT NO. 20034	CHECKED BY: AV	



NO.	DATE	REVISIONS

C:\Users\jfranklin\OneDrive\Documents\20240604\20034\20034\_01.dwg 21:18:30 6/4/2024 1:14 AM



**PROJECT BEGIN**  
 STA. 0+60.00  
 N: 2942464.6419  
 E: 683643.3237

MATCH EXISTING  
 PAVEMENT MARKINGS

LIMIT OF PAVEMENT  
 MILL AND OVERLAY

LIMIT OF FULL DEPTH  
 RECONSTRUCTION  
 STA: 1+65.00

LIMIT OF WORK  
 STA: 300+47

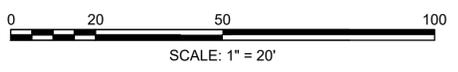
LIMIT OF WORK  
 STA: 200+55

REFER TO TEXTURED IMPRINT PAVEMENT  
 PATTERN SHOWN IN CITY OF FRAMINGHAM  
 DPW DETAIL NO R-5.5.1 REV2

10' WIDE SEWER EASEMENT  
 BOOK 13918 PAGE 254

CONTINUED ON  
 SHEET NO. 35

CONTINUED ON  
 SHEET NO. 37



PROJECT: **IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET**

DESIGN SUBMISSION: **85% DESIGN**

DRAWING TITLE: **PAVEMENT MARKING & SIGNING PLAN 2**

PREPARED FOR:  
 **CITY OF FRAMINGHAM**  
 DEPARTMENT OF PUBLIC WORKS  
 110 WESTERN AVENUE  
 FRAMINGHAM, MA 01702

PREPARED BY:  
 **Green International Affiliates, Inc.**  
 100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876

SCALE: AS NOTED  
 DATE: 6/4/2024  
 PROJECT NO. 20034

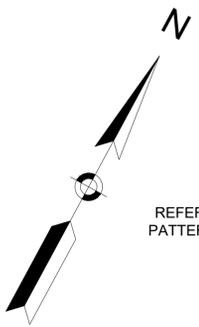
DESIGNED BY: MP  
 DRAWN BY: MP  
 CHECKED BY: AV

SHEET NO.  
**36 OF 89**

NO.	DATE	REVISIONS

C:\Users\jgarcia\OneDrive\Documents\20240604\20034\20034\_000000.dwg Printed: 6/17/2024 1:54 AM





REFER TO TEXTURED IMPRINT PAVEMENT PATTERN SHOWN IN CITY OF FRAMINGHAM DPW DETAIL NO R-5.5.1 REV2

**LIMIT OF WORK**  
STA. 100+75.00  
N: 2943436.5826  
E: 682934.8854

MATCH EXISTING PAVEMENT MARKINGS  
**LIMIT OF WORK**  
STA. 600+75.00  
N: 2943535.2195  
E: 682942.6889

**PROJECT END**  
STA. 14+00.00  
N: 2943679.8552  
E: 683182.7130

MATCH EXISTING PAVEMENT MARKINGS  
BIT PARKING  
LIMIT OF FULL DEPTH RECONSTRUCTION

REFER TO TEXTURED IMPRINT PAVEMENT PATTERN SHOWN IN CITY OF FRAMINGHAM DPW DETAIL NO R-5.5.1 REV2

REFER TO TEXTURED IMPRINT PAVEMENT PATTERN SHOWN IN CITY OF FRAMINGHAM DPW DETAIL NO R-5.5.1 REV2

MATCH EXISTING PAVEMENT MARKINGS

LIMIT OF PAVEMENT MILL AND OVERLAY

RET. R3-7L

PROP. "NO TURN ON RED" ELECTRONIC BLANK-OUT SIGN

REFER TO TEXTURED IMPRINT PAVEMENT PATTERN SHOWN IN CITY OF FRAMINGHAM DPW DETAIL NO R-5.5.1 REV2

**CENTRAL STREET**

R&S "JAMES J. McGRATH WORLD WAR I MEMORIAL SQUARE" (BACK TO BACK)

PROP. R3-2

PROP. R3-5R

PROP. R3-5a

**CONCORD ST**

PROP. R3-5a

PROP. R6-1L

PROP. R6-1R

PROP. PID-2

R&S R1-1

R&S D3-1

R&S R10-7

PROP. PID-1

PROP. PID-3

R&S R7-5

PROP. R7-5

R&S D9-6

RELOCATED D3-1

PROP. R10-6

PROP. PID-1

PROP. PID-2

PROP. PID-3

PROP. PID-4

PROP. PID-5

PROP. PID-6

PROP. PID-7

PROP. PID-8

PROP. PID-9

PROP. PID-10

PROP. PID-11

PROP. PID-12

PROP. PID-13

PROP. PID-14

PROP. PID-15

PROP. PID-16

PROP. PID-17

PROP. PID-18

PROP. PID-19

PROP. PID-20

PROP. PID-21

PROP. PID-22

PROP. PID-23

PROP. PID-24

PROP. PID-25

PROP. PID-26

PROP. PID-27

PROP. PID-28

PROP. PID-29

PROP. PID-30

PROP. PID-31

PROP. PID-32

PROP. PID-33

PROP. PID-34

PROP. PID-35

PROP. PID-36

PROP. PID-37

PROP. PID-38

PROP. PID-39

PROP. PID-40

PROP. PID-41

PROP. PID-42

PROP. PID-43

PROP. PID-44

PROP. PID-45

PROP. PID-46

PROP. PID-47

PROP. PID-48

PROP. PID-49

PROP. PID-50

PROP. PID-51

PROP. PID-52

PROP. PID-53

PROP. PID-54

PROP. PID-55

PROP. PID-56

PROP. PID-57

PROP. PID-58

PROP. PID-59

PROP. PID-60

PROP. PID-61

PROP. PID-62

PROP. PID-63

PROP. PID-64

PROP. PID-65

PROP. PID-66

PROP. PID-67

PROP. PID-68

PROP. PID-69

PROP. PID-70

PROP. PID-71

PROP. PID-72

PROP. PID-73

PROP. PID-74

PROP. PID-75

PROP. PID-76

PROP. PID-77

PROP. PID-78

PROP. PID-79

PROP. PID-80

PROP. PID-81

PROP. PID-82

PROP. PID-83

PROP. PID-84

PROP. PID-85

PROP. PID-86

PROP. PID-87

PROP. PID-88

PROP. PID-89

PROP. PID-90

PROP. PID-91

PROP. PID-92

PROP. PID-93

PROP. PID-94

PROP. PID-95

PROP. PID-96

PROP. PID-97

PROP. PID-98

PROP. PID-99

PROP. PID-100

PROP. PID-101

PROP. PID-102

PROP. PID-103

PROP. PID-104

PROP. PID-105

PROP. PID-106

PROP. PID-107

PROP. PID-108

PROP. PID-109

PROP. PID-110

PROP. PID-111

PROP. PID-112

PROP. PID-113

PROP. PID-114

PROP. PID-115

PROP. PID-116

PROP. PID-117

PROP. PID-118

PROP. PID-119

PROP. PID-120

PROP. PID-121

PROP. PID-122

PROP. PID-123

PROP. PID-124

PROP. PID-125

PROP. PID-126

PROP. PID-127

PROP. PID-128

PROP. PID-129

PROP. PID-130

PROP. PID-131

PROP. PID-132

PROP. PID-133

PROP. PID-134

PROP. PID-135

PROP. PID-136

PROP. PID-137

PROP. PID-138

PROP. PID-139

PROP. PID-140

PROP. PID-141

PROP. PID-142

PROP. PID-143

PROP. PID-144

PROP. PID-145

PROP. PID-146

PROP. PID-147

PROP. PID-148

PROP. PID-149

PROP. PID-150

PROP. PID-151

PROP. PID-152

PROP. PID-153

PROP. PID-154

PROP. PID-155

PROP. PID-156

PROP. PID-157

PROP. PID-158

PROP. PID-159

PROP. PID-160

PROP. PID-161

PROP. PID-162

PROP. PID-163

PROP. PID-164

PROP. PID-165

PROP. PID-166

PROP. PID-167

PROP. PID-168

PROP. PID-169

PROP. PID-170

PROP. PID-171

PROP. PID-172

PROP. PID-173

PROP. PID-174

PROP. PID-175

PROP. PID-176

PROP. PID-177

PROP. PID-178

PROP. PID-179

PROP. PID-180

PROP. PID-181

PROP. PID-182

PROP. PID-183

PROP. PID-184

PROP. PID-185

PROP. PID-186

PROP. PID-187

PROP. PID-188

PROP. PID-189

PROP. PID-190

PROP. PID-191

PROP. PID-192

PROP. PID-193

PROP. PID-194

PROP. PID-195

PROP. PID-196

PROP. PID-197

PROP. PID-198

PROP. PID-199

PROP. PID-200

PROP. PID-201

PROP. PID-202

PROP. PID-203

PROP. PID-204

PROP. PID-205

PROP. PID-206

PROP. PID-207

PROP. PID-208

PROP. PID-209

PROP. PID-210

PROP. PID-211

PROP. PID-212

PROP. PID-213

PROP. PID-214

PROP. PID-215

PROP. PID-216

PROP. PID-217

PROP. PID-218

PROP. PID-219

PROP. PID-220

PROP. PID-221

PROP. PID-222

PROP. PID-223

PROP. PID-224

PROP. PID-225

PROP. PID-226

PROP. PID-227

PROP. PID-228

PROP. PID-229

PROP. PID-230

PROP. PID-231

PROP. PID-232

PROP. PID-233

PROP. PID-234

PROP. PID-235

PROP. PID-236

PROP. PID-237

PROP. PID-238

PROP. PID-239

PROP. PID-240

PROP. PID-241

PROP. PID-242

PROP. PID-243

PROP. PID-244

PROP. PID-245

PROP. PID-246

PROP. PID-247

PROP. PID-248

PROP. PID-249

PROP. PID-250

PROP. PID-251

PROP. PID-252

PROP. PID-253

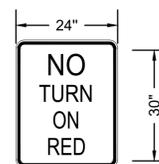
</

IDENTIFICATION	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (IN)			NUMBER OF SIGNS REQUIRED	COLOR			POST SIZE AND NUMBER REQUIRED	UNIT AREA (S.F.)	AREA (S.F.)
	WIDTH (IN)	HEIGHT (IN)		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.		BACKGRO UND	LEGEND	BORDER			
MA-W16-19P	24	18		SEE MASSDOT STANDARD SIGN BOOK			2	RETRORE FLECTIVE YELLOW	RETRORE FLECTIVE BLACK	RETROREF LECTIVE BLACK	2 MOUNTED WITH W11-1	3.00	6.00
W3-3	30	30		SEE MUTCD DETAIL			1	RETRORE FLECTIVE YELLOW	RETRORE FLECTIVE BLACK	RETROREF LECTIVE BLACK	P-5 1	6.25	6.25
W11-1	30	30					3	FLOURE-SCENT YELLOW GREEN	RETRORE FLECTIVE BLACK	RETROREF LECTIVE BLACK	P-5 3	6.25	18.75
W11-2	30	30					4	FLOURE-SCENT YELLOW GREEN	RETRORE FLECTIVE BLACK	RETROREF LECTIVE BLACK	4 MOUNTED ON RRFB	6.25	25.00
W16-7PL	24	12					2	FLOURE-SCENT YELLOW GREEN	RETRORE FLECTIVE BLACK	RETROREF LECTIVE BLACK	2 MOUNTED ON RRFB	2.00	4.00
W16-7PR	24	12					2	FLOURE-SCENT YELLOW GREEN	RETRORE FLECTIVE BLACK	RETROREF LECTIVE BLACK	2 MOUNTED ON RRFB	2.00	4.00
R1-1	30	30					2	RETRORE FLECTIVE RED	RETRORE FLECTIVE WHITE	RETROREF LECTIVE WHITE	P-5 2	6.25	12.50
R3-2	24	24					1	RETRORE FLECTIVE WHITE	BLACK/RETROREFLECTIVE RED	RETROREF LECTIVE BLACK	P-5 1	4.00	4.00
R3-2_SP	24	24					1	RETRORE FLECTIVE WHITE	BLACK/RETROREFLECTIVE RED	RETROREF LECTIVE BLACK	P-5 1	4.00	4.00
R3-5a	30	36					2	RETRORE FLECTIVE WHITE	RETRORE FLECTIVE BLACK	RETROREF LECTIVE BLACK	2 MOUNTED ON MAST ARM	7.50	15.00
R3-5L	30	36					1	RETRORE FLECTIVE WHITE	RETRORE FLECTIVE BLACK	RETROREF LECTIVE BLACK	1 MOUNTED ON MAST ARM	7.50	7.50
R3-5R	30	36					1	RETRORE FLECTIVE WHITE	RETRORE FLECTIVE BLACK	RETROREF LECTIVE BLACK	1 MOUNTED ON MAST ARM	7.50	7.50
R3-7L	30	30					1	RETRORE FLECTIVE WHITE	RETRORE FLECTIVE BLACK	RETROREF LECTIVE BLACK	P-5 1	6.25	6.25
R3-7R	30	30					3	RETRORE FLECTIVE WHITE	RETRORE FLECTIVE BLACK	RETROREF LECTIVE BLACK	P-5 3	6.25	18.75
R3-17	24	18					4	RETRORE FLECTIVE WHITE	RETRORE FLECTIVE BLACK	RETROREF LECTIVE BLACK	P-5 4	3.00	12.00
R3-17aP	24	9					2	RETRORE FLECTIVE WHITE	RETRORE FLECTIVE BLACK	RETROREF LECTIVE BLACK	2 MOUNTED WITH R3-17	1.50	3.00
R3-17bP	24	9					2	RETRORE FLECTIVE WHITE	RETRORE FLECTIVE BLACK	RETROREF LECTIVE BLACK	2 MOUNTED WITH R3-17	1.50	3.00
R4-7	24	30					1	RETRORE FLECTIVE WHITE	RETRORE FLECTIVE BLACK	RETROREF LECTIVE BLACK	P-5 1	5.00	5.00
R6-1L	36	12					1	RETRORE FLECTIVE WHITE/RETRORE FLECTIVE BLACK	RETRORE FLECTIVE BLACK	RETROREF LECTIVE WHITE	1 MOUNTED WITH R6-1R	3.00	3.00

IDENTIFICATION	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (IN)			NUMBER OF SIGNS REQUIRED	COLOR			UNIT AREA (S.F.)	AREA (S.F.)	
	WIDTH (IN)	HEIGHT (IN)		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.		BACKGRO UND	LEGEND	BORDER			
R6-1R	36	12		SEE MUTCD DETAIL			1	RETRORE FLECTIVE WHITE/RETRORE FLECTIVE BLACK	RETRORE FLECTIVE BLACK	RETROREF LECTIVE WHITE	P-5 2	3.00	3.00
R7-1	12	18					1	RETRORE FLECTIVE WHITE	RETRORE FLECTIVE RED	RETROREF LECTIVE RED	P-5 1	1.50	1.50
R7-5	12	18					1	RETRORE FLECTIVE WHITE	RETRORE FLECTIVE RED	RETROREF LECTIVE RED	P-5 1	1.50	1.50
R10-6	24	36					2	RETRORE FLECTIVE WHITE	RETRORE FLECTIVE BLACK	RETROREF LECTIVE BLACK	P-5 2	6.00	12.00
D3-1(1)	36	9		SEE DETAIL ON SHEET 40			1	RETRORE FLECTIVE BLUE	BLACK/RETROREFLECTIVE WHITE	RETROREF LECTIVE WHITE	MOUNTED ON MAST ARM	2.25	2.25
D3-1(2)	24	9		SEE DETAIL ON SHEET 40			1	RETRORE FLECTIVE BLUE	BLACK/RETROREFLECTIVE WHITE	RETROREF LECTIVE WHITE	MOUNTED ON MAST ARM	1.50	1.50
D3-1(3)	36	9		SEE DETAIL ON SHEET 40			1	RETRORE FLECTIVE BLUE	BLACK/RETROREFLECTIVE WHITE	RETROREF LECTIVE WHITE	MOUNTED ON MAST ARM	2.25	2.25
PID-1	24	36					1	RETRORE FLECTIVE BLACK AND TAN	BLUE AND WHITE	NONE	P-5 1	6.00	6.00
PID-2	24	36					1	RETRORE FLECTIVE BLACK AND TAN	BLUE AND WHITE	NONE	P-5 1	6.00	6.00
PID-3	72	30					1	RETRORE FLECTIVE BLACK AND TAN	BLUE AND WHITE	NONE	P-5 2	15.00	15.00
IDSD-1	48	24					2	RETRORE FLECTIVE BLACK AND TAN	WHITE	NONE	P-5 2	8.00	16.00
											TOTAL (S.F.)	150.50	

NOTES:

"NO TURN ON RED" ELECTRONIC BLANK-OUT SIGN



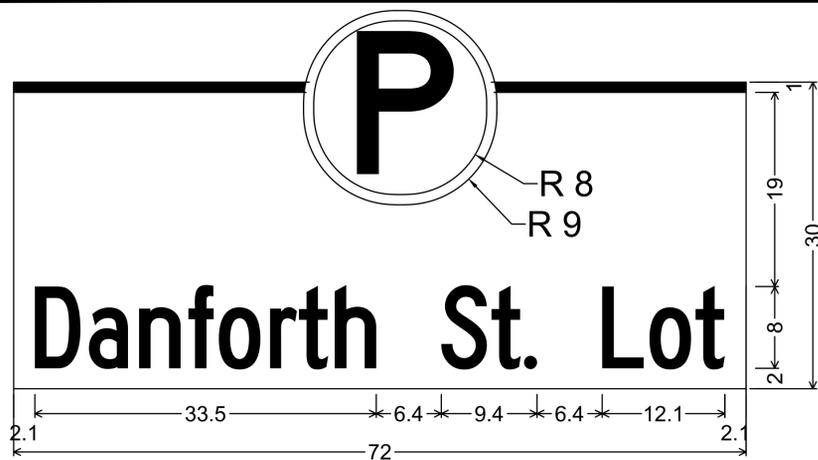
R10-11b

- "NO TURN ON RED" ELECTRONIC BLANK-OUT SIGNS TO BE INCLUDED IN THE UNIT BID PRICE FOR ITEM 815.11.
- PROPOSED R10-11b ELECTRONIC BLANK-OUT SIGNS SHALL BE BLANK AT ALL TIMES EXCEPT WHEN THE PEDESTRIAN PHASE IS ACTIVATED AT THE RESPECTIVE INTERSECTION. DURING THE PEDESTRIAN SIGNAL PHASE, THE R10-11b ELECTRONIC BLANK-OUT SIGN AT THE RESPECTIVE INTERSECTION SHALL READ "NO TURN ON RED" AS SHOWN IN THE ABOVE DETAIL.
- SEE SPECIAL PROVISIONS FOR ELECTRONIC BLANK-OUT SIGN SPECIFICATIONS.

NOTES:

- W11-2, W16-7PL AND W16-7PR SIGNS INSTALLED WITH PROPOSED RECTANGULAR RAPID FLASHING BEACONS (RRFB) TO BE INCLUDED IN THE CONTRACT UNIT BID PRICE FOR ITEMS 824.221 AND 824.222, RESPECTIVELY.
- D3-1(1), D3-2(2) AND D3-3(3) SIGNS TO BE INCLUDED IN THE CONTRACT UNIT BID PRICE FOR ITEM 874.01.
- PID-1 AND PID-2 SIGNS TO BE INCLUDED IN THE CONTRACT UNIT BID PRICE FOR ITEM 827.991.
- PID-3 AND IDSD-1 SIGNS TO BE INCLUDED IN THE CONTRACT UNIT BID PRICE FOR ITEM 827.992.

