

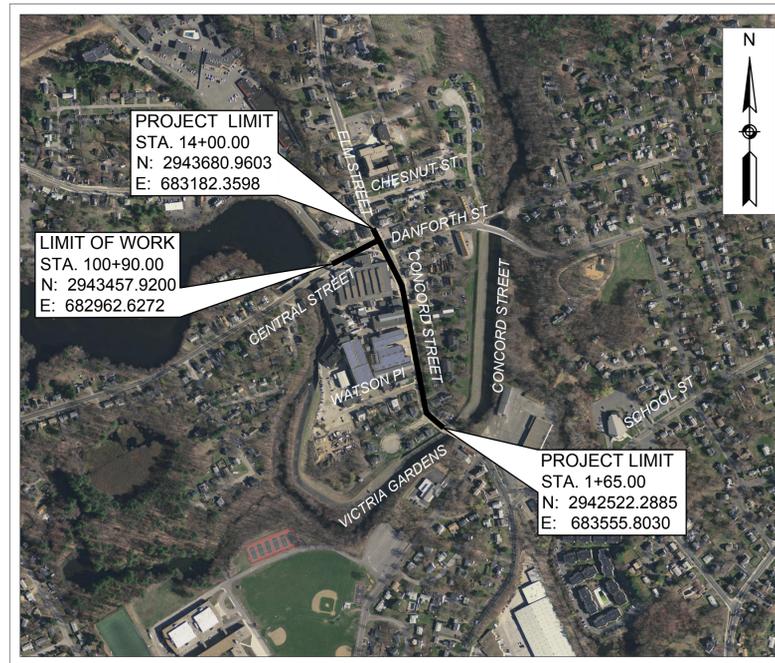
DEPARTMENT OF PUBLIC WORKS CITY OF FRAMINGHAM, MASSACHUSETTS PROPOSED ROADWAY IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET

CONTRACT PW #

THE MASSACHUSETTS HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES DATED 2020 (AS AMENDED), THE MASSDOT SUPPLEMENTAL SPECIFICATIONS DATED JUNE 30, 2020, THE MASSDOT 2017 CONSTRUCTION STANDARD DETAILS, THE CITY OF FRAMINGHAM CONSTRUCTION STANDARDS WITH ALL REVISIONS, THE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS WITH MASSACHUSETTS AMENDMENTS, MASSDOT NOTES ON WALKS AND WHEELCHAIR RAMPS FOR DESIGNERS AND CONSTRUCTION ENGINEERS DATED MARCH 2012, MASSDOT TRAFFIC MANAGEMENT PLANS AND DETAIL DRAWINGS, THE MASSACHUSETTS DEPARTMENT OF PUBLIC WORKS 1990 STANDARD DRAWINGS FOR SIGNS AND SUPPORTS, THE MASSDOT 2015 OVERHEAD SIGNAL STRUCTURE & FOUNDATION STANDARD DRAWINGS, THE MASSACHUSETTS DEPARTMENT OF PUBLIC WORKS 1968 STANDARD DRAWINGS FOR TRAFFIC SIGNALS AND HIGHWAY LIGHTING, AND THE LATEST EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK, WILL GOVERN.

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TO BE INCLUDED IN 85%	
SHEET NO.	DESCRIPTION
X	CURB TIE
X	TRAFFIC SIGNAL STD DETAILS
X	TRAFFIC SIGN SUMMARY
X	CONSTRUCTION DETAILS
X	DRAINAGE DETAILS
X	LIGHTING DETAILS
X	LANDSCAPE DETAILS
X	WHEELCHAIR RAMP/DRIVEWAY DETAILS
X	TMP



LOCATION PLAN



SCALE IN FEET

LENGTH OF PROJECT = 1325.00 FEET = 0.251 MILES

PROJECT: IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET	
DESIGN SUBMISSION:	35% DESIGN
DRAWING TITLE:	TITLE SHEET AND INDEX
PREPARED FOR:	CITY OF FRAMINGHAM DEPARTMENT OF PUBLIC WORKS 110 WESTERN AVENUE FRAMINGHAM, MA 01702