PROJECT: IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET		
DESIGN SUBMISSION: 85% DESIGN		
DRAWING TITLE: TRAFFIC SIGN SUMMARY 1		
PREPARED FOR: CITY OF FRAMINGHAM DEPARTMENT OF PUBLIC WORKS 110 WESTERN AVENUE FRAMINGHAM, MA 01702		
PREPARED BY: Green International Affiliates, Inc. 100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876		
SCALE: AS NOTED	DESIGNED BY: MP	SHEET NO. 39 OF 89
DATE: 6/4/2024	DRAWN BY: MP	
PROJECT NO. 20034	CHECKED BY: AV	

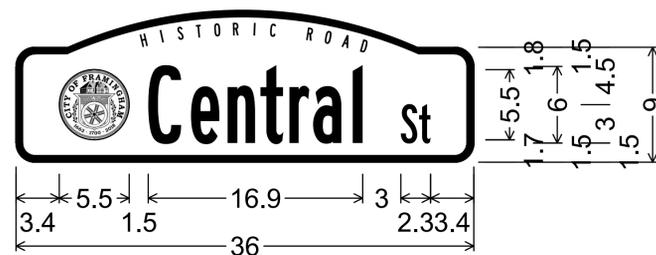


No border, White on, Light blue;  
 "Danforth St. Lot", C 2K 80% spacing;  
 Table of distances between letter and object lefts

0.0	72.0	0.0
-----	------	-----

2.1	D	a	n	f	o	r	t	h	S	t	.	L	o	t	2.1
5.3	4.9	4.9	3.0	5.0	2.8	3.6	10.4	5.0	3.2	7.6	4.7	4.5	2.9	2.1	

PID-3 DETAIL  
 NOT TO SCALE

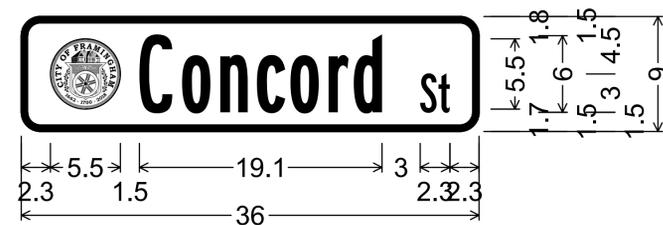


1.5" Radius, 0.5" Border, White on, Blue;  
 Rounded Rectangle 2.8" Radius;  
 "Central St", B 2K;

Table of distances between letter and object lefts

3.4	○	C	e	n	t	r	a	l	S	t	3.4
7.0	3.4	2.8	2.6	2.3	1.9	3.1	3.8	1.4	0.9	3.4	

D3-1(3) DETAIL  
 NOT TO SCALE

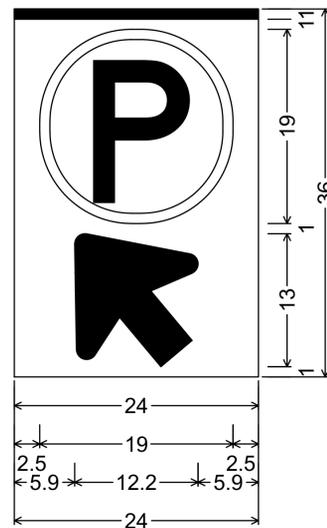


1.5" Radius, 0.5" Border, White on, Blue;  
 Rounded Rectangle 2.8" Radius;  
 "Concord St", B 2K;

Table of distances between letter and object lefts

2.3	○	C	o	n	c	o	r	d	S	t	2.3
7.0	3.3	3.0	2.9	2.7	3.0	1.9	5.3	1.4	0.9	2.3	

D3-1(1) DETAIL  
 NOT TO SCALE

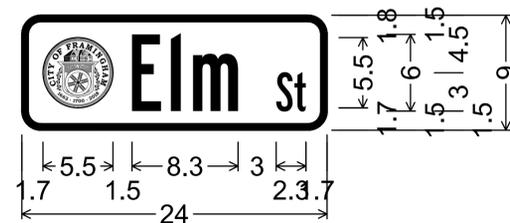


No border, White on, Black;  
 Horizontal Line Brown;  
 Rounded Rectangle 9.0" Radius Light blue;  
 Arrow Custom - 15.0" 130';

Table of distances between letter and object lefts

0.0	24.0	0.0
2.5	○	2.5
5.9	↗	5.9

PID-1 DETAIL  
 NOT TO SCALE

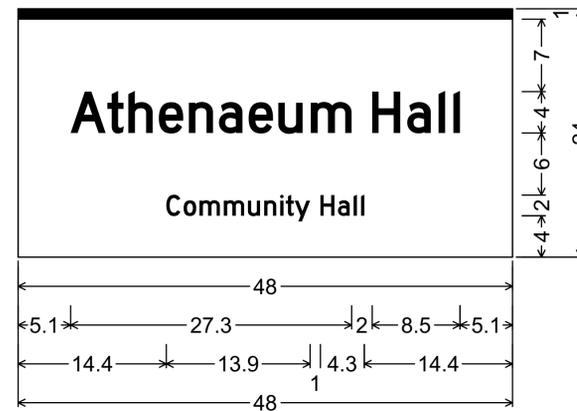


1.5" Radius, 0.5" Border, White on, Blue;  
 Rounded Rectangle 2.8" Radius;  
 "Elm St", B 2K;

Table of distances between letter and object lefts

1.7	○	E	l	m	S	t	1.7
7.0	3.0	1.8	6.5	1.4	0.9	1.7	

D3-1(2) DETAIL  
 NOT TO SCALE



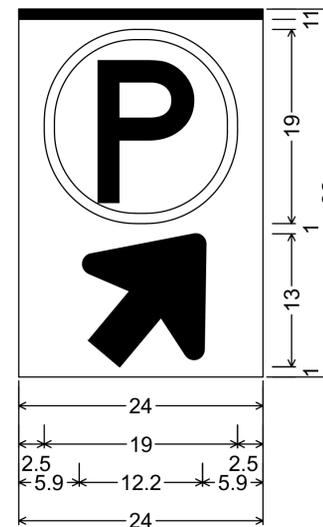
No border, White on, Light blue;  
 Horizontal Line Brown;  
 "Athenaeum" D 2K " " E 2K "Hall", D 2K;  
 "Community Hall", D 2K;  
 Table of distances between letter and object lefts

0.0	48.0	0.0
-----	------	-----

5.1	A	t	h	e	n	a	e	u	m	H	a	l	l	5.1
3.6	2.0	3.0	2.9	2.9	2.9	2.9	3.1	6.0	3.4	3.0	1.5	0.6	5.1	

14.4	C	o	m	m	u	n	i	t	y	H	a	l	l	14.4
1.7	1.5	2.4	2.3	1.6	1.5	0.6	0.8	2.5	1.7	1.6	0.7	0.3	14.4	

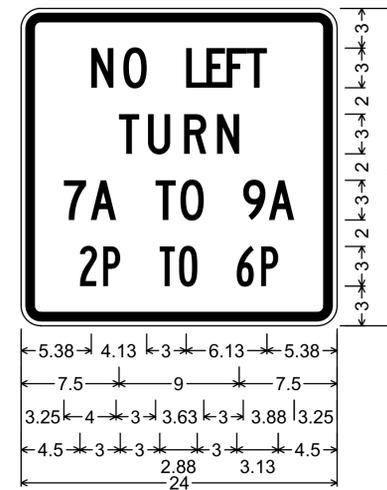
IDSD-1 DETAIL  
 NOT TO SCALE



No border, White on, Black;  
 Horizontal Line Brown;  
 Rounded Rectangle 9.0" Radius Light blue;  
 Arrow Custom - 15.0" 130';  
 Table of distances between letter and object lefts

0.0	24.0	0.0
2.5	○	2.5
5.9	↗	5.9

PID-2 DETAIL  
 NOT TO SCALE



R3-2\_SP  
 1.50" Radius, 0.63" Border, 0.38" Indent, Black on White;  
 "NO", C 2K specified length;  
 "LEFT", C 2K specified length;  
 "TURN", C 2K specified length;  
 "7A TO 9A", C 2K;  
 "2P TO 6P", B 2K;  
 Table of distances between letter and object lefts

5.38	N	O	L	E	F	T	5.38	7.50	2.13	2.75	2.50	1.63	7.50
2.38	4.75	1.50	1.63	1.50	1.50	1.50	5.38	4.50	1.75	4.25	1.50	4.38	1.88
3.25	7	A	T	O	9	A	3.25	4.50	2	P	T	0	6
2.00	5.00	1.88	4.75	2.00	1.88	3.25	4.50	1.75	4.25	1.50	4.38	1.88	

P	4.50
1.25	4.50

R3-2\_SP "7A TO 9A 2P TO 6P"  
 NOT TO SCALE

PROJECT: IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET

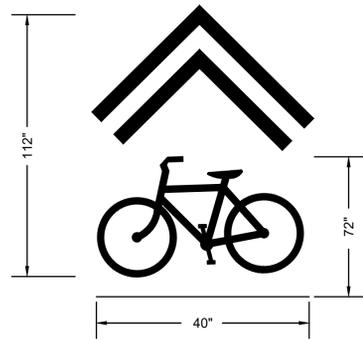
DESIGN SUBMISSION: 85% DESIGN

DRAWING TITLE: TRAFFIC DETAILS 1

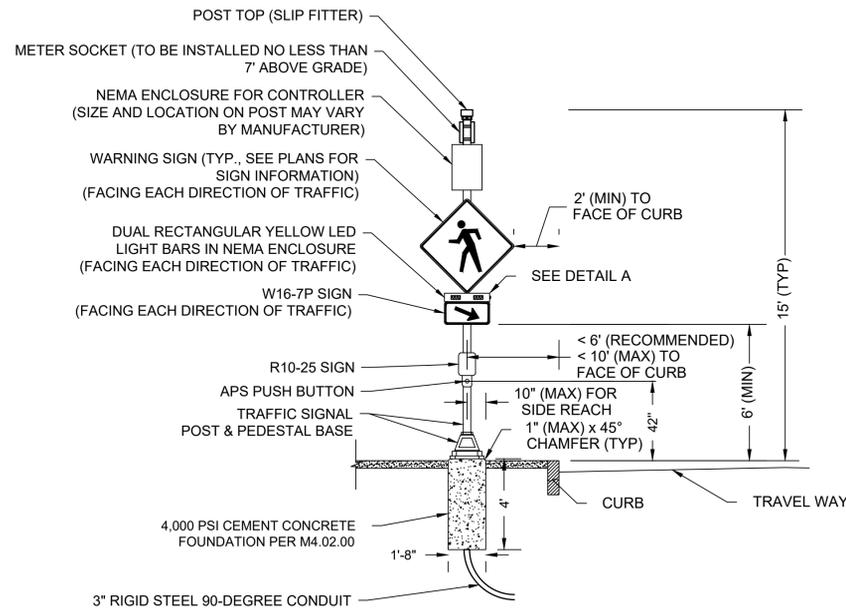
PREPARED FOR: CITY OF FRAMINGHAM DEPARTMENT OF PUBLIC WORKS  
 110 WESTERN AVENUE  
 FRAMINGHAM, MA 01702

PREPARED BY: Green International Affiliates, Inc.  
 100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876

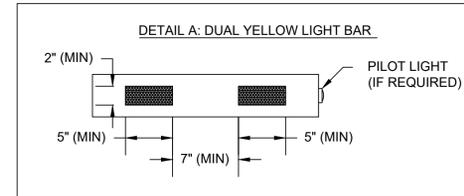
SCALE: AS NOTED  
 DATE: 6/4/2024  
 PROJECT NO. 20034  
 DESIGNED BY: MP  
 DRAWN BY: MP  
 CHECKED BY: AV  
 SHEET NO. 40 OF 89



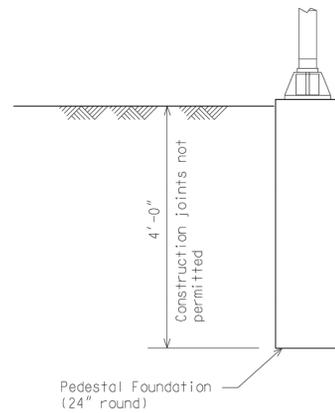
**SHARED LANE MARKING DETAIL**  
NOT TO SCALE



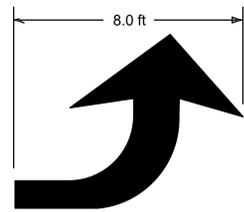
**NOTES:**  
1. CROSSWALK AND ADA/AAB-COMPLIANT RAMPS NOT SHOWN. SEE PLANS FOR LOCATIONS.  
2. APS PUSHBUTTONS SHALL BE POSITIONED TO MEET ALL ADA/AAB REQUIREMENTS.



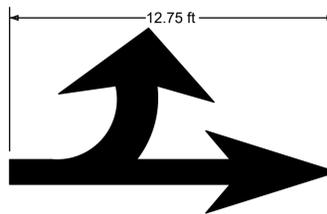
**RECTANGULAR RAPID FLASHING BEACON (RRFB)**  
NOT TO SCALE



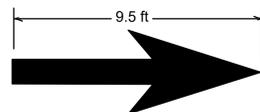
**PEDESTAL FOUNDATION DETAILS**  
NOT TO SCALE



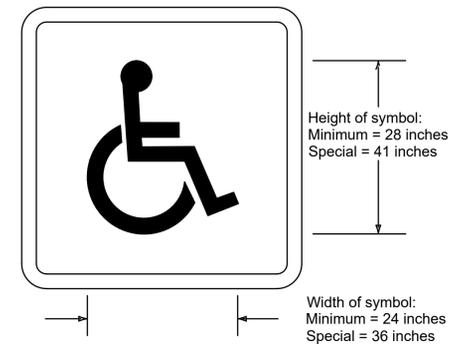
**TURN LANE USE ARROW**  
NOT TO SCALE



**TURN AND THROUGH LANE USE ARROW**  
NOT TO SCALE



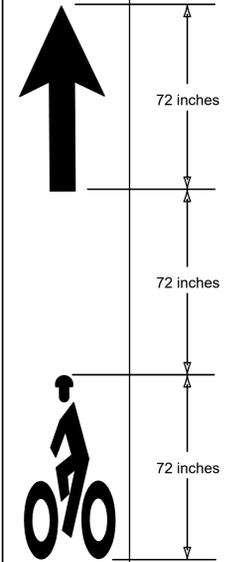
**THROUGH LANE USE ARROW**  
NOT TO SCALE



\*Stroke width:  
Minimum = 3 inches  
Special = 4 inches

Note: Blue background and white border are optional

**ACCESSIBILITY PARKING SPACE MARKING**  
NOT TO SCALE



**BIKE LANE SYMBOL**  
(NOT TO SCALE)

PROJECT: **IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET**

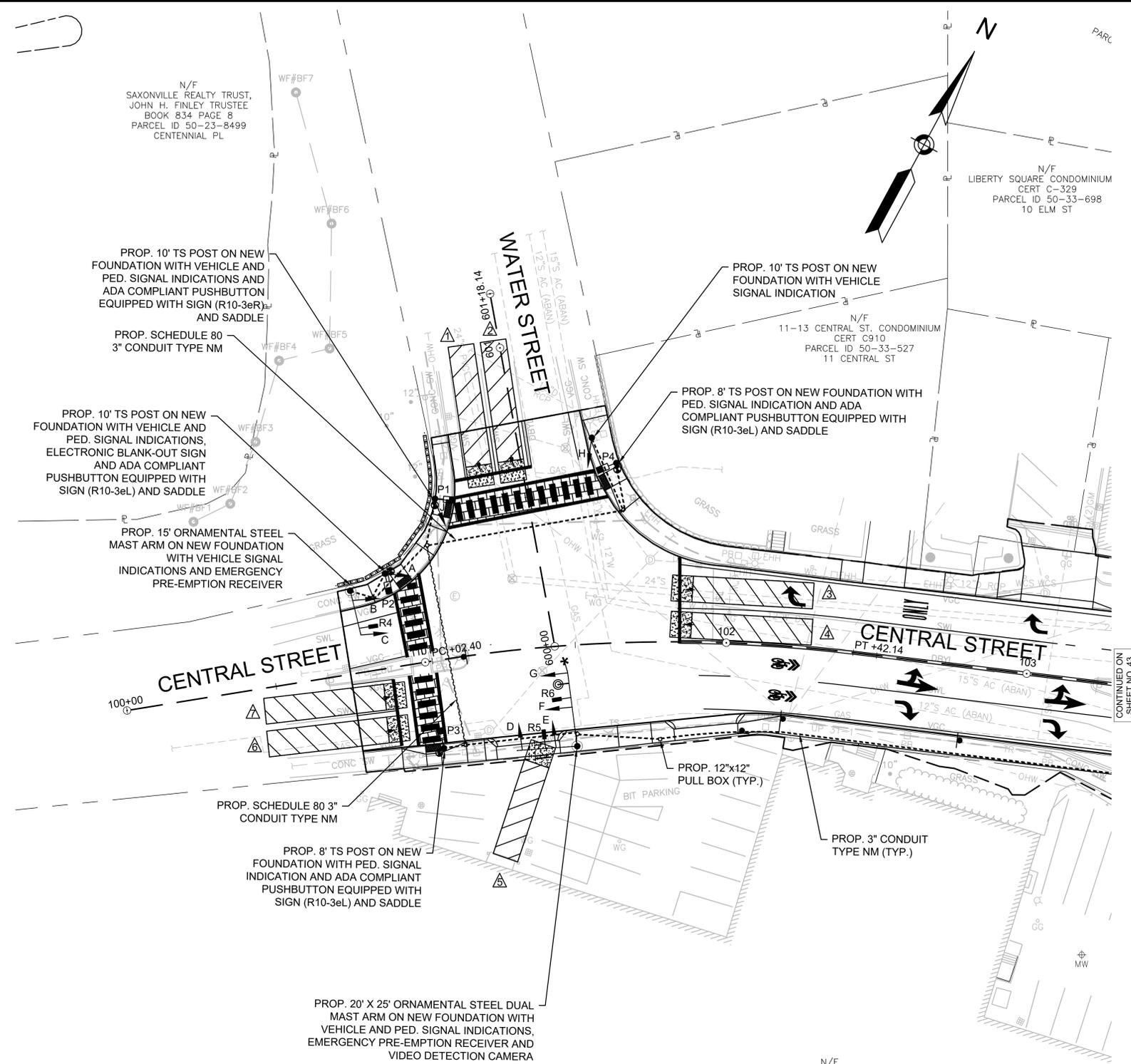
DESIGN SUBMISSION: **85% DESIGN**

DRAWING TITLE: **TRAFFIC DETAILS 2**

PREPARED FOR:  
 **CITY OF FRAMINGHAM**  
DEPARTMENT OF PUBLIC WORKS  
110 WESTERN AVENUE  
FRAMINGHAM, MA 01702

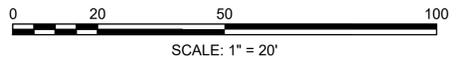
PREPARED BY:  
 **Green International Affiliates, Inc.**  
100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876

SCALE: AS NOTED	DESIGNED BY: MP	SHEET NO. <b>41 OF 89</b>
DATE: 6/4/2024	DRAWN BY: MP	
PROJECT NO. 20034	CHECKED BY: AV	



**NOTES:**

1. CONTRACTOR SHALL REMOVE AND DISPOSE ALL EXISTING TRAFFIC SIGNAL EQUIPMENT. SEE SPECIAL PROVISIONS.
2. EXISTING SIGNAL SHALL BE KEPT OPERATIONAL UNTIL THE NEW SIGNAL IS OPERATIONAL AND TESTED.
3. NEW SIGNAL HEADS SHALL NOT BE INSTALLED UNTIL EXISTING SIGNAL IS NO LONGER OPERATIONAL.
4. SEE SHEETS 35-38 FOR ALL PAVEMENT MARKINGS AND SIGNS



PROJECT: **IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET**

DESIGN SUBMISSION: **85% DESIGN**

DRAWING TITLE: **TRAFFIC SIGNAL PLAN 1**

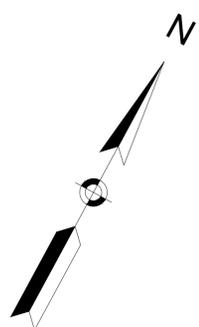
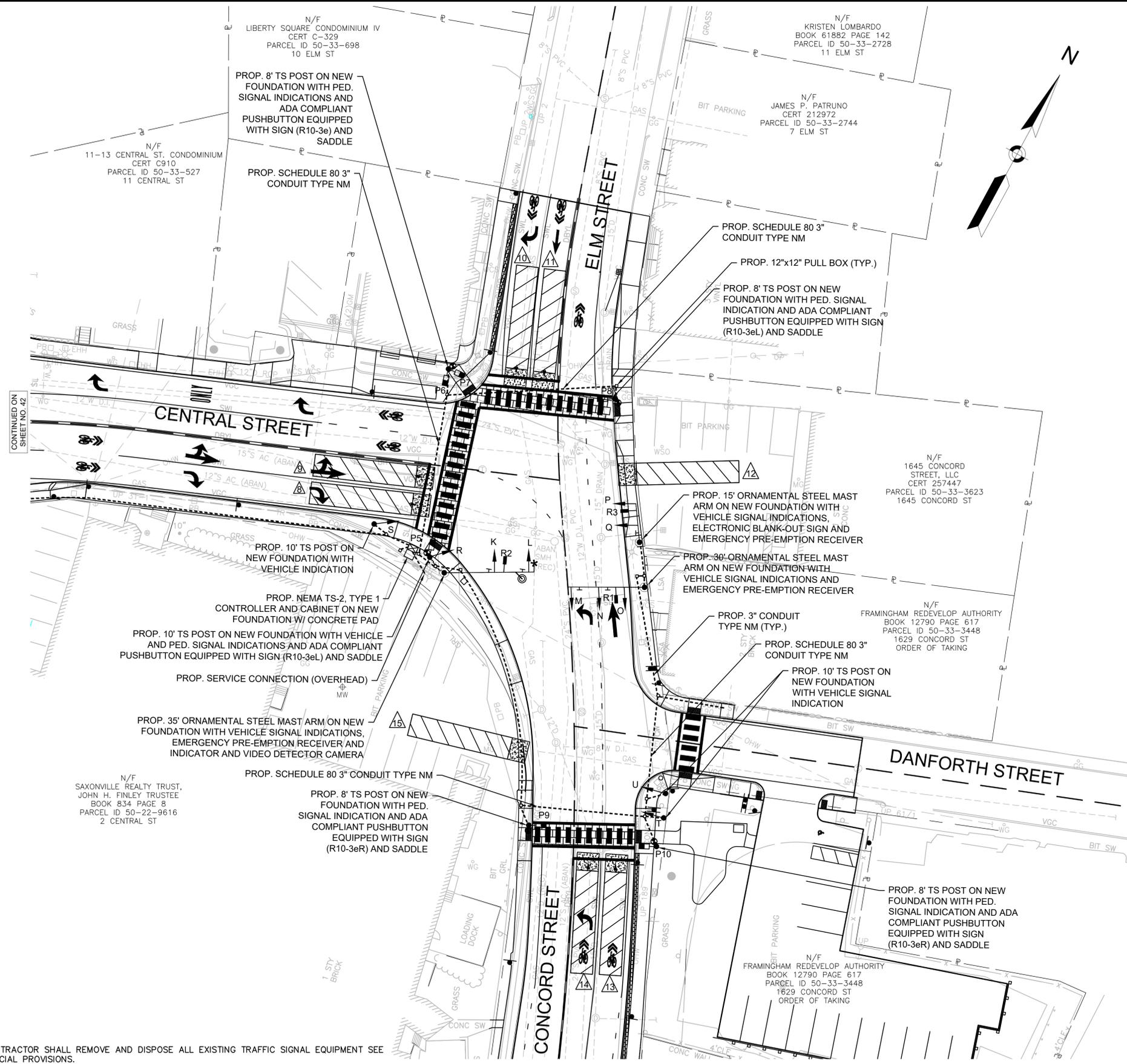
PREPARED FOR:  
 **CITY OF FRAMINGHAM**  
 DEPARTMENT OF PUBLIC WORKS  
 110 WESTERN AVENUE  
 FRAMINGHAM, MA 01702

PREPARED BY:  
 **Green International Affiliates, Inc.**  
 100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876

SCALE: AS NOTED	DESIGNED BY: MP	SHEET NO. <b>42 OF 89</b>
DATE: 6/4/2024	DRAWN BY: MP	
PROJECT NO. 20034	CHECKED BY: AV	

NO.	DATE	REVISIONS

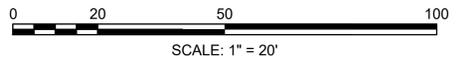
C:\Users\jgibson\OneDrive\Documents\20240604\_20034\_Traffic\_Signal\_Plan\_Sheet\_1.dwg, Signal Plan\_Sheet\_1.dwg, 6/11/2024 8:54 AM



CONTINUED ON SHEET NO. 42

**NOTES:**

1. CONTRACTOR SHALL REMOVE AND DISPOSE ALL EXISTING TRAFFIC SIGNAL EQUIPMENT SEE SPECIAL PROVISIONS.
2. EXISTING SIGNAL SHALL BE KEPT OPERATIONAL UNTIL THE NEW SIGNAL IS OPERATIONAL AND TESTED.
3. NEW SIGNAL HEADS SHALL NOT BE INSTALLED PRIOR TO REMOVAL OF THE EXISTING SIGNAL.
4. SEE SHEETS 35-38 FOR ALL PAVEMENT MARKINGS AND SIGNS.