GREEN INTERNATIONAL AFFILIATES, INC. Civil and Structural Engineers Westford, Massachusetts	(978) 923-0400 GreenIntl.com
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SCALE: AS NOTED	DESIGNED BY: JL	SHEET NO. 1 OF 51
DATE: 08/18/2020	DRAWN BY: JL	
PROJECT NO. 20034	CHECKED BY: TB	

NO.	DATE	REVISIONS

ABBREVIATIONS

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

ABBREVIATIONS (cont.)

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

TRAFFIC SIGNAL

CAB.	CABINET
CCVE	CLOSED CIRCUIT VIDEO EQUIPMENT
DW	STEADY DON'T WALK
FDW	FLASHING DON'T WALK
FR	FLASHING CIRCULAR RED
FRL	FLASHING RED LEFT ARROW
FRR	FLASHING RED RIGHT ARROW
FY	FLASHING CIRCULAR 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 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
		HAY BALES/SILT FENCE
		TREE LINE OR LIMIT OF CLEARING AND GRUBBING
		SAWCUT LINE
		TOP OR BOTTOM OF SLOPE
		LIMIT OF EDGE OF PAVEMENT OR COLD PLANE AND OVERLAY
		BANK OF RIVER OR STREAM
		BORDER OF WETLAND
		100 FT WETLAND BUFFER
		200 FT RIVERFRONT BUFFER
		STATE HIGHWAY LAYOUT
		TOWN OR CITY LAYOUT
		COUNTY LAYOUT
		RAILROAD SIDELINE
		TOWN OR CITY BOUNDARY LINE
		PROPERTY LINE OR APPROXIMATE PROPERTY LINE
		EASEMENT

PAVEMENT MARKINGS SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
		PAVEMENT ARROW - WHITE
		LEGEND "ONLY" - WHITE
		STOP LINE
		CROSSWALK
		SOLID WHITE LINE
		SOLID YELLOW LINE
		BROKEN WHITE LINE
		BROKEN YELLOW LINE
		DOTTED WHITE LINE
		DOTTED YELLOW LINE
		DOTTED WHITE LINE EXTENSION
		DOTTED YELLOW LINE EXTENSION
		DOUBLE WHITE LINE
		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)
		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: 35% 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.
Civil and Structural Engineers (978) 923-0400
Westford, Massachusetts GreenIntl.com

SCALE: AS NOTED DESIGNED BY: JL
DATE: 08/18/2020 DRAWN BY: JL SHEET NO. 2 OF 51
PROJECT NO. 20034 CHECKED BY: TB

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 (2001) U.S. SURVEY FEET. 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 NATICK DEPARTMENT OF PUBLIC WORKS AT 508-647-6400 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.

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.

UTILITY NOTES CONTINUED

UTILITY QUALITY LEVEL INFORMATION INDEX (SEE ASCE/C1 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:

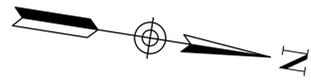
INFORMATION DERIVED FROM EXISTING RECORDS OR ORAL RECOLLECTIONS.

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 CONSTRUCTION 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. ALL SINGLE GRATE CATCH BASINS AND DRAIN MANHOLE STRUCTURES ARE ECCENTRIC, UNLESS OTHERWISE NOTED.

PROJECT: IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET		
DESIGN SUBMISSION: 35% 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. Civil and Structural Engineers Westford, Massachusetts (978) 923-0400 GreenIntl.com		
SCALE: AS NOTED	DESIGNED BY: JL	SHEET NO. 3 OF 51
DATE: 08/18/2020	DRAWN BY: JL	
PROJECT NO. 20034	CHECKED BY: TB	

NO.	DATE	REVISIONS
1		



PROJECT BEGIN
 STA. 1+65.00
 N: 2942522.2885
 E: 683555.9030



6 9 X 18

7 10 X 16

8 11 X 17

- LEGEND**
- 6 CONSTRUCTION PLANS
 - 9 CONSTRUCTION PROFILES
 - X DRAINAGE & UTILITY PLANS (TO BE INCLUDED IN 85% SUBMISSION)
 - 18 SIGN & STRIPING PLANS

PROJECT: IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET

DESIGN SUBMISSION: 35% 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.
 TRANSPORTATION | STRUCTURAL | WATER RESOURCES | CIVIL/SITE
 239 LITTLETON ROAD, SUITE 3 WESTFORD, MA 01886
 978.923.0400 | www.greenintl.com

SCALE: AS NOTED DESIGNED BY: JL
 DATE: 08/18/2020 DRAWN BY: JL SHEET NO.
 PROJECT NO. 20034 CHECKED BY: TB 4 OF 51

NO.	DATE	REVISIONS

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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