PROJECT: **IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET**

DESIGN SUBMISSION: **85% DESIGN**

DRAWING TITLE: **TRAFFIC SIGNAL PLAN 2**

PREPARED FOR:  
 **CITY OF FRAMINGHAM**  
 DEPARTMENT OF PUBLIC WORKS  
 110 WESTERN AVENUE  
 FRAMINGHAM, MA 01702

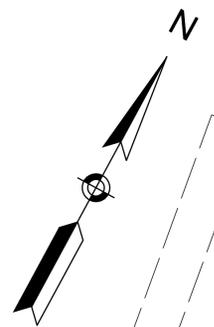
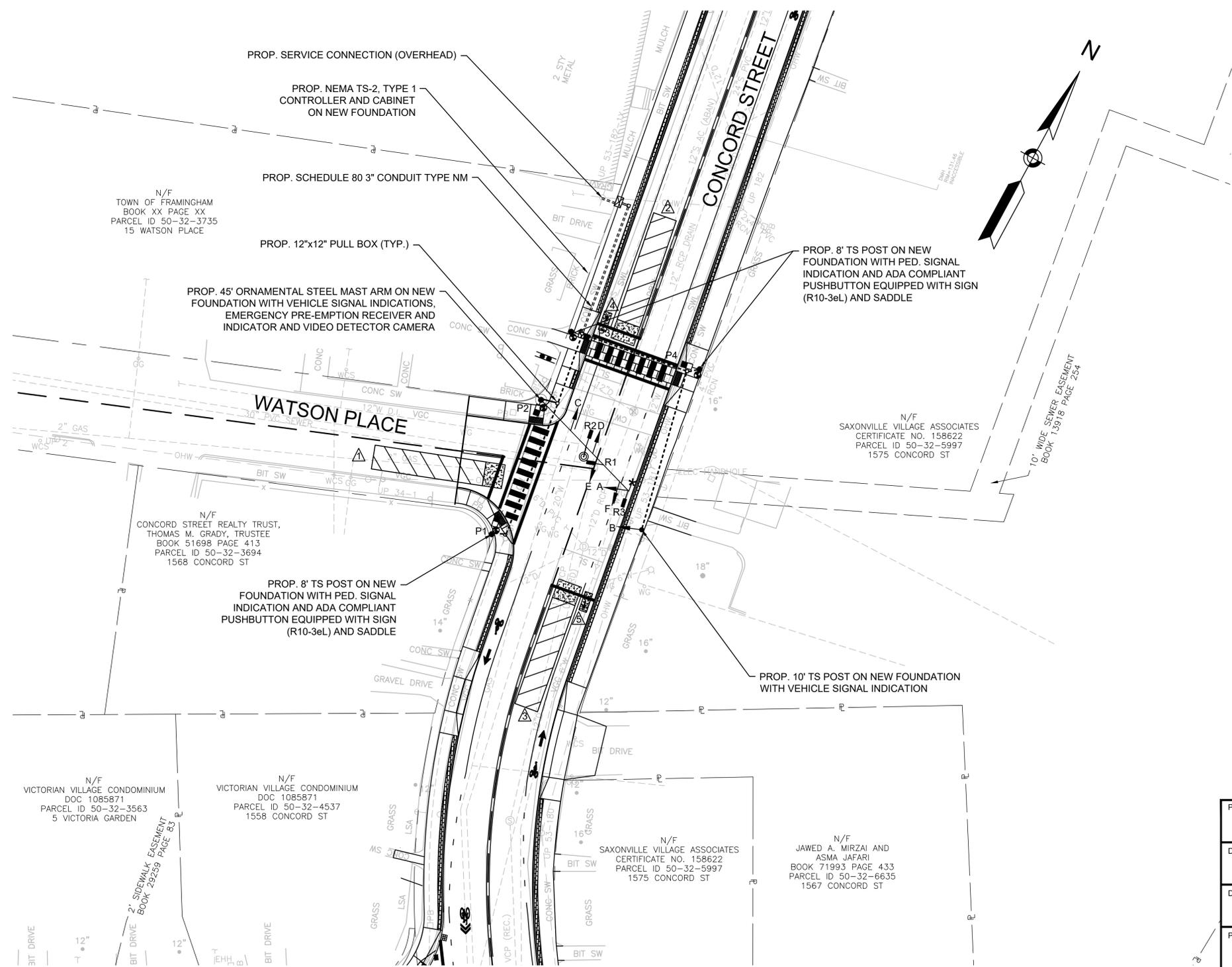
PREPARED BY:  
 **Green International Affiliates, Inc.**  
 100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876

SCALE: AS NOTED	DESIGNED BY: MP	SHEET NO. <b>43 OF 89</b>
DATE: 6/4/2024	DRAWN BY: MP	
PROJECT NO. 20034	CHECKED BY: AV	

NO.	DATE	REVISIONS

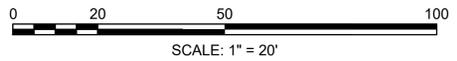
C:\Users\jgordon\OneDrive\Documents\2024\20034\20034-Traffic Signal Plan-85% Design.dwg, 6/1/2024, 4:54 AM





**NOTES:**

1. CONTRACTOR SHALL REMOVE AND DISPOSE ALL EXISTING TRAFFIC SIGNAL EQUIPMENT SEE SPECIAL PROVISIONS.
2. EXISTING SIGNAL SHALL BE KEPT OPERATIONAL UNTIL THE NEW SIGNAL IS OPERATIONAL AND TESTED.
3. SEE SHEETS 35-38 FOR ALL PAVEMENT MARKINGS AND SIGNS



PROJECT: **IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET**

DESIGN SUBMISSION: **85% DESIGN**

DRAWING TITLE: **TRAFFIC SIGNAL PLAN 3**

PREPARED FOR:  
 **CITY OF FRAMINGHAM**  
 DEPARTMENT OF PUBLIC WORKS  
 110 WESTERN AVENUE  
 FRAMINGHAM, MA 01702

PREPARED BY:  
 **Green International Affiliates, Inc.**  
 100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876

SCALE: AS NOTED	DESIGNED BY: MP	SHEET NO. <b>45 OF 89</b>
DATE: 6/4/2024	DRAWN BY: MP	
PROJECT NO. 20034	CHECKED BY: AV	

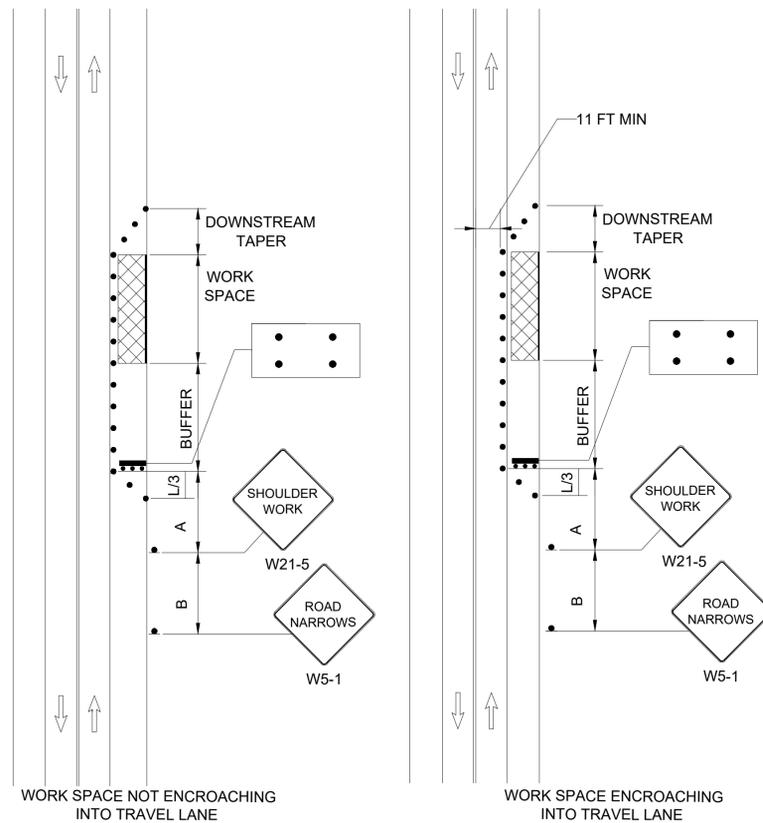
NO.	DATE	REVISIONS

C:\bham\Engineering\Projects\2024\20034\20034.dwg, Title: Signal Plans, Date Plotted: 6/17/2024 8:55 AM







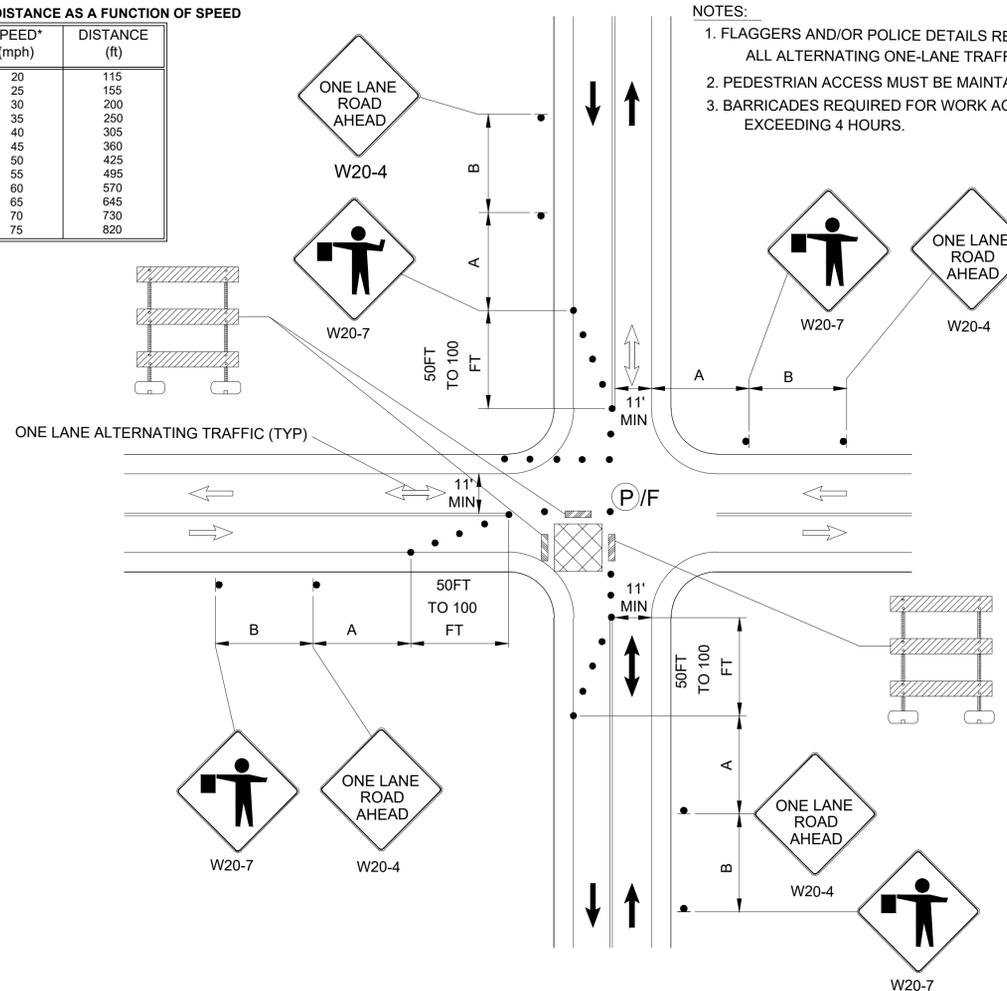


**SHOULDER CLOSURE**

NOT TO SCALE

**STOPPING SIGHT DISTANCE AS A FUNCTION OF SPEED**

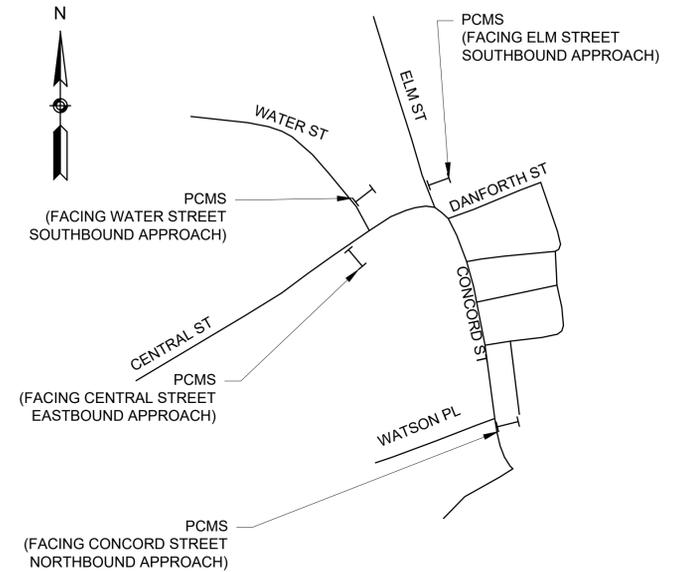
SPEED* (mph)	DISTANCE (ft)
20	115
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645
70	730
75	820



**TYPICAL APPLICATION - SINGLE LANE APPROACH ONE QUADRANT CLOSURE AT T-INTERSECTION**

NOT TO SCALE

- NOTES:**
1. FLAGGERS AND/OR POLICE DETAILS REQUIRED FOR ALL ALTERNATING ONE-LANE TRAFFIC.
  2. PEDESTRIAN ACCESS MUST BE MAINTAINED
  3. BARRICADES REQUIRED FOR WORK ACTIVITY EXCEEDING 4 HOURS.



**PCMS (PCMS DISPLAY ADVANCE NOTIFICATION)**

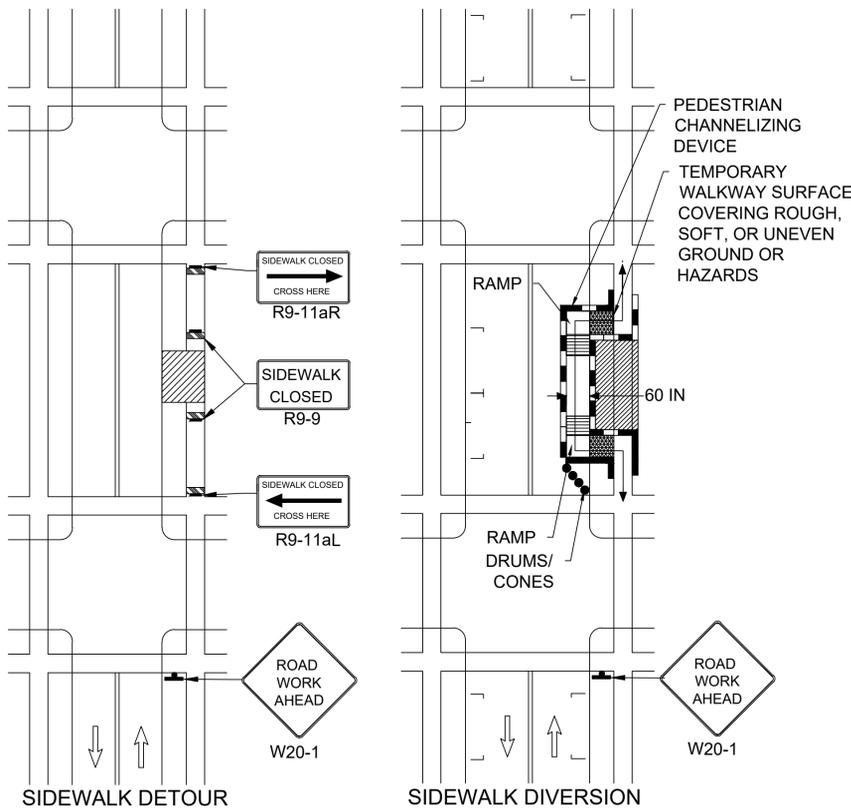
MESSAGE 1 ROAD WORK	MESSAGE 2 MM/DD TO MM/DD
------------------------	-----------------------------

**(PCMS DISPLAY DURING CONSTRUCTION)**

MESSAGE 1 ROAD WORK AHEAD	MESSAGE 2 BE PREPARED TO STOP
------------------------------	----------------------------------

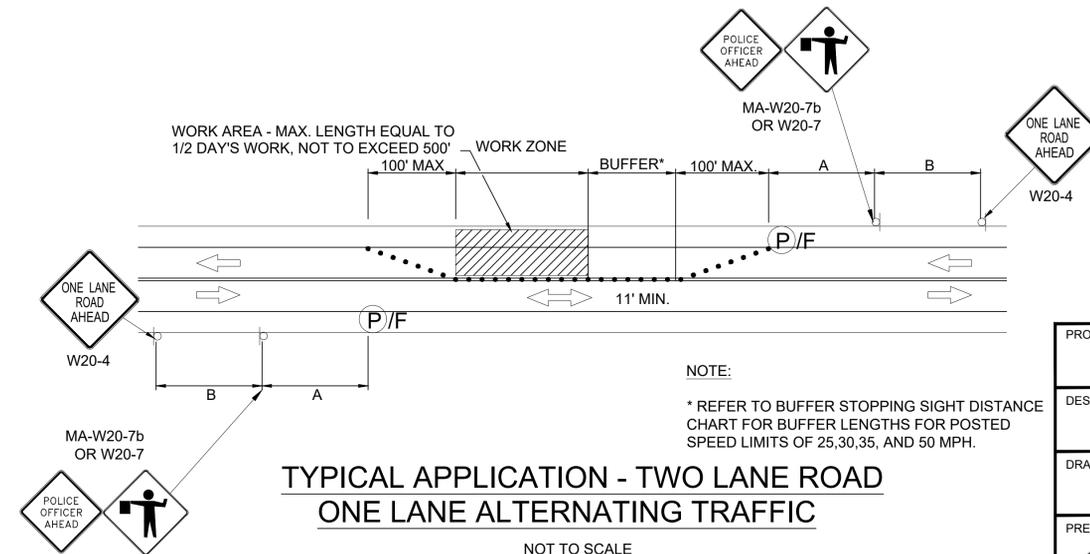
**NOTE:** THE CONTRACTOR SHALL INSTALL PCMS BOARDS ALONG CENTRAL STREET, WATER STREET, ELM STREET, AND CONCORD STREET 1/4 MILES FROM THE PROJECT LIMITS.

**PCMS BOARD SETUP FOR ROADWORK**  
NOT TO SCALE



**PEDESTRIAN DETOUR**

NOT TO SCALE



**TYPICAL APPLICATION - TWO LANE ROAD ONE LANE ALTERNATING TRAFFIC**

NOT TO SCALE

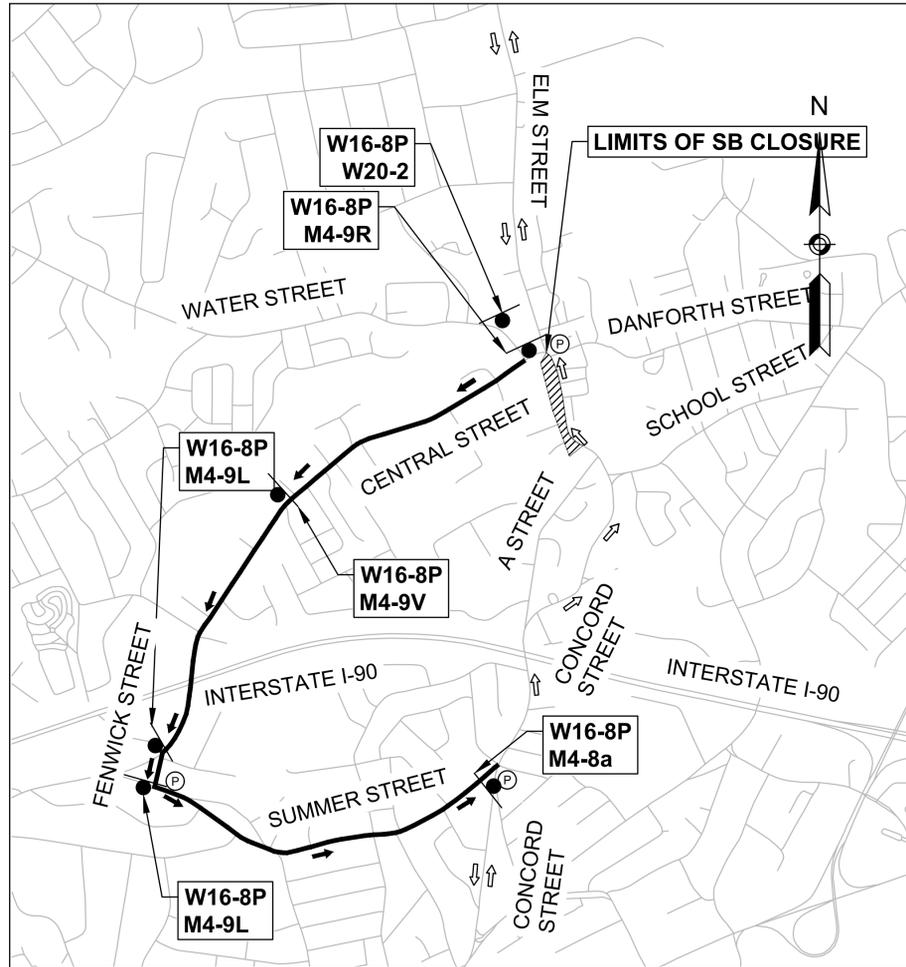
**NOTE:**  
\* REFER TO BUFFER STOPPING SIGHT DISTANCE CHART FOR BUFFER LENGTHS FOR POSTED SPEED LIMITS OF 25,30,35, AND 50 MPH.

**TRAFFIC DEVICE LEGEND**

- WORK ZONE
- DIRECTION OF VEHICULAR TRAFFIC
- DIRECTION OF PROPOSED VEHICULAR TRAFFIC
- SIGN
- TYPE III BARRICADE
- REFLECTORIZED PLASTIC DRUM OR 36" CONE
- POLICE OFFICER
- PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

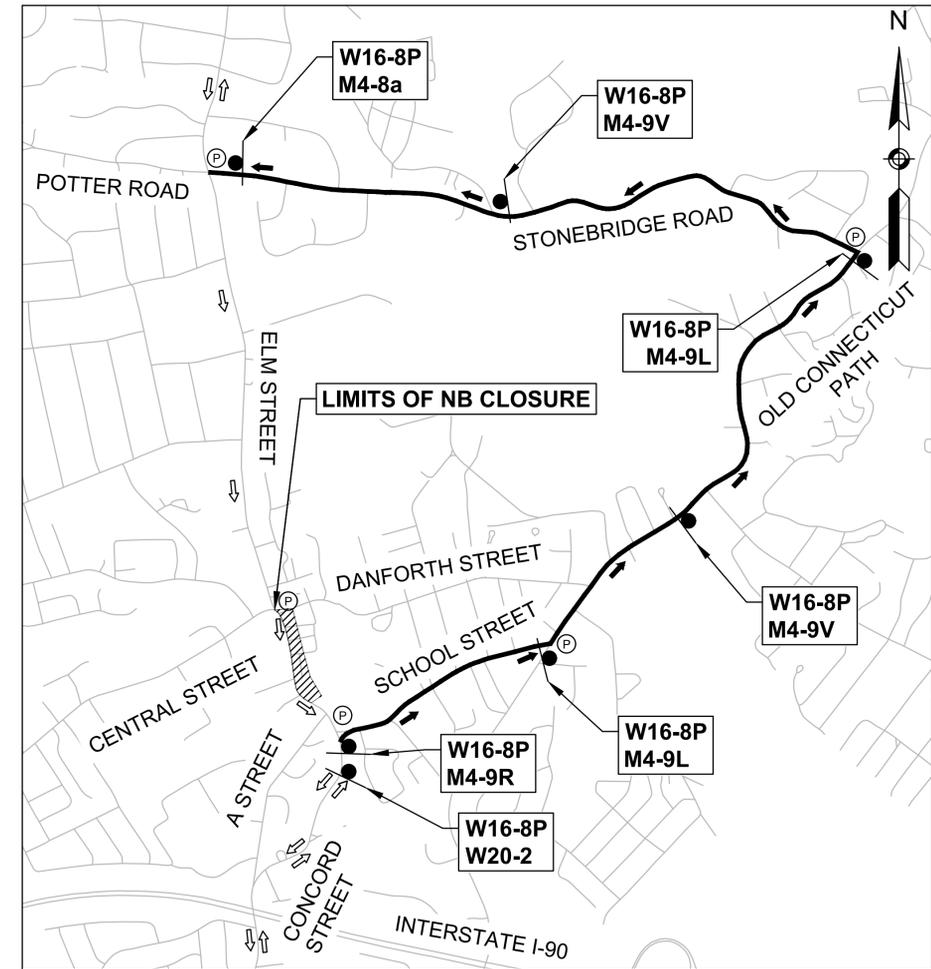
PROJECT: IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET		DESIGN SUBMISSION: 85% DESIGN
DRAWING TITLE: TRAFFIC MANAGEMENT PLAN 2		PREPARED FOR: CITY OF FRAMINGHAM DEPARTMENT OF PUBLIC WORKS 110 WESTERN AVENUE FRAMINGHAM, MA 01702
PREPARED BY: Green International Affiliates, Inc. 100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876		SCALE: AS NOTED
DATE: 6/4/2024	DESIGNED BY: MP	DRAWN BY: MP
PROJECT NO. 20034	CHECKED BY: AV	SHEET NO. 49 OF 89

NO.	DATE	ENTER DESCRIPTION OF REVISION HERE
1	XX/XX/XX	ENTER DESCRIPTION OF REVISION HERE



MAP SOURCE: MASSGIS

DETOUR ROUTE 1: CONCORD STREET - SOUTHBOUND

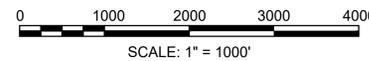


MAP SOURCE: MASSGIS

DETOUR ROUTE 2: CONCORD STREET - NORTHBOUND

**NOTES:**

1. DETOUR ROUTE 1 SHALL BE USED WHILE THE SOUTHBOUND HALF OF CONCORD STREET IS CLOSED FOR FULL DEPTH RECONSTRUCTION.
2. DETOUR ROUTE 2 SHALL BE USED WHILE THE NORTHBOUND HALF OF CONCORD STREET IS CLOSED FOR FULL DEPTH RECONSTRUCTION.
3. DETOURS SHALL ONLY BE USED FOR WORK DURING THE DAY. NORMAL TRAFFIC OPERATIONS WILL BE RESTORED DURING NON-WORK HOURS.
4. DETOUR ROUTE 2 WILL REQUIRE THE DETOUR OF EMERGENCY VEHICLES EXITING FOR A CALL FROM FRAMINGHAM FIRE STATION 2 GOING NORTHBOUND.
5. ROAD CLOSURES ON CONCORD STREET SHALL FOLLOW THE TYPICAL TEMPORARY TRAFFIC MANAGEMENT DETAILS ON SHEETS 48, AND 49



**TRAFFIC DEVICE LEGEND**

- WORK ZONE
- DIRECTION OF VEHICULAR TRAFFIC
- DIRECTION OF DETOURED VEHICULAR TRAFFIC
- POLICE OFFICER
- PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

PROJECT:	IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET
DESIGN SUBMISSION:	85% DESIGN
DRAWING TITLE:	DETOUR PLAN
PREPARED FOR:	CITY OF FRAMINGHAM DEPARTMENT OF PUBLIC WORKS 110 WESTERN AVENUE FRAMINGHAM, MA 01702

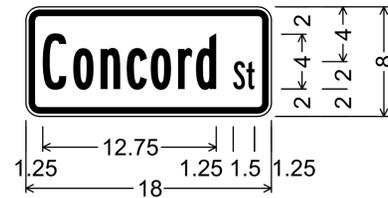
PREPARED BY:	<b>Green International Affiliates, Inc.</b> 100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876
--------------	---------------------------------------------------------------------------------------------------

SCALE: AS NOTED	DESIGNED BY: MP	SHEET NO. <b>50 OF 89</b>
DATE: 6/4/2024	DRAWN BY: MP	
PROJECT NO. 20034	CHECKED BY: AV	

NO.	DATE	REVISIONS

IDENTIFICATION	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (IN)			NUMBER OF SIGNS REQUIRED	COLOR			UNIT AREA (S.F.)	AREA (S.F.)
	WIDTH (IN)	HEIGHT (IN)		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MRK.		BACKGROUND	LEGEND	BORDER		
MA-R2-10a	48	36	WORK ZONE SPEEDING FINES DOUBLED	SEE MASSDOT STANDARD SIGN BOOK			8	FLOURESCENT ORANGE	BLACK	BLACK	12.00	96.00
MA-R2-10e	36	48	END ROAD WORK DOUBLE FINES END	SEE MASSDOT STANDARD SIGN BOOK			8	FLOURESCENT ORANGE	BLACK	BLACK	12.00	96.00
MA-W20-7b	36	36	POLICE OFFICER AHEAD	SEE MASSDOT STANDARD SIGN BOOK			8	FLOURESCENT ORANGE	BLACK	BLACK	9.00	72.00
M4-8a	24	18	END DETOUR	SEE MUTCD			1	FLOURESCENT ORGANGE	BLACK	BLACK	3.00	3.00
M4-9L	30	24	DETOUR ←	SEE MUTCD			3	FLOURESCENT ORGANGE	BLACK	BLACK	5.00	15.00
M4-9R	30	24	DETOUR →	SEE MUTCD			1	FLOURESCENT ORGANGE	BLACK	BLACK	5.00	5.00
M4-9V	30	24	DETOUR ↑	SEE MUTCD			2	FLOURESCENT ORGANGE	BLACK	BLACK	5.00	10.00
R9-9	24	12	SIDEWALK CLOSED	SEE MUTCD			4	WHITE	BLACK	BLACK	2.00	8.00
R9-11aL	24	18	SIDEWALK CLOSED ← CROSS HERE	SEE MUTCD			2	WHITE	BLACK	BLACK	3.00	6.00
R9-11aR	24	18	SIDEWALK CLOSED → CROSS HERE	SEE MUTCD			2	WHITE	BLACK	BLACK	3.00	6.00
W5-1	36	36	ROAD NARROWS	SEE MUTCD			2	FLOURESCENT ORANGE	BLACK	BLACK	9.00	18.00
W8-1	36	36	BUMP	SEE MUTCD			4	FLOURESCENT ORANGE	BLACK	BLACK	9.00	36.00
W8-3	36	36	PAVEMENT ENDS	SEE MUTCD			4	FLOURESCENT ORANGE	BLACK	BLACK	9.00	36.00
W8-9	36	36	LOW SHOULDER	SEE MUTCD			2	FLOURESCENT ORANGE	BLACK	BLACK	9.00	18.00
W8-15	36	36	GROOVED PAVEMENT	SEE MUTCD			4	FLOURESCENT ORANGE	BLACK	BLACK	9.00	36.00

IDENTIFICATION	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (IN)			NUMBER OF SIGNS REQUIRED	COLOR			UNIT AREA (S.F.)	AREA (S.F.)
	WIDTH (IN)	HEIGHT (IN)		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MRK.		BACKGROUND	LEGEND	BORDER		
W8-24	36	36	STEEL PLATE AHEAD	SEE MUTCD			4	FLOURESCENT ORANGE	BLACK	BLACK	9.00	36.00
W16-8P	18	8	Concord st	SEE SIGN DETAIL			8	FLOURESCENT ORGANGE	BLACK	BLACK	1.00	8.00
W20-1	36	36	ROAD WORK AHEAD	SEE MUTCD			8	FLOURESCENT ORANGE	BLACK	BLACK	9.00	72.00
W20-2	36	36	DETOUR AHEAD	SEE MUTCD			1	FLOURESCENT ORGANGE	BLACK	BLACK	9.00	9.00
W20-4	36	36	ONE LANE ROAD AHEAD	SEE MUTCD			8	FLOURESCENT ORANGE	BLACK	BLACK	9.00	72.00
W20-7	36	36	PEDESTRIAN	SEE MUTCD			8	FLOURESCENT ORANGE	BLACK	BLACK	9.00	72.00
W21-5	36	36	SHOULDER WORK	SEE MUTCD			2	FLOURESCENT ORANGE	BLACK	BLACK	9.00	18.00
TOTAL:											748.00	



W16-8P

1.00" Radius, 0.38" Border, 0.25" Indent, Black on White;  
 "Concord", B 2K;  
 "St", B 2K;

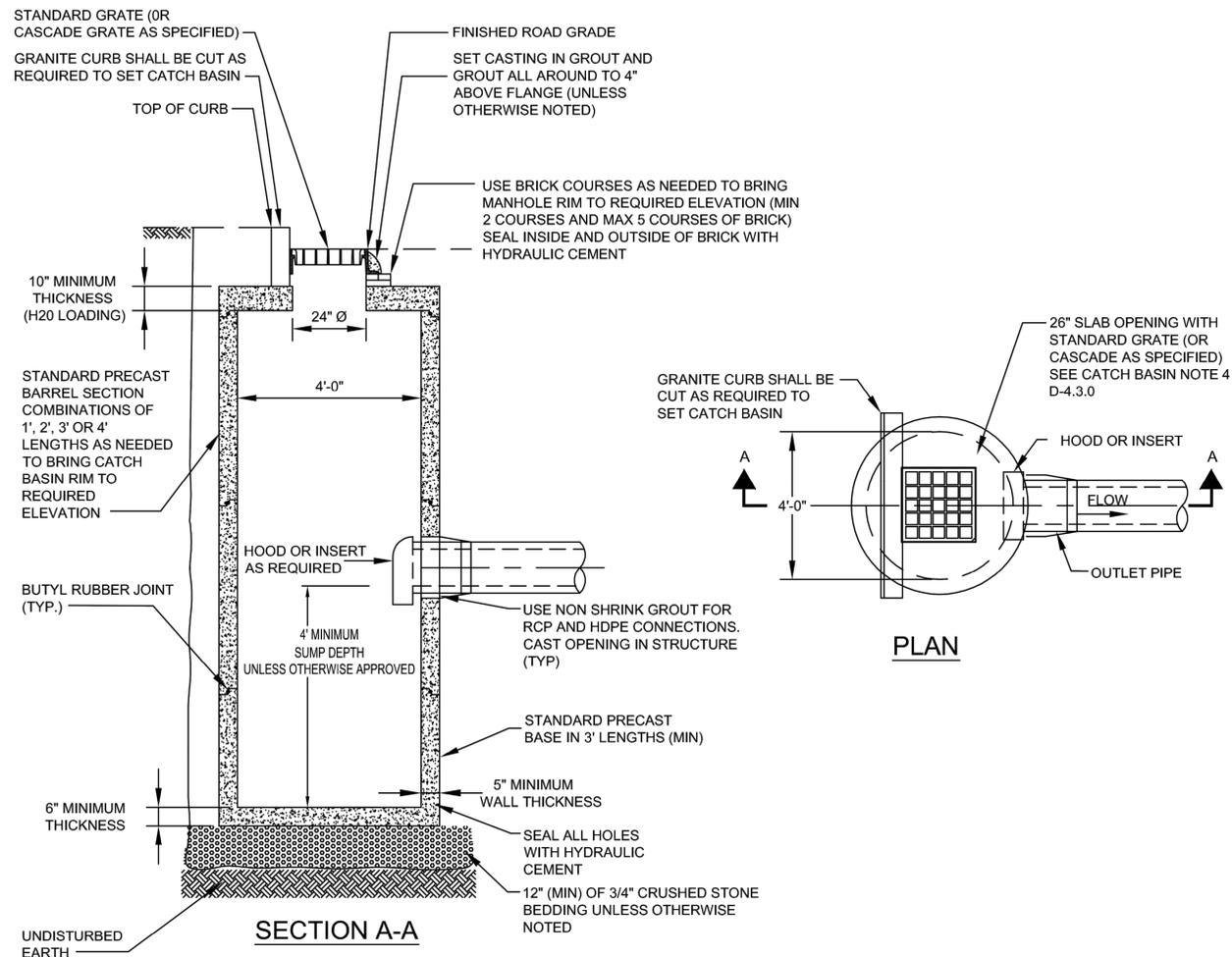
Table of distances between letter and object lefts

1.25	C	o	n	c	o	r	d
2.25	2.00	1.88	1.75	2.00	1.38		
2.75	s	t	1.25				
	0.88	0.63					

W16-8P DETAIL  
NOT TO SCALE

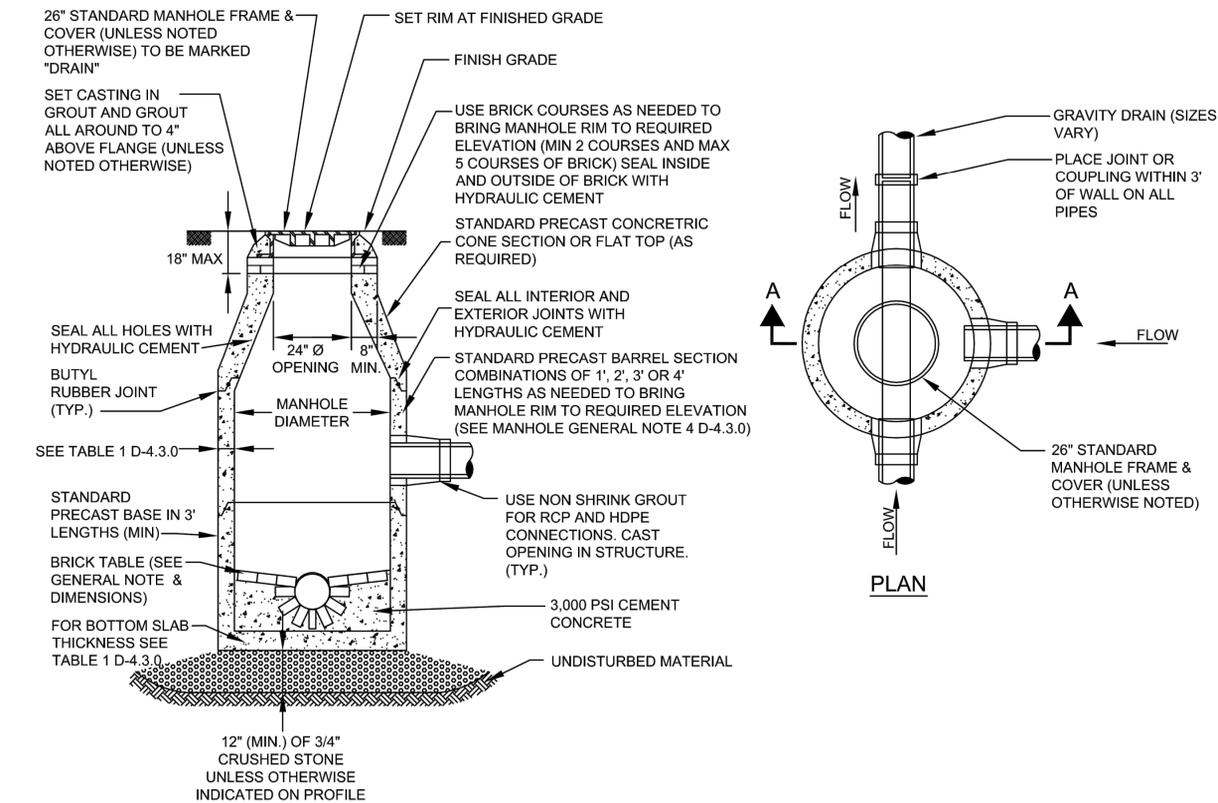
PROJECT: IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET	
DESIGN SUBMISSION: 85% DESIGN	
DRAWING TITLE: TMP SIGN SUMMARY	
PREPARED FOR: CITY OF FRAMINGHAM DEPARTMENT OF PUBLIC WORKS 110 WESTERN AVENUE FRAMINGHAM, MA 01702	
PREPARED BY: Green International Affiliates, Inc. 100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876	
SCALE: AS NOTED	DESIGNED BY: MP
DATE: 6/4/2024	DRAWN BY: MP
PROJECT NO. 20034	CHECKED BY: AV
SHEET NO. 51 OF 89	

NO.	DATE	REVISIONS
1	XX/XX/XX	ENTER DESCRIPTION OF REVISION HERE



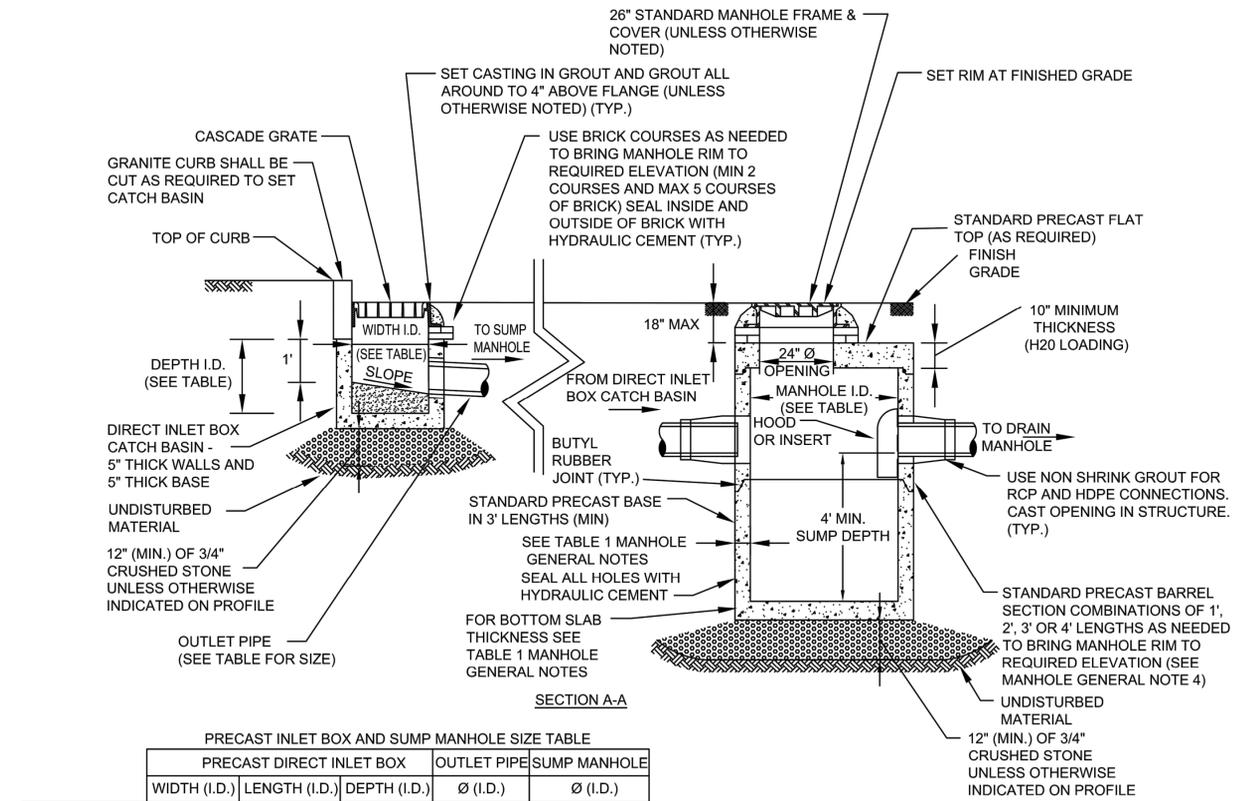
**SINGLE GRATE CATCH BASIN**

NOT TO SCALE



**SECTION A-A DRAIN MANHOLE**

NOT TO SCALE



PRECAST INLET BOX AND SUMP MANHOLE SIZE TABLE

	PRECAST DIRECT INLET BOX		OUTLET PIPE		SUMP MANHOLE
	WIDTH (I.D.)	LENGTH (I.D.)	DEPTH (I.D.)	Ø (I.D.)	Ø (I.D.)
SINGLE GRATE	24"	24"	24"	12"	4'
DOUBLE GRATE	24"	48"	36"	15"	5'

I.D. = INSIDE DIMENSION

**DIRECT INLET CATCH BASIN**

NOT TO SCALE

**GENERAL CATCH BASIN NOTES:**

1. FACE OF PIPE SHALL NOT PROJECT MORE THAN 3-INCHES FROM FACE OF WALL ALONG CENTERLINE OF PIPE.
2. DESIGN PRECAST SECTIONS WITH FRAME AND GRATE FOR AASHTO H20 LOADINGS UNLESS OTHERWISE NOTED.
3. PRECAST TOP SLAB OPENING CAN BE CENTERED OR OFFSET AS NECESSARY.
4. GRATE VANES SHALL BE INSTALLED IN DIRECTION TO RECEIVE FLOWS.
5. CATCH BASIN BASE SHALL BE SOLID.