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 OVER

SUBBASE: 8" GRAVEL BORROW, TYPE B

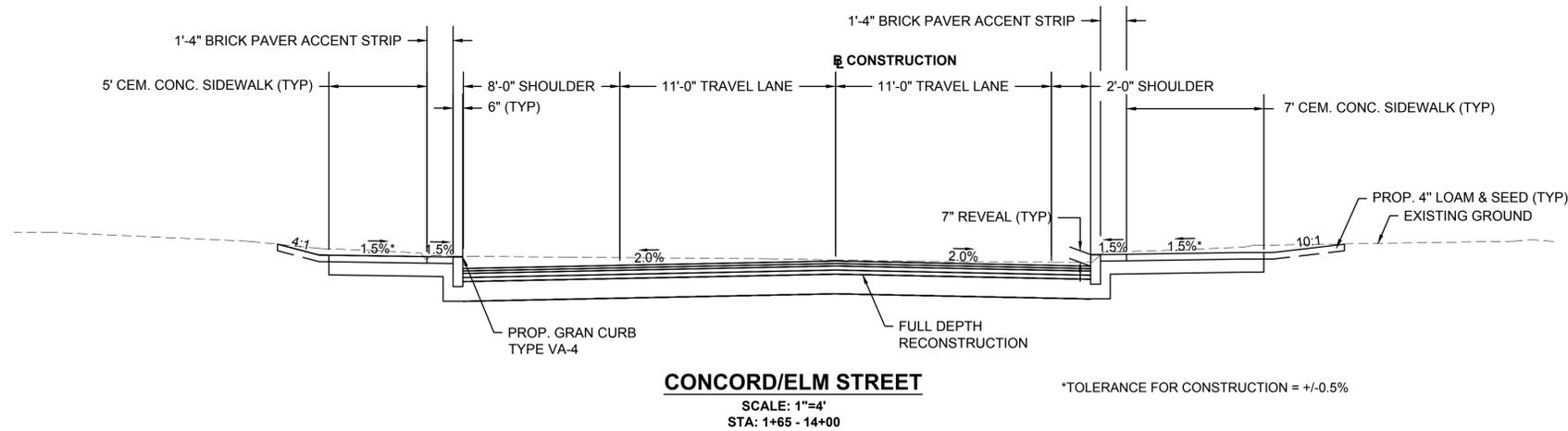
PROPOSED PAVEMENT MICROMILLING & RESURFACING

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

MILLING: 1.5" PAVEMENT MICROMILLING

NOTE

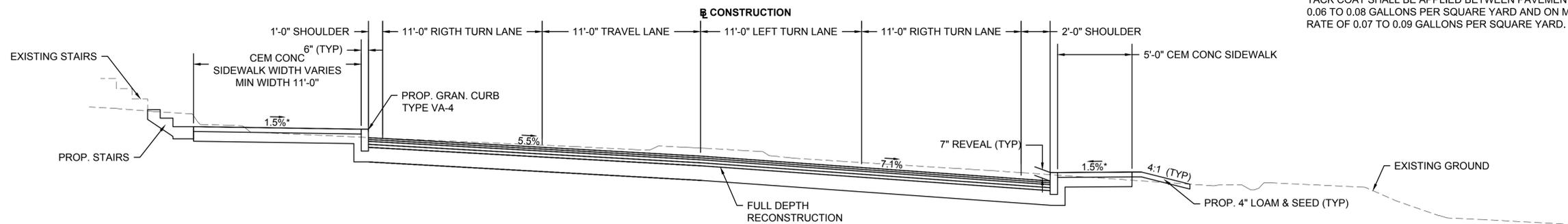
TACK COAT SHALL BE APPLIED BETWEEN PAVEMENT LAYERS AT A RATE OF
 0.06 TO 0.08 GALLONS PER SQUARE YARD AND ON MILLED SURFACES AT A
 RATE OF 0.07 TO 0.09 GALLONS PER SQUARE YARD.



CONCORD/ELM STREET

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

*TOLERANCE FOR CONSTRUCTION = +/-0.5%



CENTRAL STREET

SCALE: 1"=4'
 STA: 100+90 - 104+00

*TOLERANCE FOR CONSTRUCTION = +/-0.5%

PROJECT: IMPROVEMENTS TO CENTRAL
 STREET AND CONCORD STREET

DESIGN SUBMISSION: 35% DESIGN

DRAWING TITLE: TYPICAL SECTIONS - 1

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

PREPARED BY:
 GREEN INTERNATIONAL AFFILIATES, INC.
 Civil and Structural Engineers (978) 923-0400
 Westford, Massachusetts GreenIntl.com