**MANHOLE GENERAL NOTES:**

1. DRAIN MANHOLE DIAMETER SHALL BE 4', 5', 6', 8' OR 10' AS SHOWN ON PLAN/PROFILE VIEWS.
2. DESIGN PRECAST SECTIONS WITH FRAME AND COVER FOR AASHTO H20 LOADINGS UNLESS OTHERWISE NOTED.
3. MANHOLES LARGER THAN 4' IN DIAMETER AT THE BASE SHALL BE REDUCED IN DIAMETER TO 4' AT THE NEXT RISER SECTION UNLESS NOTED OTHERWISE ON PLANS.

PROJECT: IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET

DESIGN SUBMISSION: 85% DESIGN

DRAWING TITLE: CONSTRUCTION DETAILS - 1

PREPARED FOR: CITY OF FRAMINGHAM DEPARTMENT OF PUBLIC WORKS  
110 WESTERN AVENUE  
FRAMINGHAM, MA 01702

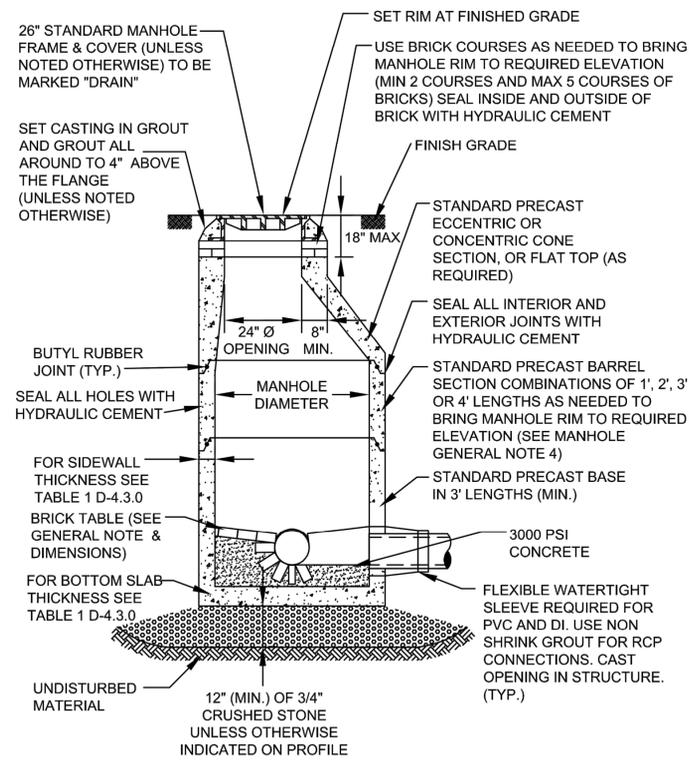
PREPARED BY: Green International Affiliates, Inc.  
100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876

SCALE: AS NOTED  
DATE: 6/4/2024  
PROJECT NO. 20034

DESIGNED BY: J.L.  
DRAWN BY: MPC  
CHECKED BY: HP

SHEET NO. 52 OF 89

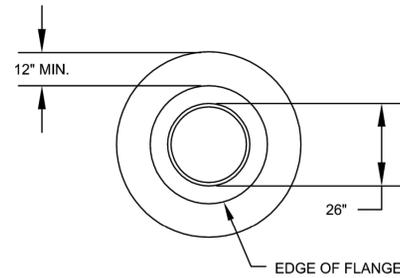
NO.	DATE	REVISIONS
1		



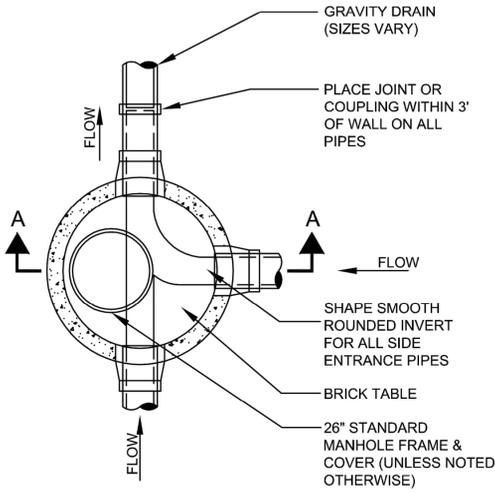
SECTION A-A

**ECCENTRIC MANHOLE**

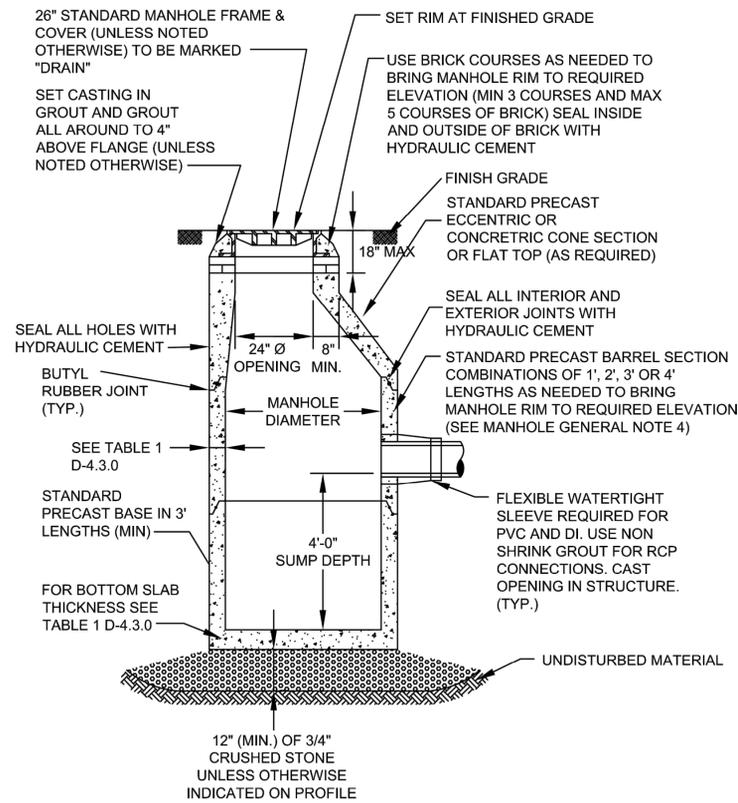
NOT TO SCALE



PLAN



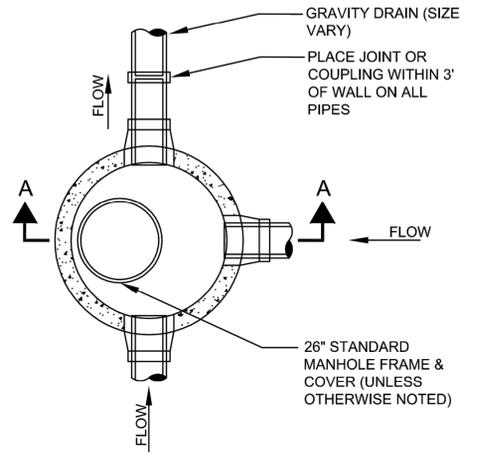
PLAN



SECTION A-A

**SUMP MANHOLE**

NOT TO SCALE

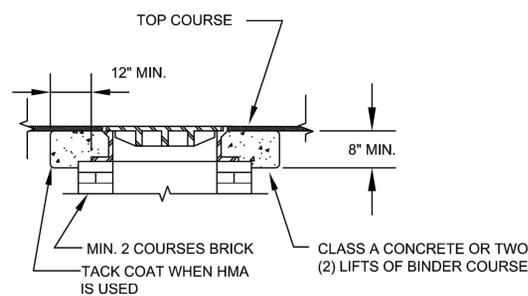


PLAN

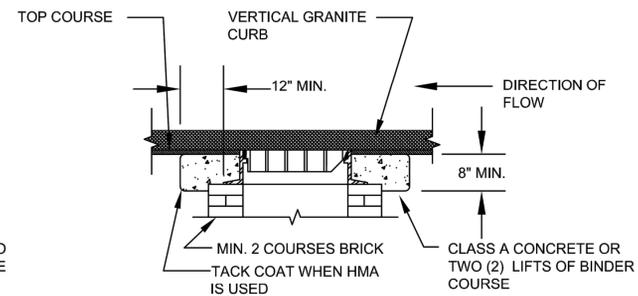
MANHOLE DIAMETER	SIDE WALL MIN. THICKNESS	BOTTOM SLAB MIN. THICKNESS	MAX PIPE DIAMETER *	
			RCP	DI/PVC
4'	5"	6"	24"	30"
5'	6"	8"	36"	42"
6'	6"	8"	48"	54"
8'	8"	8"	66"	72"
10'	10"	10"	72"	84"

\* MAY VARY DEPENDING ON SIZE AND LOCATION OF ADDITIONAL PENETRATIONS OR RELATIONSHIP OF PENETRATIONS IN MANHOLE

**MANHOLE AND CATCH BASINS DIMENSIONS**



SECTION  
MANHOLES



SECTION  
CATCH BASINS

**RAISING CASTINGS**

NOT TO SCALE

NO.	DATE	REVISIONS
1		

PROJECT: IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET

DESIGN SUBMISSION: 85% DESIGN

DRAWING TITLE: CONSTRUCTION DETAILS - 2

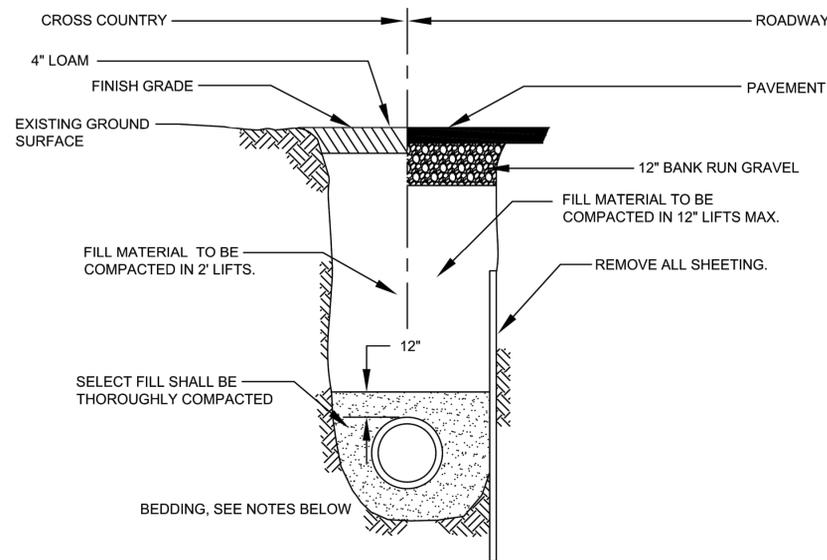
PREPARED FOR: CITY OF FRAMINGHAM  
DEPARTMENT OF PUBLIC WORKS  
110 WESTERN AVENUE  
FRAMINGHAM, MA 01702

PREPARED BY: Green International Affiliates, Inc.  
100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876

SCALE: AS NOTED  
DATE: 6/4/2024  
PROJECT NO. 20034

DESIGNED BY: JL  
DRAWN BY: MPC  
CHECKED BY: HP

SHEET NO. 53 OF 89



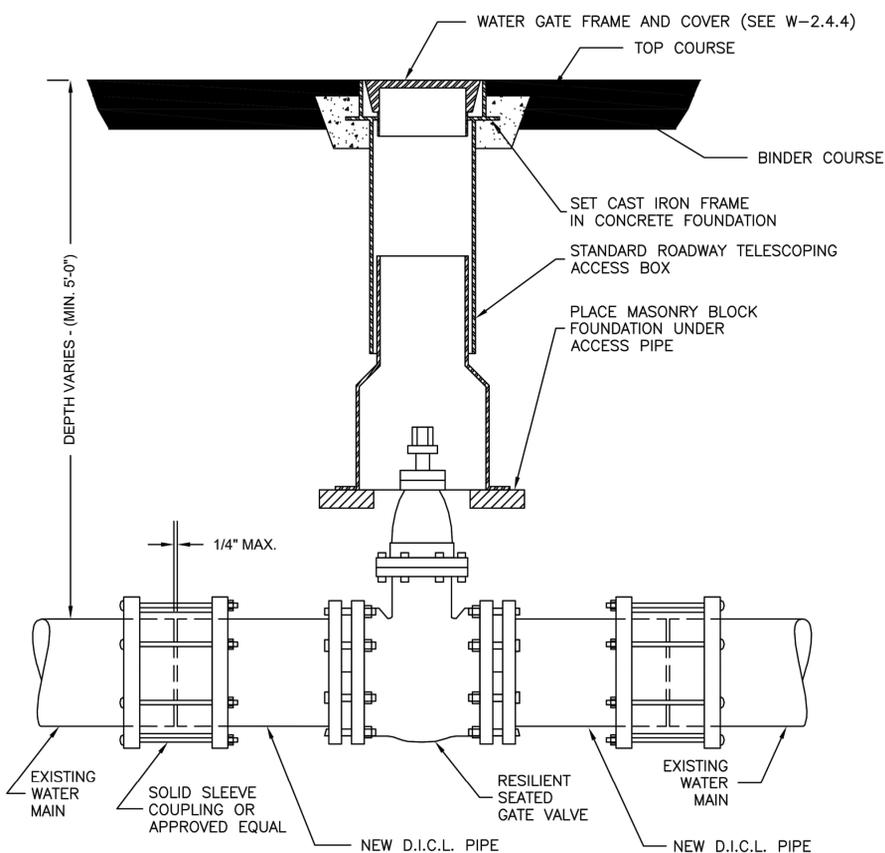
NOTE: 5'-0" MIN. COVER

**NOTES:**

1. CITY OF FRAMINGHAM MAY REQUIRE FLOWABLE FILL AT ITS DISCRETION.
2. FOR LOCATIONS WHERE LEDGE IS NOT ENCOUNTERED IN TRENCH, PIPE CAN LAY ON UNDISTURBED EARTH, OR ON SAND BEDDING CONSISTENT WITH AWWA GUIDELINES.
3. FOR LOCATIONS WHERE LEDGE IS ENCOUNTERED, SAND BEDDING SHALL BE MINIMUM OF 12" THICK UNDER PIPE.
4. FILL MATERIAL SHALL BE COMPACTED TO 95% PROCTOR DENSITY.

**WATER MAIN TRENCH DETAIL**

NOT TO SCALE

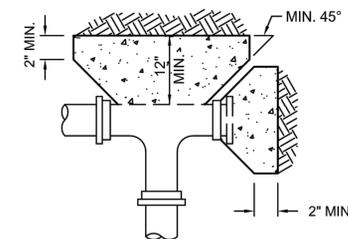
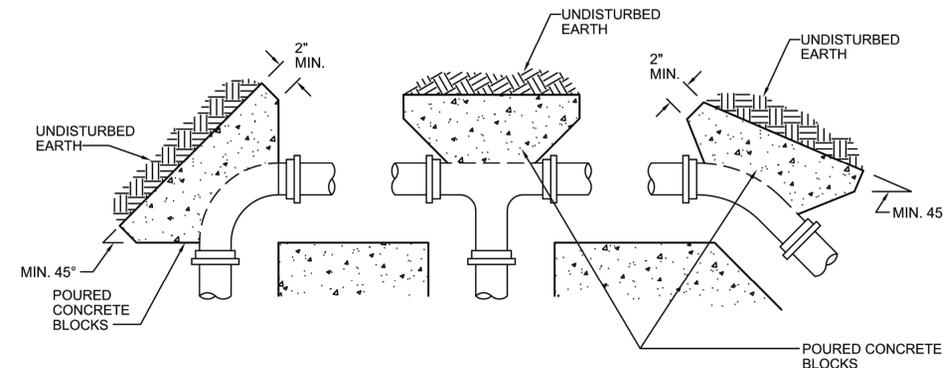


**NOTE:**

1. ALL EXCAVATION, BACKFILLING AND PAVING SHALL BE IN ACCORDANCE WITH THE TOWN OF FRAMINGHAM REQUIREMENTS.
2. WATER GATE COVER SHALL HAVE A MINIMUM HEIGHT OF 3.5 INCHES AND A MINIMUM WEIGHT OF 13 POUNDS, BRAND NAME BIBBY-STE-CROIX OR EQUAL.

**GATE VALVE**

NOT TO SCALE



**PLAN VIEWS**

**NOTES:**

1. SPECIFIC THRUST BLOCK DESIGN SHALL CONFORM TO AWWA GUIDELINES.
2. PLACE 4 mil. POLYETHYLENE BETWEEN CONCRETE AND FITTING (CONCRETE SHALL NOT INTERFERE WITH JOINT).
3. MINIMUM CONCRETE THICKNESS SHALL BE 12 INCHES.
4. THRUST BLOCK ORIENTATION SHALL BE SUCH THAT THE CENTER OF THE FITTING CORRESPONDS WITH THE CENTER OF THE THRUST BLOCK.
5. THE MINIMUM ALLOWABLE ANGLE (EITHER VERTICAL OR HORIZONTAL) SHALL BE 45 DEGREES.

**TYPICAL THRUST BLOCK DETAILS**

NOT TO SCALE

PROJECT: IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET

DESIGN SUBMISSION: 85% DESIGN

DRAWING TITLE: CONSTRUCTION DETAILS - 3

PREPARED FOR: CITY OF FRAMINGHAM DEPARTMENT OF PUBLIC WORKS  
110 WESTERN AVENUE  
FRAMINGHAM, MA 01702

PREPARED BY: Green International Affiliates, Inc.  
100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876

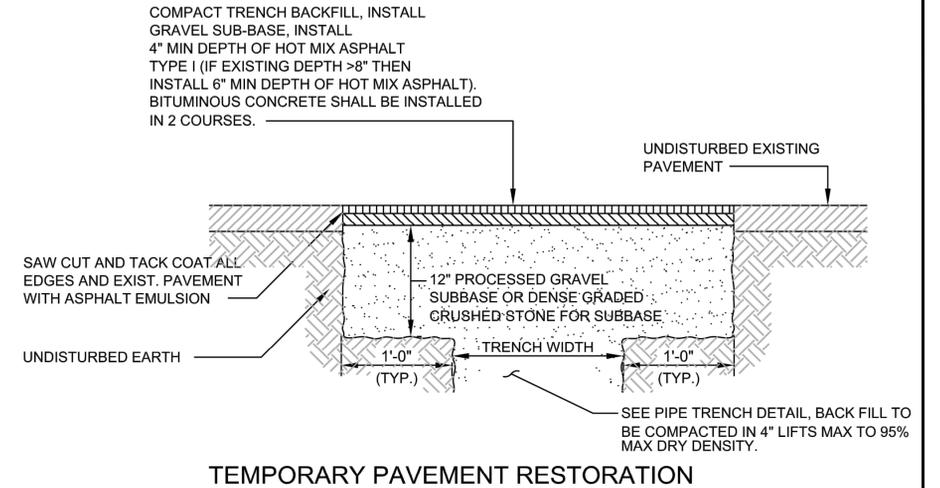
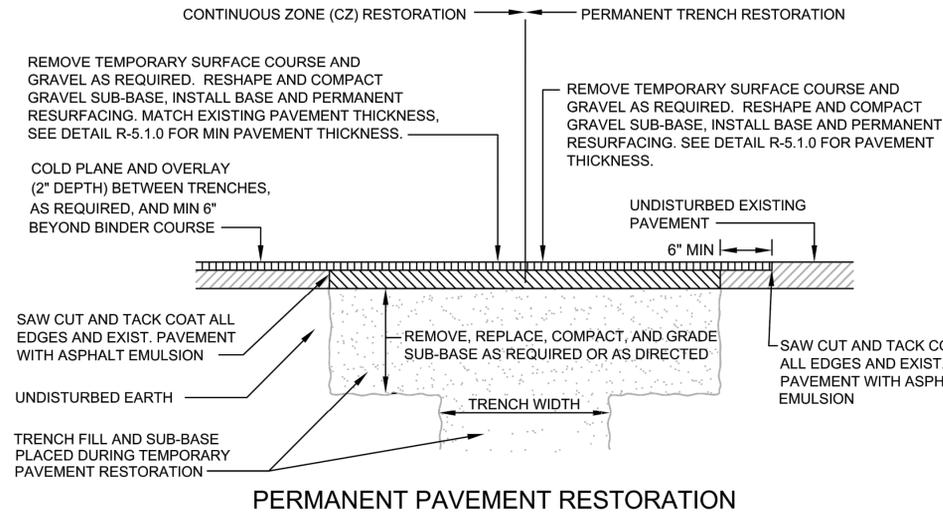
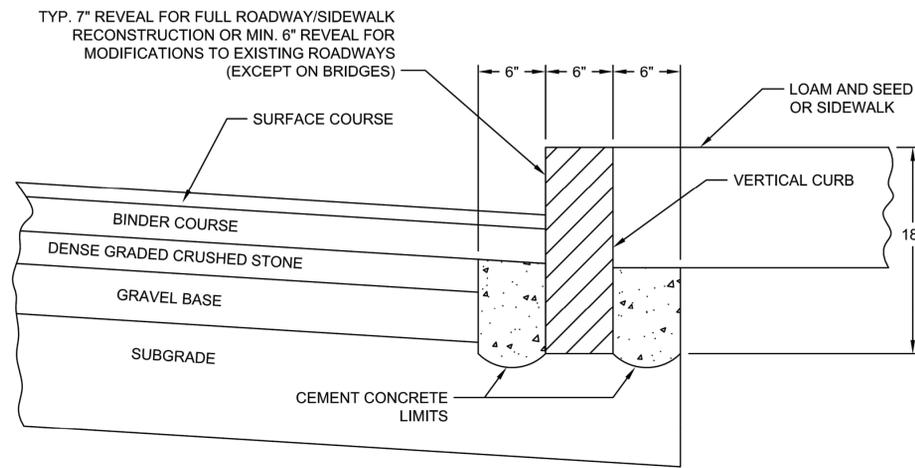
SCALE: AS NOTED  
DATE: 6/4/2024  
PROJECT NO. 20034

DESIGNED BY: JL  
DRAWN BY: MPC  
CHECKED BY: HP

SHEET NO. 54 OF 89

NO.	DATE	REVISIONS
1		

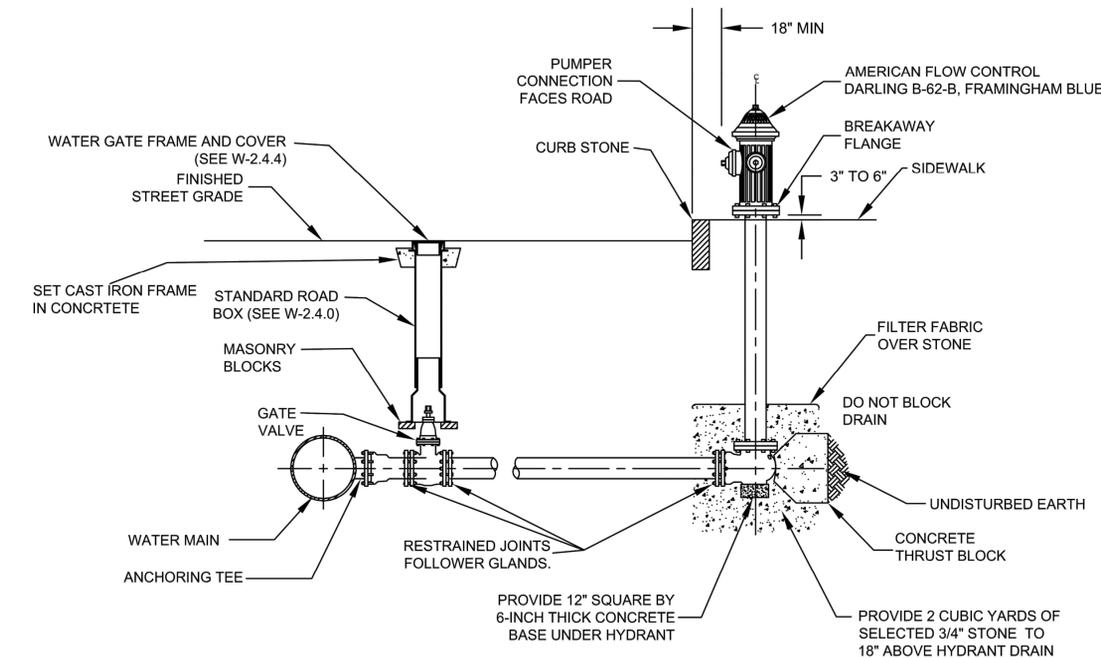
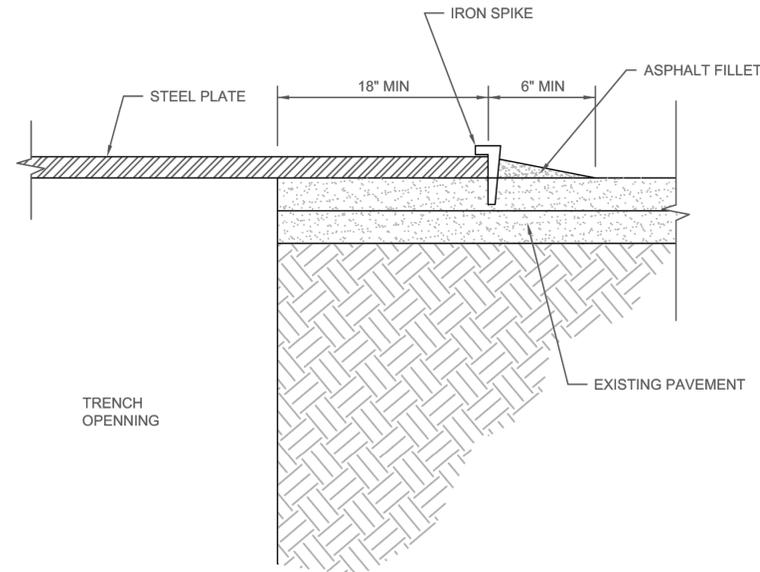
W:\Shared\Engineering\Projects\2024\20034\DWG\12 Construction Details.dwg Plot Date: 6/17/2024 8:58 AM



- NOTES:**
- CUT NEAT LINE 6" FROM CURB LINE AND REMOVE BASE AND SUBGRADE, REPLACE WITH CEMENT CONCRETE. COVER WITH BINDER AND TOP COURSE TO CURB.
  - ANY DESIGNATED CEMENT CONCRETE THAT IS ACCEPTABLE UNDER SECTION M4 OF THE STANDARD MHD SPECIFICATIONS MAY BE USED; ALL TEST REQUIREMENTS ARE WAIVED. BITUMINOUS CONCRETE SHALL NOT BE USED AS A SUBSTITUTE.

**GRANITE CURBS**  
NOT TO SCALE

**PAVEMENT DETAILS FOR TRENCH RESTORATION**  
NOT TO SCALE



- NOTES:**
- USE OF STEEL PLATES ALLOWED ON A CASE BY CASE BASIS, PENDING WRITTEN APPROVAL BY TOWN.
  - CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGES OR CLAIMS RESULTING FROM THE USE OF STEEL PLATES.
  - MUTCD COMPLIANT RETROREFLECTIVE ORANGE CONSTRUCTION WARNING SIGNS (48"x48") WITH WORDING "STEEL PLATE AHEAD" SHALL BE INSTALLED IN ADVANCE OF STEEL PLATE INSTALLATION.
  - THE CONTRACTOR SHALL DESIGN AND UTILIZE STEEL PLATES OF ADEQUATE DIMENSIONS AND THICKNESS FOR INTENDED USE AND VEHICLE LOADING. MAXIMUM ALLOWABLE DEFLECTION SHALL BE 0.025". IRON SPIKE FASTENERS SHALL BE INSTALLED AROUND THE PERIMETER OF THE STEEL PLATE.
  - SEE CONSTRUCTION STANDARDS SECTION 6.3 SPECIAL CONDITIONS FOR ADDITIONAL REQUIREMENTS.

**FIRE HYDRANT INSTALLATION**  
NOT TO SCALE

**STEEL PLATE INSTALLATION**  
NOT TO SCALE

NO.	DATE	REVISIONS
1		

PROJECT: IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET

DESIGN SUBMISSION: 85% DESIGN

DRAWING TITLE: CONSTRUCTION DETAILS - 4

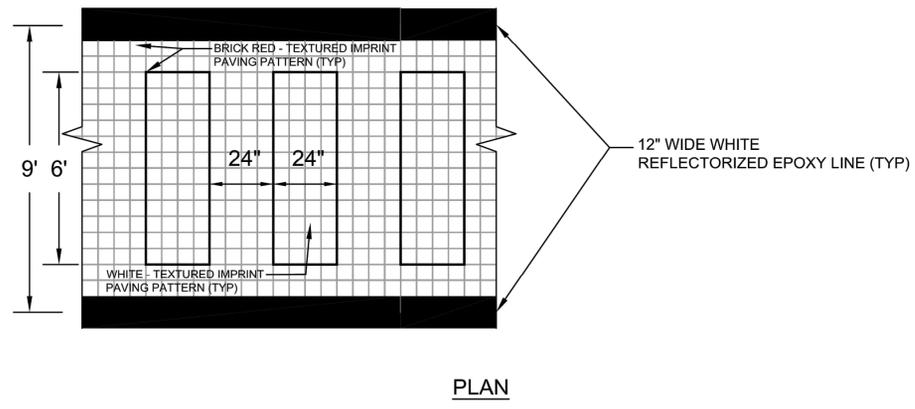
PREPARED FOR: CITY OF FRAMINGHAM DEPARTMENT OF PUBLIC WORKS  
110 WESTERN AVENUE  
FRAMINGHAM, MA 01702

PREPARED BY: Green International Affiliates, Inc.  
100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876

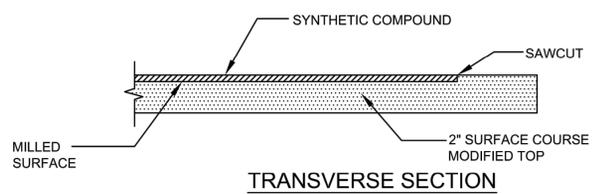
SCALE: AS NOTED  
DATE: 6/4/2024  
PROJECT NO. 20034

DESIGNED BY: JL  
DRAWN BY: MPC  
CHECKED BY: HP

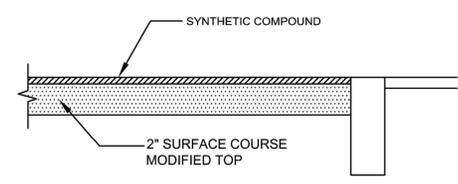
SHEET NO. 55 OF 89



PLAN



TRANSVERSE SECTION



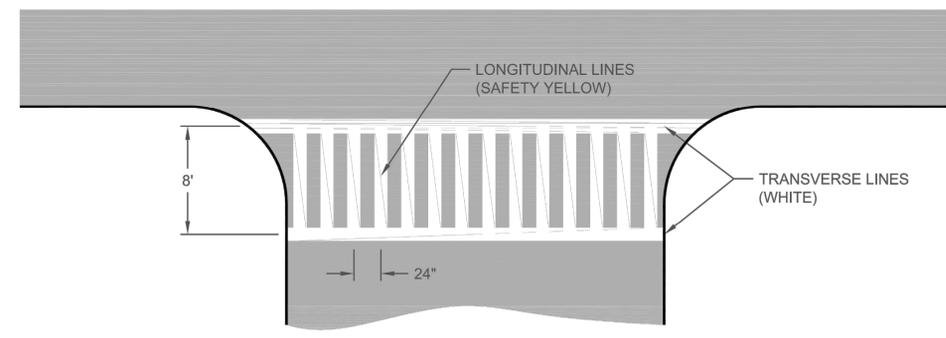
LONGITUDINAL SECTION

NOTES:

- BRICK PATTERN TO BE STAMPED INTO MECHANICALLY HEATED SYNTHETIC COMPOUND.
- REFER TO ITEM 706.9 FOR SPECIFICATIONS FOR TEXTURED DECORATIVE PAVEMENT CROSSWALK WHICH IS ON FILE WITH THE CITY OF FRAMINGHAM'S MUNICIPAL ENGINEERING DEPARTMENT.

**DECORATIVE CROSS WALK**

NOT TO SCALE



**PAVEMENT MARKING - FAST DRYING WATER-BORNE OR OTHER TRAFFIC PAINT**

NOT TO SCALE

NOTES:

- CROSSWALK MARKINGS SHALL CONSIST OF SOLID WHITE OR YELLOW (AS INDICATED) LINES (BOTH TRANSVERSE AND LONGITUDINAL) 12 INCHES IN WIDTH.
- CROSSWALKS SHALL BE 8 FEET WIDE.
- LONGITUDINAL LINES SHALL BE SPACED 24" APART ON CENTER FOR ALL NEW CROSSWALKS. EXISTING CROSSWALK REPAIRS SHALL MATCH EXISTING SPACING.
- CROSSWALK LINES SHALL EXTEND ACROSS THE FULL WIDTH OF PAVEMENT OR TO THE EDGE OF THE INTERSECTING CROSSWALK.
- CROSSWALKS SHALL BE MARKED AT ALL INTERSECTIONS WHERE THERE IS SUBSTANTIAL CONFLICT BETWEEN VEHICULAR AND PEDESTRIAN MOVEMENT.
- CROSSWALK MARKINGS FOR NEW ROADWAYS SHALL BE INSTALLED USING EPOXY PAVING MARKING MATERIAL CONFORMING TO MASSDOT ENGINEERING DIRECTIVE E-05-003, DATED JUNE 16, 2005 AND TO MASSDOT STANDARD SECTION 860.
- CROSSWALK MARKINGS FOR EXISTING ROADWAYS SHALL BE INSTALLED USING FAST DRYING WATER-BORNE TRAFFIC PAINT PAVING MARKING MATERIAL TO MEET MASSDOT SPECIFICATIONS M07.01.23 (WHITE) AND M07.01.24 (YELLOW).
- THERMOPLASTIC SHALL NOT BE USED FOR ANY PAVEMENT MARKINGS.

**CROSS WALK**

NOT TO SCALE

PROJECT: IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET

DESIGN SUBMISSION: 85% DESIGN

DRAWING TITLE: CONSTRUCTION DETAILS - 5

PREPARED FOR: CITY OF FRAMINGHAM DEPARTMENT OF PUBLIC WORKS  
110 WESTERN AVENUE  
FRAMINGHAM, MA 01702

PREPARED BY: **Green International Affiliates, Inc.**  
100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876

NO.	DATE	REVISIONS
1		

SCALE: AS NOTED  
DATE: 6/4/2024  
PROJECT NO. 20034

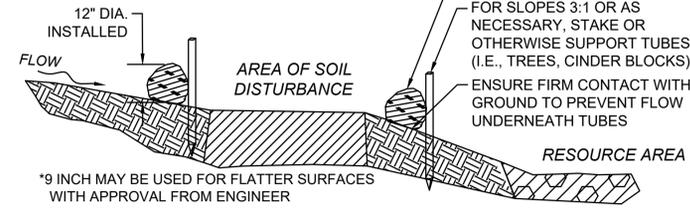
DESIGNED BY: JL  
DRAWN BY: MPC  
CHECKED BY: HP

SHEET NO. 56 OF 89

W:\Shared\Engineering\Projects\2024\20034\DWG\12 Construction Details.dwg (Printed: 6/17/2024 8:57 AM)

**COMPOST FILTER TUBE**

REDUCE FLOW ONTO WORK ZONE

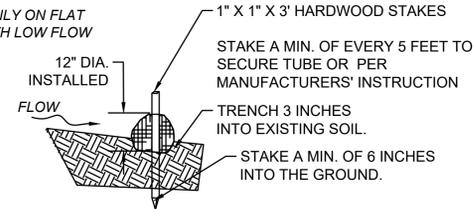


PREVENT FLOW OFF SITE:  
PLACE AS CLOSE TO **AREA OF DISTURBANCE** AS POSSIBLE

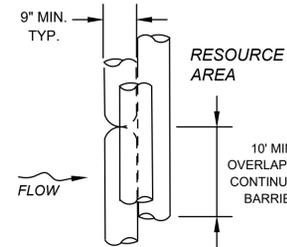
BIODEGRADABLE FABRIC  
FOR SLOPES 3:1 OR AS NECESSARY, STAKE OR OTHERWISE SUPPORT TUBES (I.E., TREES, CINDER BLOCKS)  
ENSURE FIRM CONTACT WITH GROUND TO PREVENT FLOW UNDERNEATH TUBES

**12 INCH STRAW WATTLE**

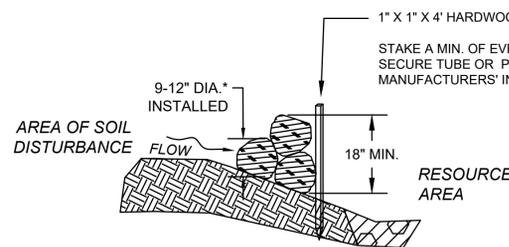
TO BE USED ONLY ON FLAT SURFACES WITH LOW FLOW



**SECTION**



**PLAN VIEW**



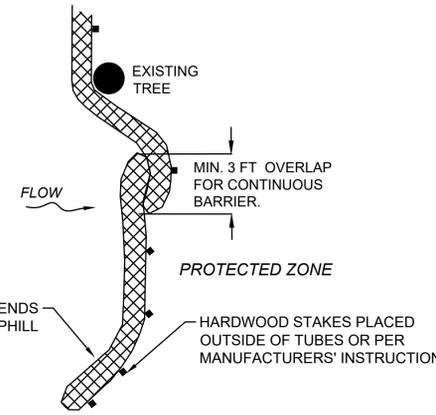
**SECTION**

**COMPOST FILTER TUBE BERM (SLOPES 2:1 OR STEEPER)**

NOT TO SCALE

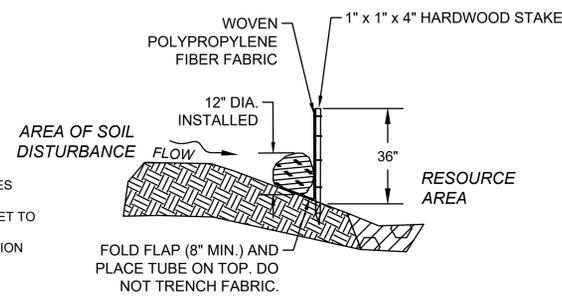
**SEDIMENT CONTROL BARRIERS - COMPOST FILTER TUBE & STRAW WATTLES**

NOT TO SCALE



PLACE TUBE ALONG CONTOURS AND PERPENDICULAR TO FLOW.  
ADJUST LOCATION AS REQUIRED FOR OPTIMUM EFFECTIVENESS. DO NOT INSTALL IN WATERWAYS.  
PLACE STAKES AS NEEDED TO SECURE TUBES IN PLACE.

**PLAN VIEW**



**SECTION**

**COMPOST FILTER TUBE & SILT FENCE**

NOT TO SCALE

PROJECT: IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET

DESIGN SUBMISSION: 85% DESIGN

DRAWING TITLE: CONSTRUCTION DETAILS - 6

PREPARED FOR:  
CITY OF FRAMINGHAM  
DEPARTMENT OF PUBLIC WORKS  
110 WESTERN AVENUE  
FRAMINGHAM, MA 01702

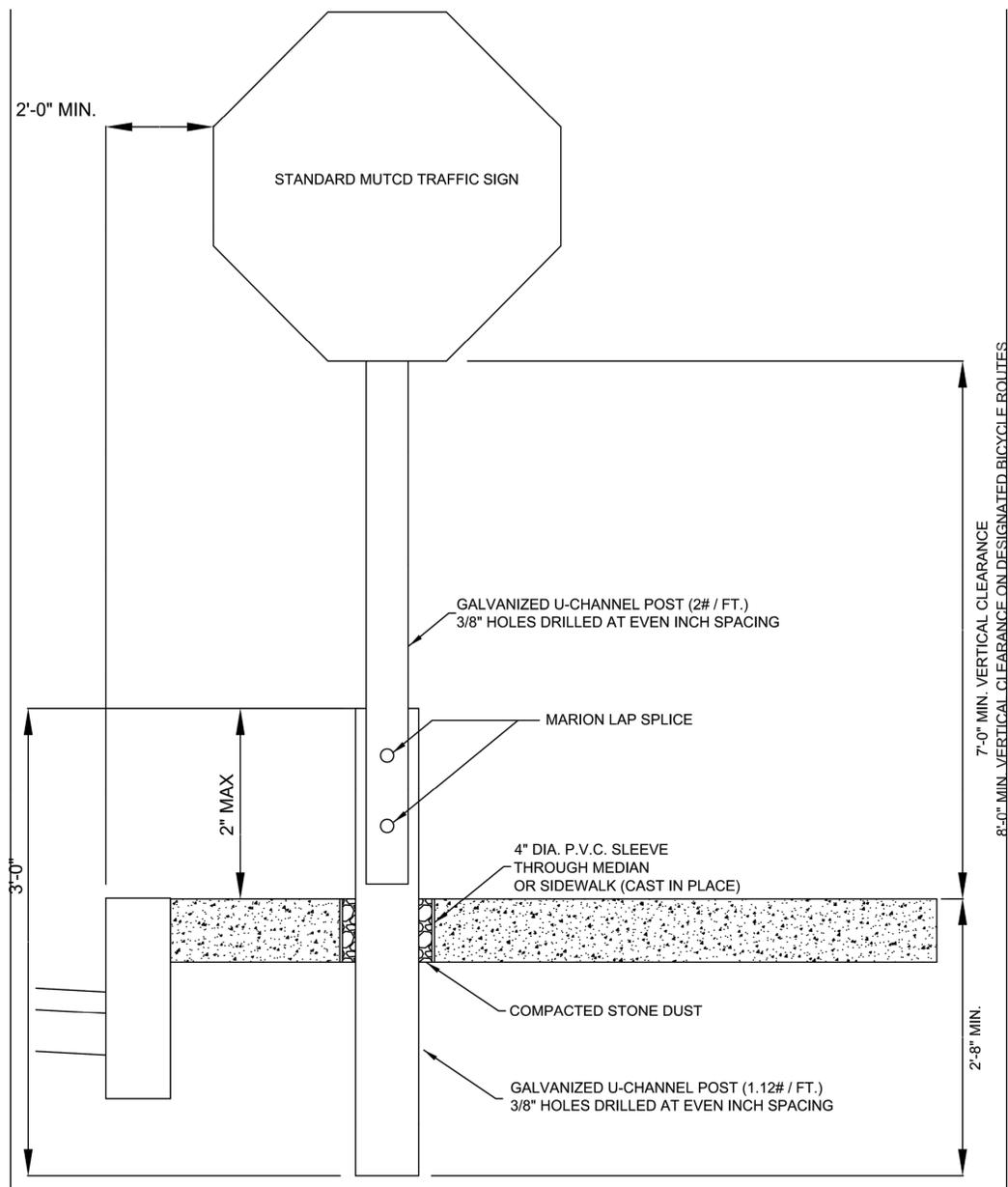
PREPARED BY:  
**Green International Affiliates, Inc.**  
100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876