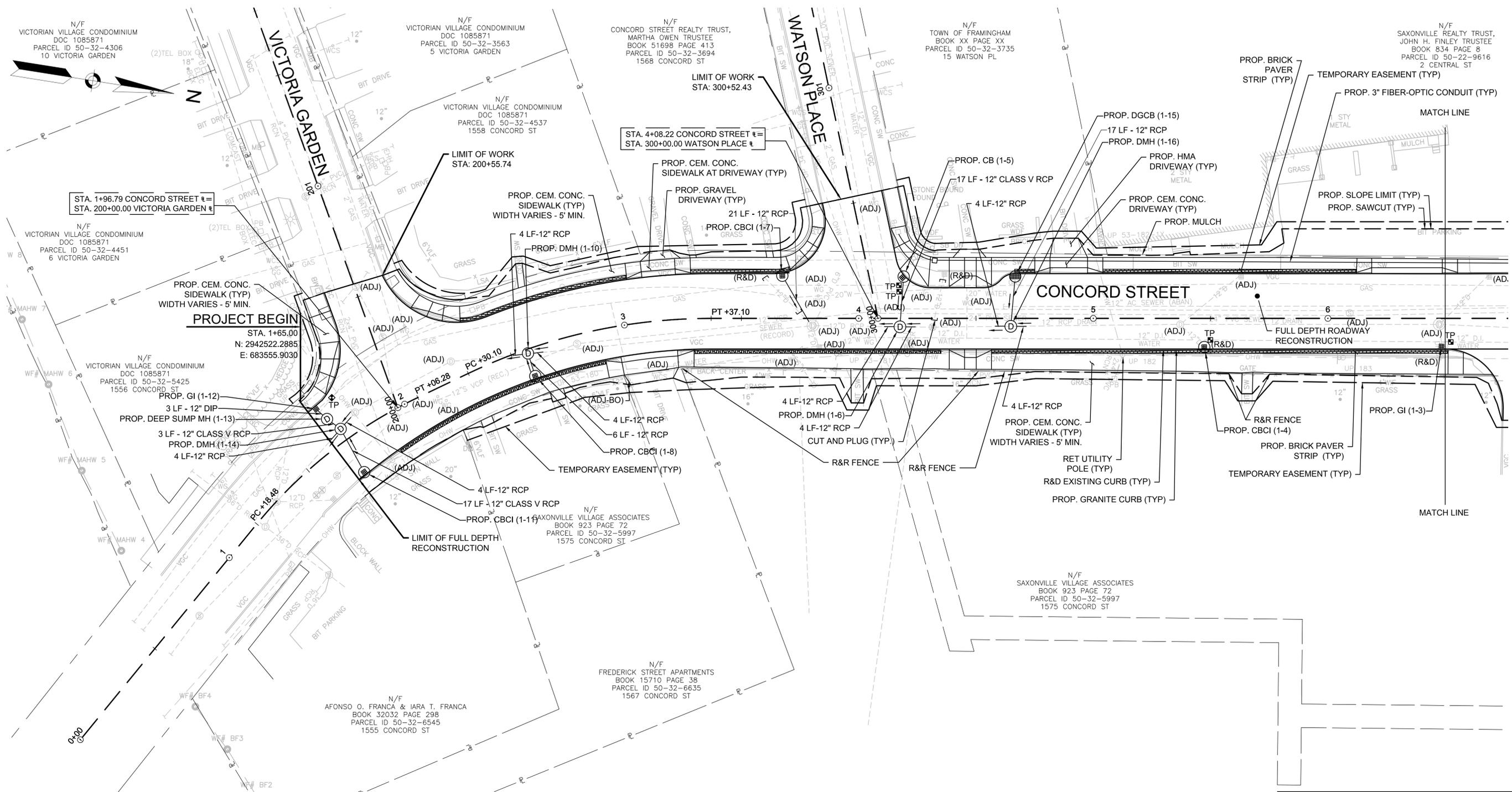
NO.	DATE	REVISIONS
1		

SCALE: AS NOTED
 DATE: 08/18/2020
 PROJECT NO. 20034

DESIGNED BY: JL
 DRAWN BY: JL
 CHECKED BY: TB

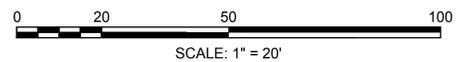
SHEET NO.
 5 OF 51

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CONTINUED ON SHEET NO. 7

NOTE: REFER TO GENERAL NOTES SHEET 3 FOR DRAINAGE NOTES.



PROJECT:	IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET
DESIGN SUBMISSION:	35% DESIGN
DRAWING TITLE:	CONSTRUCTION PLAN 1
PREPARED FOR:	 CITY OF FRAMINGHAM DEPARTMENT OF PUBLIC WORKS 110 WESTERN AVENUE FRAMINGHAM, MA 01702