SCALE: AS NOTED  
DATE: 6/4/2024  
PROJECT NO. 20034

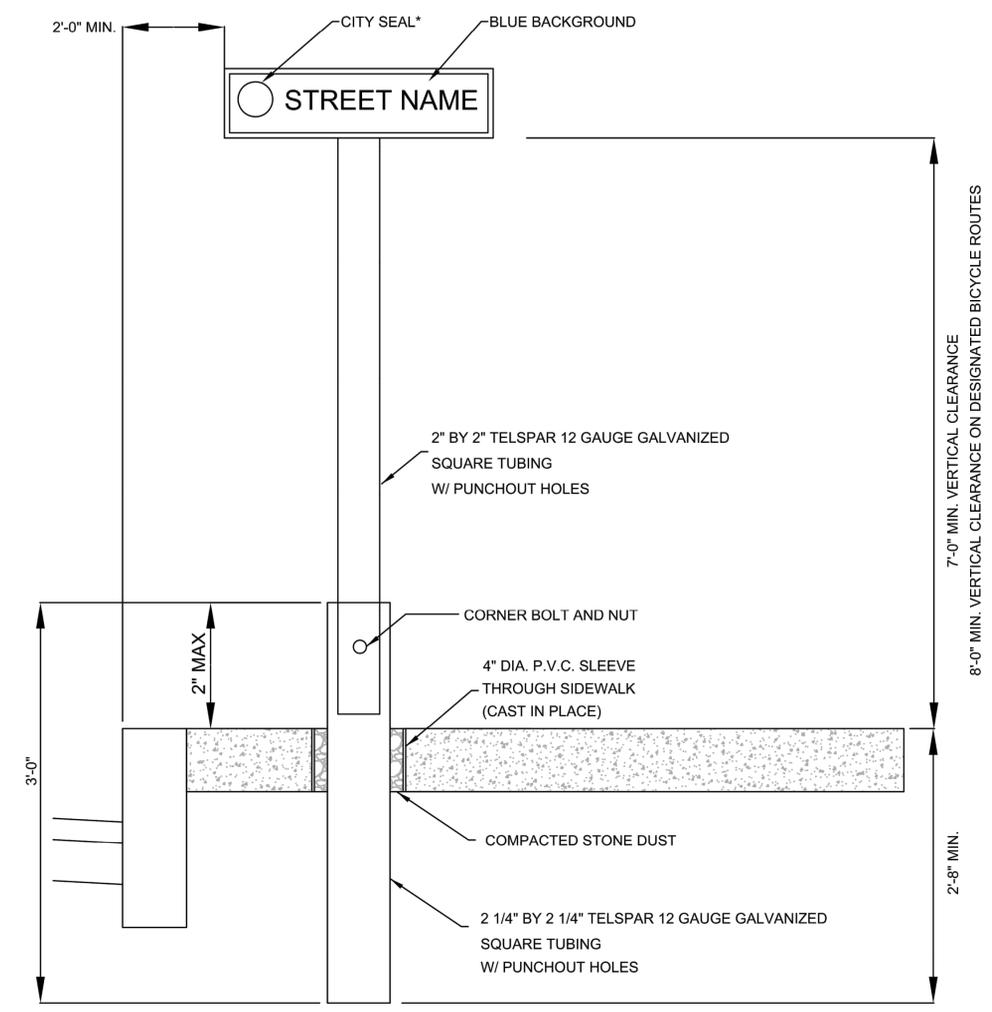
DESIGNED BY: JL  
DRAWN BY: MPC  
CHECKED BY: HP

SHEET NO. 57 OF 89

NO.	DATE	REVISIONS
1		



**TRAFFIC SIGN DETAIL SIDEWALK OR MEDIAN INSTALLATION**  
NOT TO SCALE



**STREET SIGN DETAIL SIDEWALK INSTALLATION**  
NOT TO SCALE

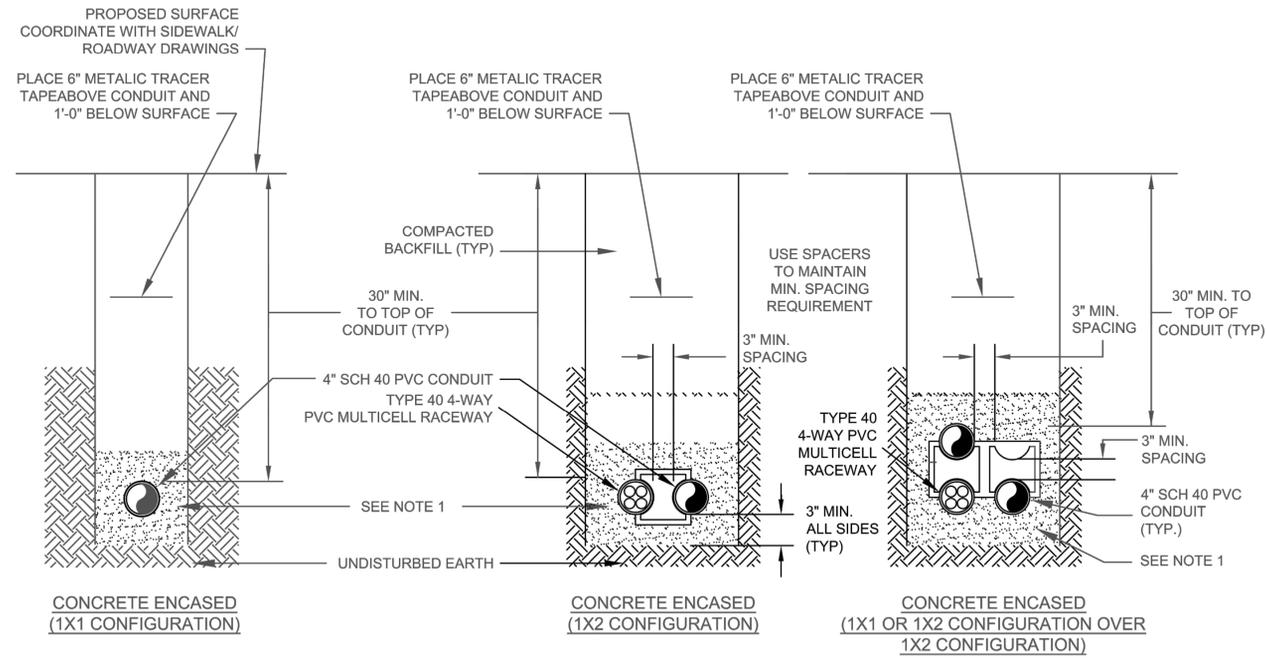
1. EACH SIGN SHALL CONSIST OF (2) SINGLE SIDED PLATES USING DRIVE PINS TO SECURE PLATES TO POST.
2. OUTER EDGE OF SIGN SHALL BE SECURED WITH POP RIVETS AND 2" SPACER BETWEEN THE 2 PLATES.
3. FONT SHALL BE HIGHWAY GOTHIC B IN UPPER CASE ONLY.
4. PLATES SHALL HAVE ROUNDED CORNERS.
5. WHITE AVERY-DENNISON PRISMATIC PLATE SHALL BE UTILIZED.
6. THE SIGNS SHALL INCLUDE 5.5" TOWN SEALS (2 REQUIRED).
7. THE SIGNS SHALL INCLUDE A 0.5" WHITE BORDER.

**STREET NAME SIGN INSTALLATION NOTES**

NO.	DATE	REVISIONS
1		

PROJECT: IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET	
DESIGN SUBMISSION: 85% DESIGN	
DRAWING TITLE: CONSTRUCTION DETAILS - 7	
PREPARED FOR: CITY OF FRAMINGHAM DEPARTMENT OF PUBLIC WORKS 110 WESTERN AVENUE FRAMINGHAM, MA 01702	
PREPARED BY:  Green International Affiliates, Inc. 100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876	
SCALE: AS NOTED	DESIGNED BY: JL
DATE: 6/4/2024	DRAWN BY: MPC
PROJECT NO. 20034	CHECKED BY: HP
SHEET NO. 58 OF 89	

W:\Shared\Engineering\Projects\2024\20034\DWG\12 Construction Details.dwg (Printed: 6/17/2024 8:57 AM)

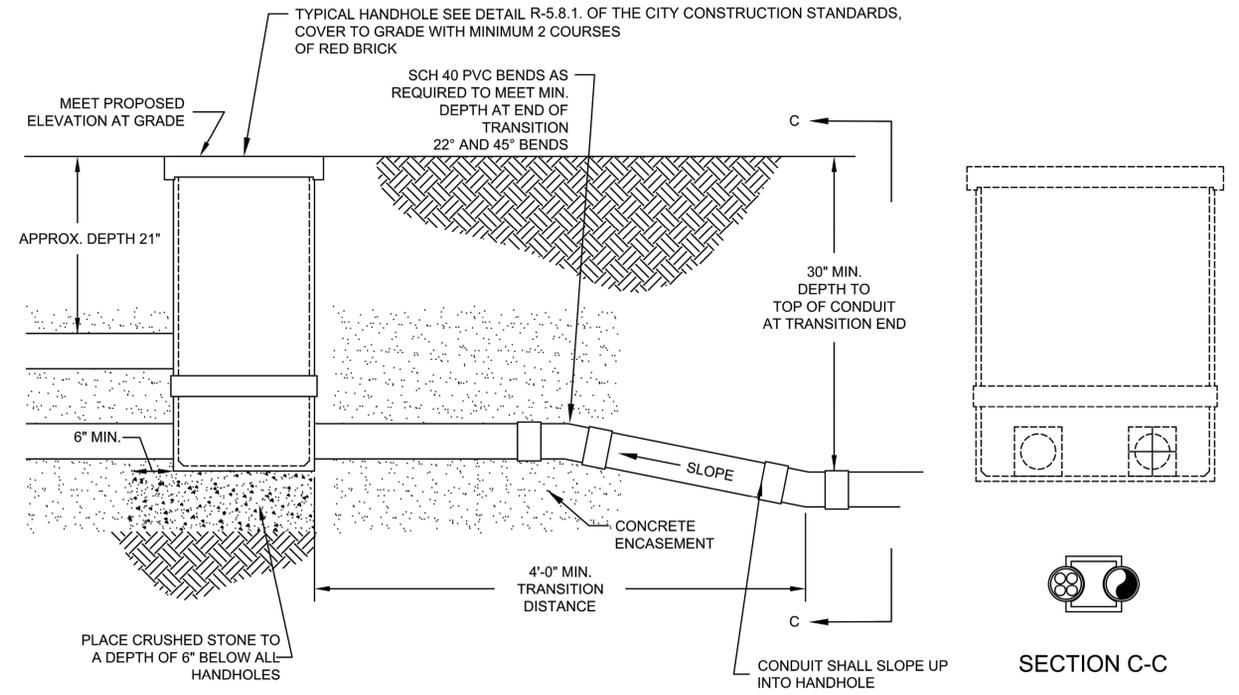


**NOTE:**

1. CONDUIT TO BE ENCASED IN CEMENT CONCRETE WITH 3" MINIMUM COVER ON ALL SIDES.
2. COVERS SHALL BE STEEL.

**TRENCH DETAIL FOR COMMUNICATIONS CONDUIT**

NOT TO SCALE



**NOTES:**

1. CONDUIT HAND HOLES SHALL BE INSTALLED EVERY 600 FEET (MAX) OF LENGTH.
2. 90° BENDS MAY BE USED IF DEEMED NECESSARY AT THE CITY'S DISCRETION AND SHALL BE COMPOSED OF GALVANIZED METAL.

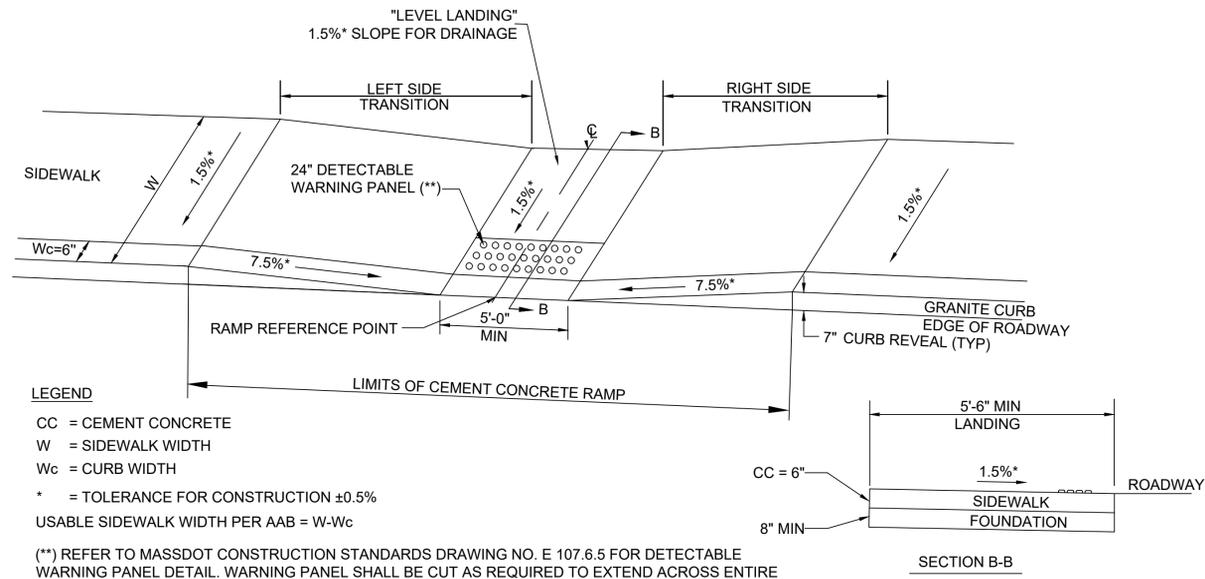
**TRANSITION FROM COMMUNICATIONS HAND HOLE TO TRENCH**

NOT TO SCALE

V:\Shared\Engineering\Projects\2024\240101212 Construction Details.dwg (Printed: 6/17/2024 8:57 AM)

PROJECT: IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET		
DESIGN SUBMISSION: 85% DESIGN		
DRAWING TITLE: CONSTRUCTION DETAILS - 8		
PREPARED FOR:  <b>CITY OF FRAMINGHAM</b> DEPARTMENT OF PUBLIC WORKS 110 WESTERN AVENUE FRAMINGHAM, MA 01702		
PREPARED BY:  <b>Green International Affiliates, Inc.</b> 100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876		
SCALE: AS NOTED	DESIGNED BY: JL	SHEET NO. 59 OF 89
DATE: 6/4/2024	DRAWN BY: MPC	
PROJECT NO. 20034	CHECKED BY: HP	

NO.	DATE	REVISIONS
1		



**LEGEND**

- CC = CEMENT CONCRETE
- W = SIDEWALK WIDTH
- Wc = CURB WIDTH
- \* = TOLERANCE FOR CONSTRUCTION ±0.5%
- USABLE SIDEWALK WIDTH PER AAB = W-Wc

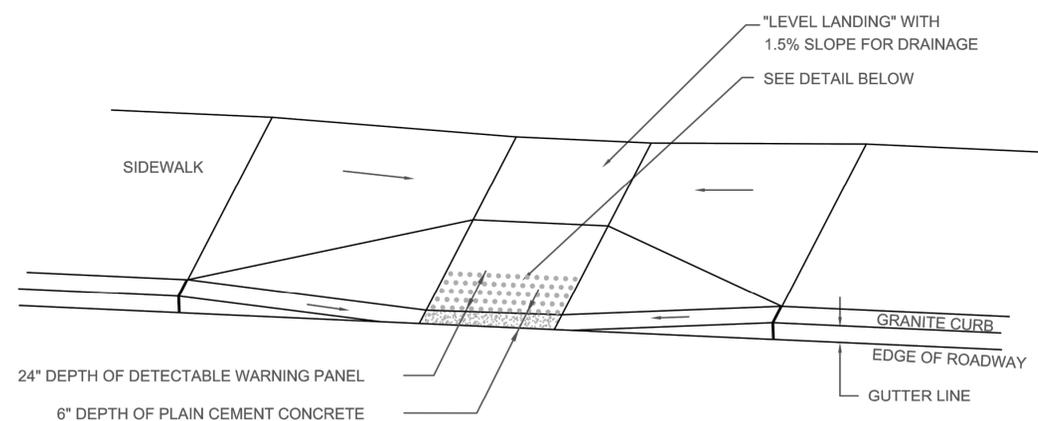
(\*\*) REFER TO MASSDOT CONSTRUCTION STANDARDS DRAWING NO. E 107.6.5 FOR DETECTABLE WARNING PANEL DETAIL. WARNING PANEL SHALL BE CUT AS REQUIRED TO EXTEND ACROSS ENTIRE RAMP OPENING. DETECTABLE WARNING PANELS ARE REQUIRED ON ALL PROPOSED CURB RAMPS AND ARE TO BE INSTALLED IN ACCORDANCE WITH MASSDOT CONSTRUCTION STANDARDS.

**WHEELCHAIR RAMP ON NARROW SIDEWALK**  
NOT TO SCALE

WHEELCHAIR #.	STATION	OFFSET	WIDTH OF SIDEWALK	WIDTH OF RAMP MIN. (5'-0")	ROADWAY GUTTER SLOPE	LEFT SIDE TRANSITION LENGTH	RIGHT SIDE TRANSITION LENGTH
3	3+81.08	27.46 LT	5.50	5.00	2.00%	7'-6"***	9'-0"
4	4+15.47	27.75 LT	7.00	5.00	2.00%	9'-0"	9'-0"***
9	8+20.42	16.52 LT	5.50	5.00	0.70%	7'-10"	9'-0"
15	11+52.21	24.00 RT	7.50	5.00	6.24%	8'-6"*	4'-0"
16	11+52.21	16.00 LT	5.50	5.00	6.24%	7'-10"	7'-6"*
18	500+45.58	11.21 LT	6.00	5.00	-1.80%	10'-10"	7'-10"
22	103+59.36	29.32 RT	6.00	5.00	-0.75%	7'-10"	13'-0"***
25	100+97.97	26.02 LT	7.00	5.00	4.93%	7'-10"	8'-6"*
26	101+13.13	25.68 LT	6.50	5.80	4.93%	3'-9"*	17'-0"

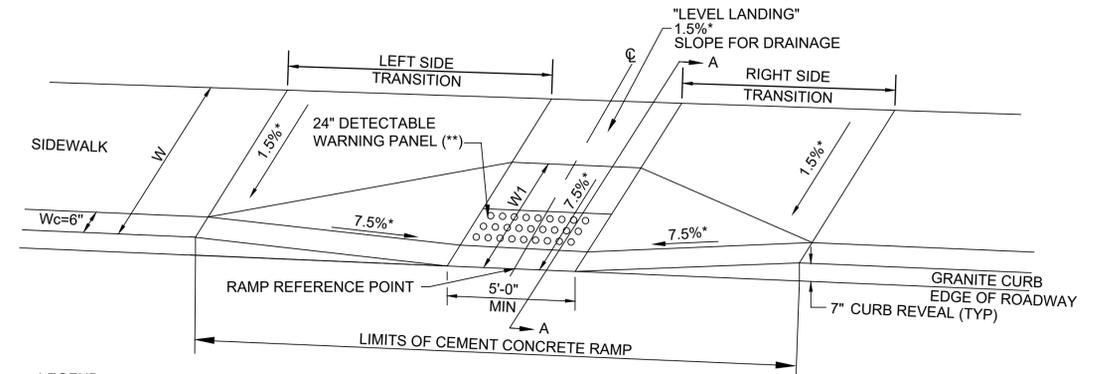
- NOTE:**
- \* = 3" CURB REVEAL
  - \*\* = 4" CURB REVEAL
  - \*\*\* = 5" CURB REVEAL
  - \*\*\*\* = 6" CURB REVEAL
  - \*\*\*\*\* = 2.5" CURB REVEAL

WHEELCHAIR RAMPS SHALL BE CONSTRUCTED IN CONFORMANCE WITH THE CURRENT REGULATIONS OF THE ARCHITECTURAL ACCESS BOARD, THE AMERICANS WITH DISABILITIES ACT AND THE CURRENT MASSDOT CONSTRUCTION STANDARDS.



**TYPICAL INSTALLATION**

**DETECTABLE WARNING PANEL DETAIL**  
NOT TO SCALE



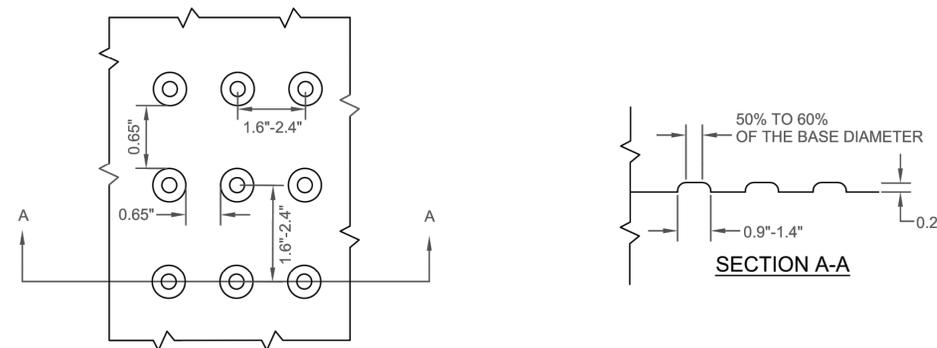
**LEGEND**

- CC = CEMENT CONCRETE
- HSL = HIGH SIDE FRONT TRANSITION LENGTH (SEE MASSDOT STANDARD DRAWING NO. E 107.9.0)
- W = SIDEWALK WIDTH
- W<sub>1</sub> = LENGTH OF PRIMARY RAMP
- Wc = CURB WIDTH
- \* = TOLERANCE FOR CONSTRUCTION ±0.5%
- USABLE SIDEWALK WIDTH PER AAB = W-Wc

(\*\*) REFER TO MASSDOT CONSTRUCTION STANDARDS DRAWING NO. E 107.6.5 FOR DETECTABLE WARNING PANEL DETAIL. WARNING PANEL SHALL BE CUT AS REQUIRED TO EXTEND ACROSS ENTIRE RAMP OPENING. DETECTABLE WARNING PANELS ARE REQUIRED ON ALL PROPOSED CURB RAMPS AND ARE TO BE INSTALLED IN ACCORDANCE WITH MASSDOT CONSTRUCTION STANDARDS.