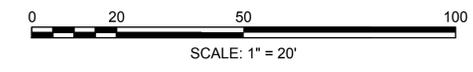
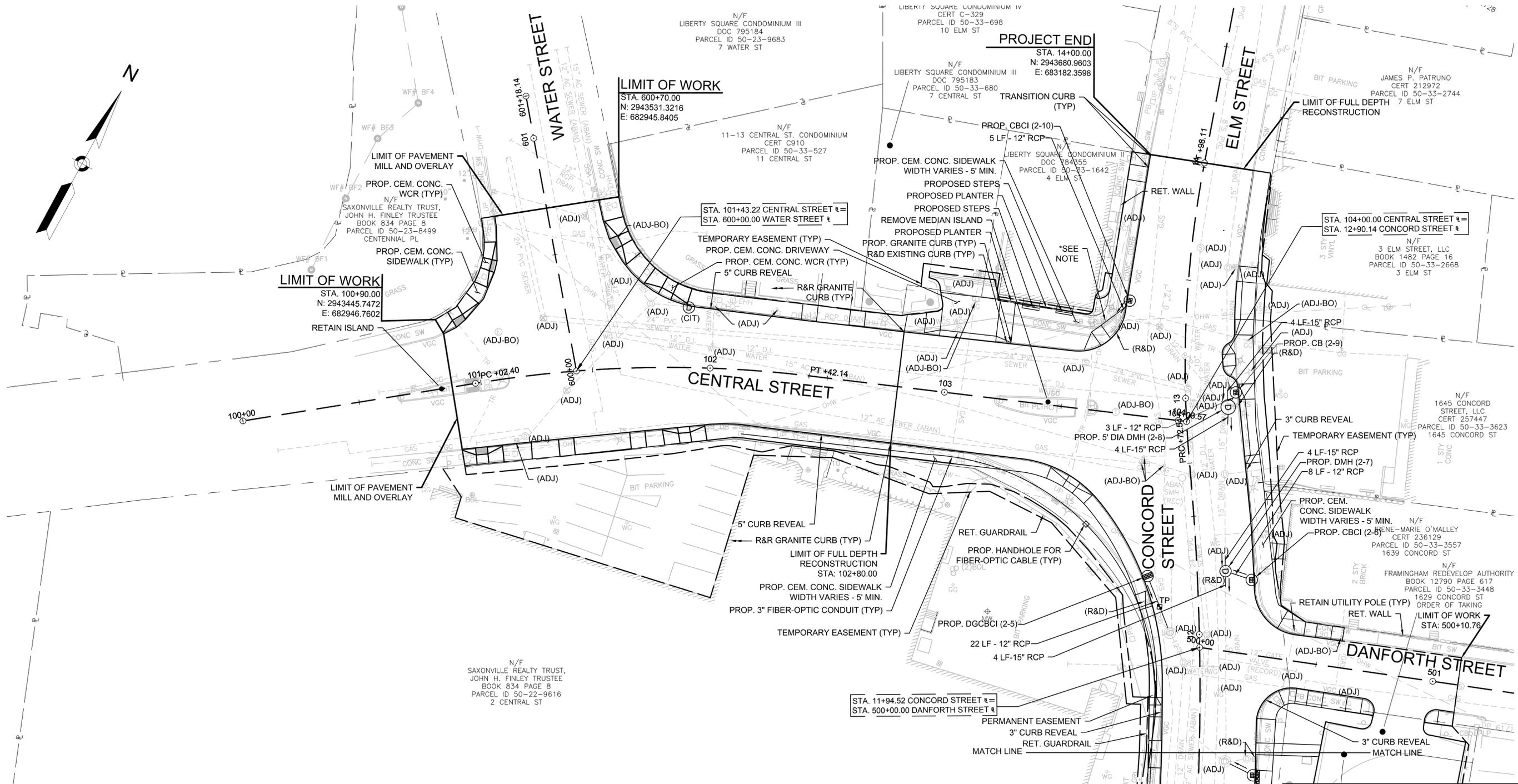
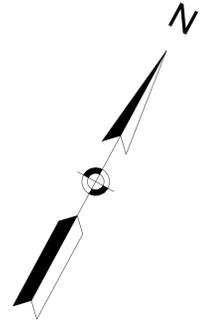
PREPARED BY:

GREEN INTERNATIONAL AFFILIATES, INC.
 Civil and Structural Engineers
 Westford, Massachusetts
 (978) 923-0400
 GreenIntl.com

SCALE: AS NOTED	DESIGNED BY: JL	SHEET NO. 6 OF 51
DATE: 08/18/2020	DRAWN BY: JL	
PROJECT NO. 20034	CHECKED BY: TB	

NO.	DATE	REVISIONS
1		

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*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. 7