**WHEELCHAIR RAMP WITH LESS THAN 12'-4" SIDEWALK**  
NOT TO SCALE

WHEELCHAIR #.	STATION	OFFSET	LENGTH OF PRIMARY RAMP	WIDTH OF SIDEWALK	WIDTH OF RAMP MIN. (5'-0")	ROADWAY GUTTER SLOPE	LEFT SIDE TRANSITION LENGTH	RIGHT SIDE TRANSITION LENGTH
1	1+83.34	27.81 LT	2.50	6.50	5.00	1.00%	9'-0"	7'-10"
2	2+26.71	27.13 LT	2.50	7.00	5.00	1.28%	7'-10"	10'-8"
5	4+47.62	18.50 LT	2.00	7.00	5.00	1.28%	6'-6"***	10'-8"
6	4+47.62	13.00 RT	3.50	8.50	5.00	1.28%	7'-10"	10'-8"
10	8+21.42	16.00 RT	3.00	9.50	5.00	0.70%	7'-10"	9'-0"
17	500+45.87	11.21 RT	2.50	6.50	5.00	-1.80%	9'-0"	3'-9"*
21	13+15.21	22.15 RT	2.50	5.50	5.00	5.26%	6'-1"***	2'10"***
23	103+65.65	34.14 LT	2.50	7.00	5.00	-0.75%	9'-0"	17'-0"***
24	100+98.19	27.10 RT	3.00	7.00	5.00	4.93%	8'-6"*	7'-10"
27	101+60.72	25.78 LT	2.50	9.00	5.00	4.93%	17'-0"	7'-6"***



**DETAIL OF DETECTABLE WARNING PANEL**

**NOTE:**  
PANELS SHALL BE "BRICK RED" IN COLOR AND SHALL BE CAST-IN-PLACE WITH WHEELCHAIR RAMP CEMENT CONCRETE. SURFACE APPLIED TACTILE PANELS SHALL NOT BE UTILIZED.

NO.	DATE	REVISIONS
1		

PROJECT: IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET

DESIGN SUBMISSION: 85% DESIGN

DRAWING TITLE: WHEELCHAIR RAMP DETAILS 1

PREPARED FOR: CITY OF FRAMINGHAM DEPARTMENT OF PUBLIC WORKS  
110 WESTERN AVENUE  
FRAMINGHAM, MA 01702

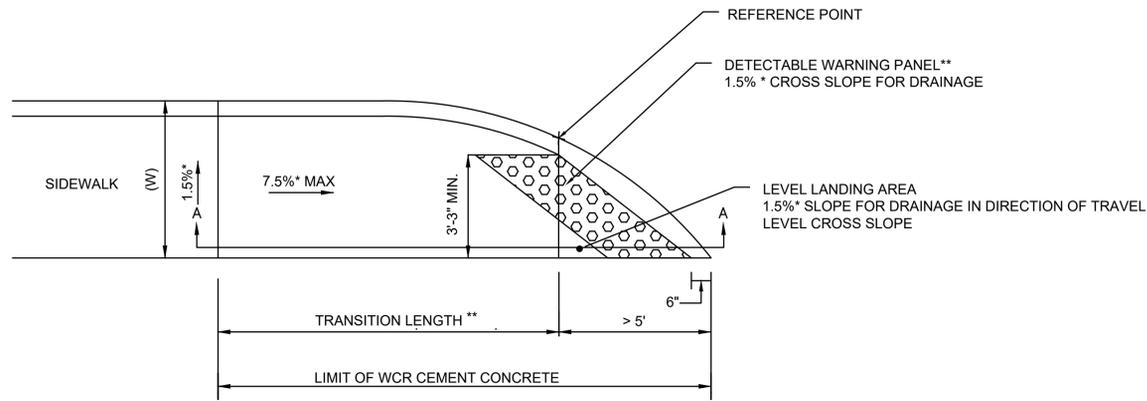
PREPARED BY: Green International Affiliates, Inc.  
100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876

SCALE: AS NOTED  
DATE: 6/4/2024  
PROJECT NO. 20034

DESIGNED BY: JL  
DRAWN BY: MPC  
CHECKED BY: HP

SHEET NO. 60 OF 89

V:\Shared\Engineering\Projects\2020\20034\DWG\13 Drawings\Arch\Wheelchair Ramp Details.dwg, Printed: 6/17/2024, 8:57 AM



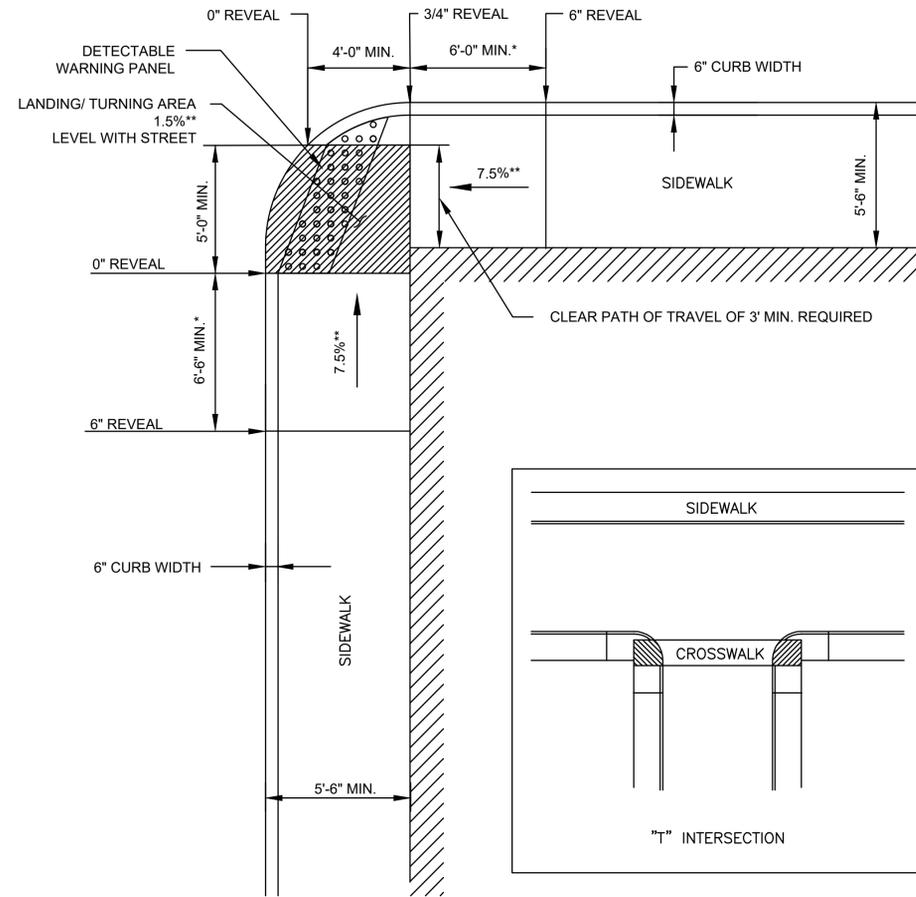
**CONTINUOUS DIRECTION WHEELCHAIR RAMP DETAIL**

(LEVEL LANDING GREATER THAN 5 FEET)

NOT TO SCALE

WHEELCHAIR #	STATION	OFFSET	WIDTH OF SIDEWALK (W)	DEPTH OF LEVEL LANDING MIN. 4.0'	ROADWAY GUTTER SLOPE	LEFT SIDE TRANSITION LENGTH	RIGHT SIDE TRANSITION LENGTH	LEVEL LANDING LENGTH
7	6+67.14	20.01 RT	8.93	-	0.70%	-	7'-10"	< 5'
12	8+75.20	15.14 RT	8.00	-	1.66%	9'-0"	-	< 5'
13	400+32.00	14.23 RT	7.43	-	3.90%	-	5'-4"****	< 5'
14	400+28.00	11.39 RT	7.37	-	4.50%	17'-0"	-	< 5'
19	500+76.89	14.73 RT	6.50	-	-2.40%	-	7'-10"	< 5'
20	500+91.38	14.45 RT	6.00	-	-3.12%	9'-0"	-	< 5'

NOTE:  
 \* = 3" CURB REVEAL  
 \*\* = 4" CURB REVEAL  
 \*\*\* = 5" CURB REVEAL  
 \*\*\*\* = 6" CURB REVEAL  
 \*\*\*\*\* = 2.5" CURB REVEAL



**"T" INTERSECTION WHEELCHAIR RAMP DETAIL**

NOT TO SCALE

NOTE:  
 ROADWAY, GUTTER, AND FIRST 6" OF SIDEWALK TO BE ADJUSTED FOR FIELD CONDITIONS

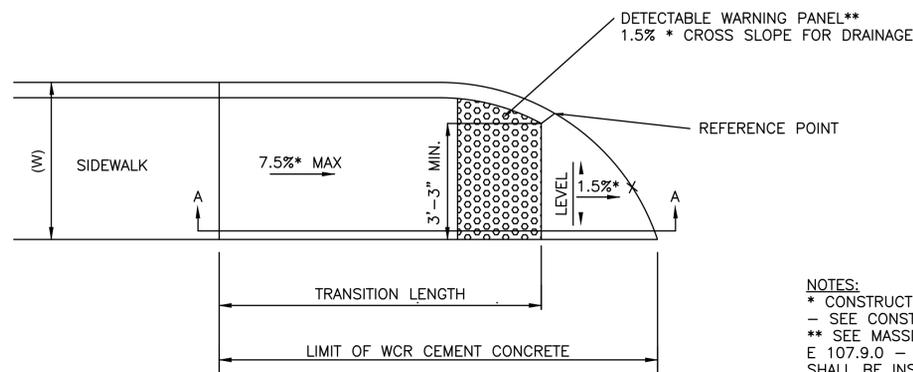
LEGEND



BUILDING OR OTHER UNALTERABLE CONDITION

\* TRANSITION LENGTH SHOWN IS MINIMUM. (SEE E 107.9.0)

\*\* TOLERANCE FOR CONSTRUCTION ± 0.5%

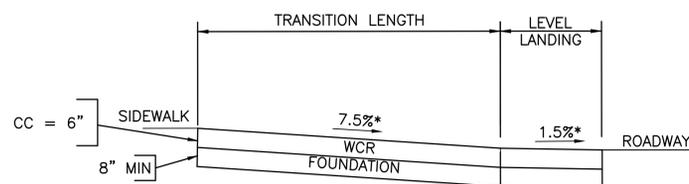


**CONTINUOUS DIRECTION WHEELCHAIR RAMP DETAIL**

(LEVEL LANDING LESS THAN 5 FEET)

NOT TO SCALE

NOTES:  
 \* CONSTRUCTION TOLERANCE ± 0.5%  
 - SEE CONSTRUCTION STANDARD R-5.3.4  
 \*\* SEE MASSDOT CONSTRUCTION STANDARD E 107.9.0 - DETECTABLE WARNING PANELS SHALL BE INSTALLED IN ACCORDANCE WITH CONSTRUCTION STD E 107.6.5  
 - CONTRACTOR IS ULTIMATELY RESPONSIBLE FOR CONSTRUCTING RAMPS COMPLIANT WITH ADA/AAB RULES, REGULATIONS AND STANDARDS. CONTRACTOR SHALL VERIFY RAMPS ARE ADA/AAB COMPLIANT BEFORE POURING CEMENT CONCRETE.



SECTION A-A

WHEELCHAIR #	STATION	OFFSET	WIDTH OF SIDEWALK (W)	DEPTH OF LEVEL LANDING MIN. 4.0'	ROADWAY GUTTER SLOPE	LEFT SIDE TRANSITION LENGTH	RIGHT SIDE TRANSITION LENGTH	LEVEL LANDING LENGTH
8	7+15.90	20.81 RT	10.66	-	0.70%	9'-0"	-	> 5'
11	8+29.92	13.36 RT	9.00	-	0.70%	-	7'-10"	< 5'

PROJECT: IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET

DESIGN SUBMISSION: 85% DESIGN

DRAWING TITLE: WHEELCHAIR RAMP DETAILS 2

PREPARED FOR: CITY OF FRAMINGHAM DEPARTMENT OF PUBLIC WORKS  
 110 WESTERN AVENUE  
 FRAMINGHAM, MA 01702

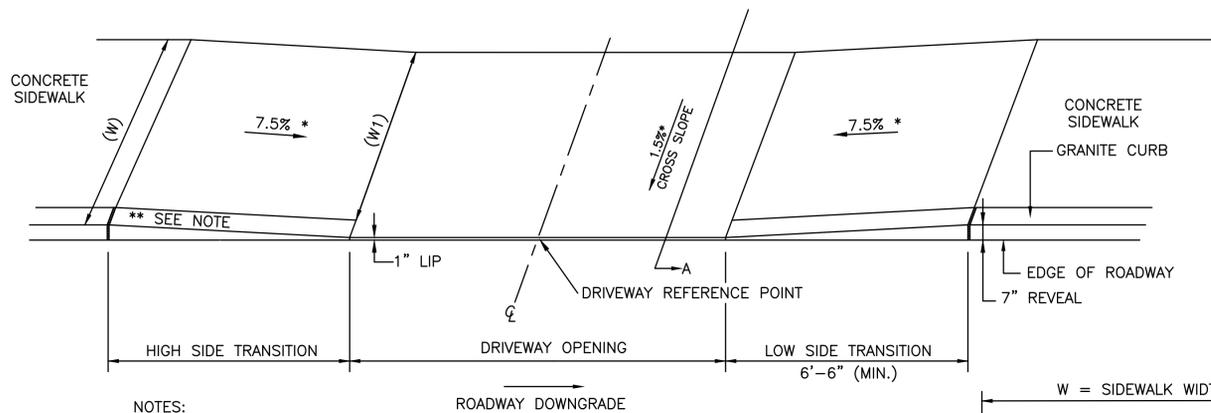
PREPARED BY: Green International Affiliates, Inc.  
 100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876

NO.	DATE	REVISIONS
1		

SCALE: AS NOTED  
 DATE: 6/4/2024  
 PROJECT NO. 20034

DESIGNED BY: JL  
 DRAWN BY: MPC  
 CHECKED BY: HP

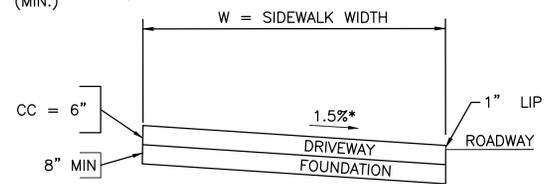
SHEET NO. 61 OF 89



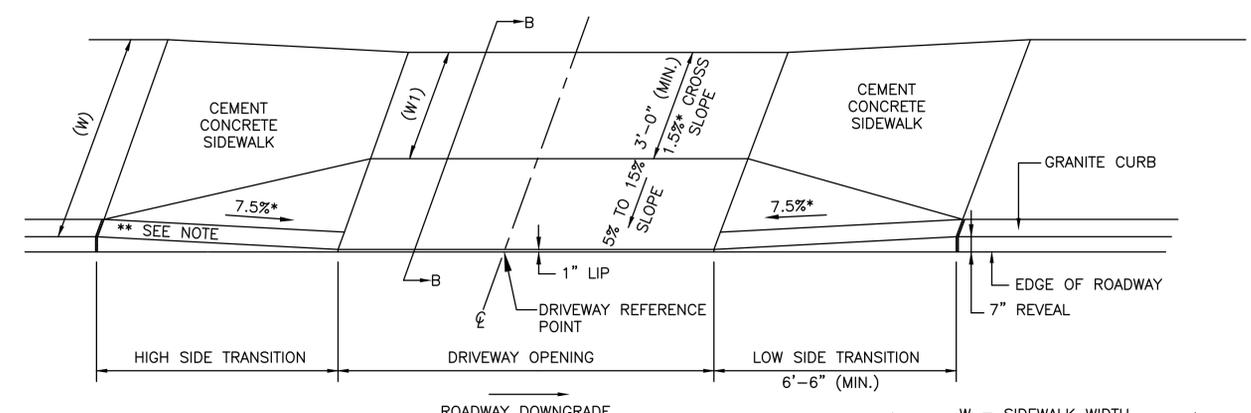
NOTES:  
 \* CONSTRUCTION TOLERANCE ± 0.5%  
 \*\* SEE CONSTRUCTION STANDARD E 107.9.0

**DEPRESSED DRIVEWAY DETAILS**

NOT TO SCALE



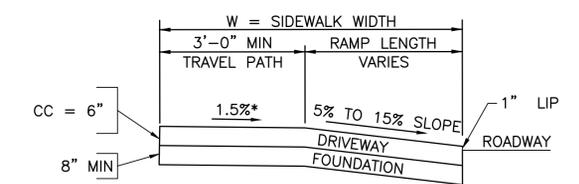
SECTION A-A



NOTES:  
 \* CONSTRUCTION TOLERANCE ± 0.5%  
 \*\* SEE CONSTRUCTION STANDARD E 107.9.0  
 \*\*\* 3 INCH CURB REVEAL

**DRIVEWAY DETAILS**

(STANDARD CURB CUT)  
 NOT TO SCALE



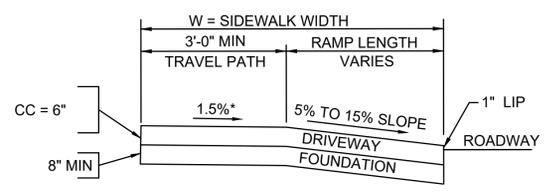
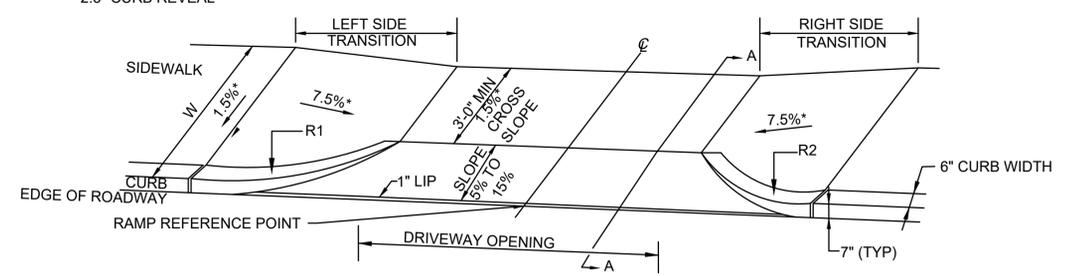
SECTION B-B

DWY NO.	STATION	OFFSET	WIDTH OF SIDEWALK (W)	WIDTH OF DRIVEWAY OPENING	WIDTH OF TRAVEL PATH (W1)	ROADWAY GUTTER SLOPE	LEFT SIDE TRANSITION LENGTH	RIGHT SIDE TRANSITION LENGTH
3	6+33.07	19.00 LT	6.50	30.00	3.50	0.70%	7'-10"	9'-0"
4	7+50.48	19.00 LT	5.50	24.00	3.00	0.70%	7'-10"	9'-0"
6	10+00.00	19.00 LT	5.50	35.00	5.00	4.97%	7'-10"	17'-0"
7	12+00.00	16.50 LT	5.50	39.00	3.00	6.24%	3'-9"	17'-0"
12	102+42.14	23.16 LT	7.00	14.00	6.50	2.45%	7'-6"***	13'-0"

NOTE:  
 \* = 3" CURB REVEAL  
 \*\* = 4" CURB REVEAL  
 \*\*\* = 5" CURB REVEAL  
 \*\*\*\*\* = 2.5" CURB REVEAL

DWY NO.	STATION	OFFSET	WIDTH OF SIDEWALK (W)	WIDTH OF DRIVEWAY OPENING	WIDTH OF TRAVEL PATH (W1)	ROADWAY GUTTER SLOPE	LEFT SIDE TRANSITION LENGTH	RIGHT SIDE TRANSITION LENGTH
1	3+09.09	13.00 RT	7.50	24.31	5.50	1.28%	10'-8"	7'-10"
2	3+15.97	19.00 LT	6.80	14.30	4.32	1.28%	7'-10"	10'-8"***
5	9+68.27	20.00 RT	7.50	20.00	4.80	0.40%	7'-6"***	7'-6"
8	12+86.05	23.30 RT	6.50	24.00	3.50	6.10%	6'-1"*****	7'-6"***
9	13+42.73	20.50 RT	8.10	16.14	5.68	5.17%	17'-0"	2'-10"*****
13	103+7.09	19.00 LT	17.70	24.00	15.64	0.39%	7'-10"	7'-10"

(LEFT SIDE/RIGHT SIDE DETERMINED WHEN STANDING IN ROADWAY LOOKING AT RAMP OR DRIVEWAY)



SECTION A-A

**CEMENT CONCRETE DRIVEWAY WITH SIDEWALK CURB RADI**

NOT TO SCALE

LEGEND  
 CC = CEMENT CONCRETE  
 W = WIDTH OF SIDEWALK  
 HMA = HOT MIX ASPHALT  
 HSL = HIGH SIDE FRONT TRANSITION LENGTH (SEE MASSDOT STANDARD DRAWING NO. E 107.9.0)  
 \* = TOLERANCE FOR CONSTRUCTION ±0.5%

DRIVEWAY #.	STATION	OFFSET	WIDTH OF SIDEWALK	WIDTH OF TRAVEL PATH ACROSS OPENING	LEFT SIDE TRANSITION LENGTH	RIGHT SIDE TRANSITION LENGTH	ROADWAY GUTTER SLOPE (%)	RADIUS 1	RADIUS 2
10	101+31.95	28.04 RT	7.21	20.00	17'-0"	3'-9"	4.93%	3.00	3.00
11	101+93.44	24.82 RT	6.96	20.00	13'-0"***	7'-6"	4.93%	3.00	3.00

NOTE:  
 \* = 3" CURB REVEAL  
 \*\* = 4" CURB REVEAL  
 \*\*\* = 5" CURB REVEAL  
 \*\*\*\*\* = 2.5" CURB REVEAL

NO.	DATE	REVISIONS
1		

PROJECT: IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET

DESIGN SUBMISSION: 85% DESIGN

DRAWING TITLE: DRIVEWAY DETAILS 1

PREPARED FOR: CITY OF FRAMINGHAM DEPARTMENT OF PUBLIC WORKS  
 110 WESTERN AVENUE  
 FRAMINGHAM, MA 01702

PREPARED BY: Green International Affiliates, Inc.  
 100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876

SCALE: AS NOTED  
 DATE: 6/4/2024  
 PROJECT NO. 20034

DESIGNED BY: JL  
 DRAWN BY: MPC  
 CHECKED BY: HP

SHEET NO. 62 OF 89