PROJECT: IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET

DESIGN SUBMISSION: 35% DESIGN

DRAWING TITLE: CONSTRUCTION PLAN 3

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

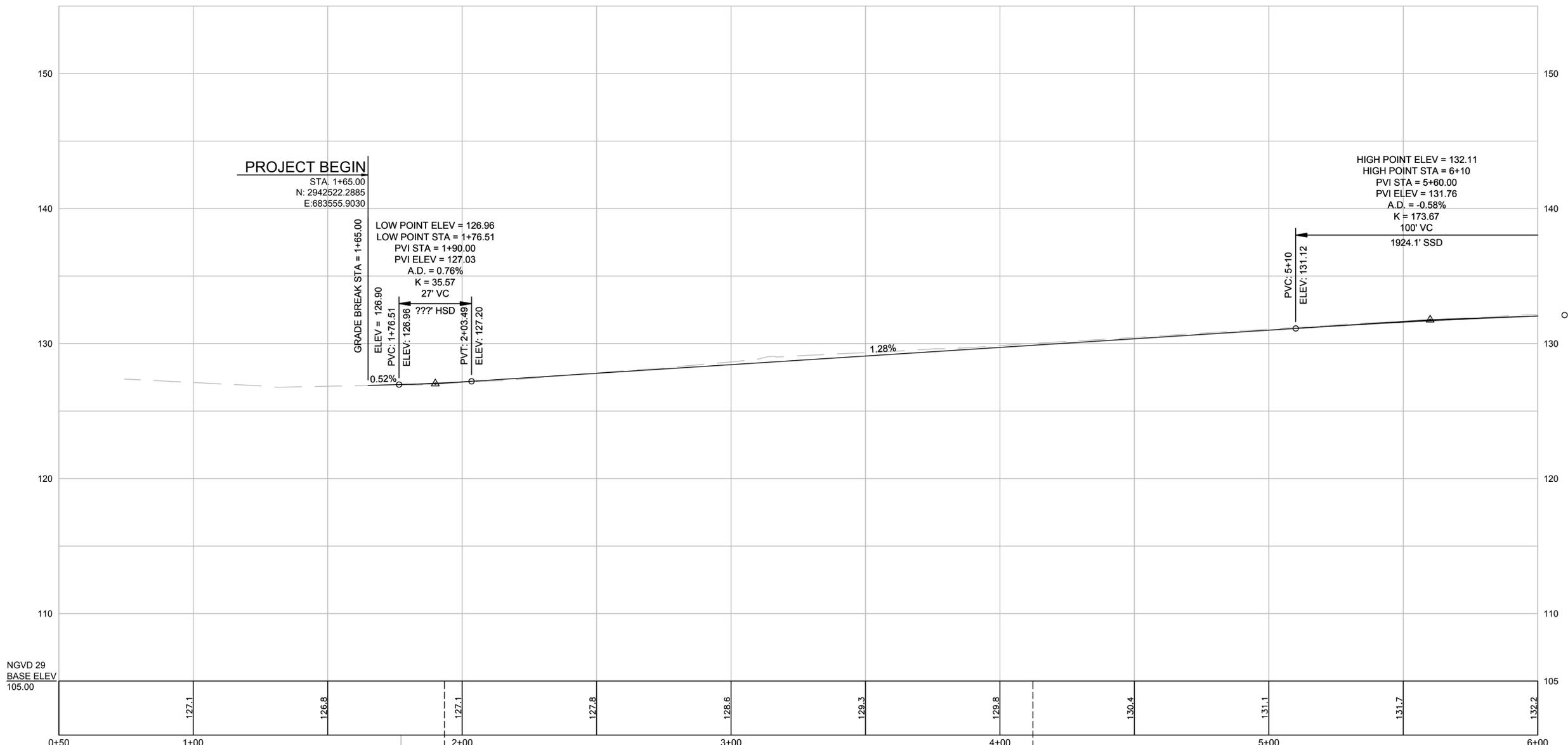
PREPARED BY: GREEN INTERNATIONAL AFFILIATES, INC. Civil and Structural Engineers Westford, Massachusetts (978) 923-0400 GreenIntl.com

SCALE: AS NOTED DATE: 08/18/2020 PROJECT NO. 20034 DESIGNED BY: J.L. DRAWN BY: J.L. CHECKED BY: T.B. SHEET NO. 8 OF 51

NO.	DATE	REVISIONS
1		

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CONCORD STREET ALIGNMENT



NGVD 29
BASE ELEV
105.00

0+50 1+00 2+00 3+00 4+00 5+00 6+00

GRADE BREAK STA = 1+65.00
ELEV = 126.90
PVC: 1+76.51
ELEV: 126.96
PVT: 2+03.49
ELEV: 127.20

PROJECT BEGIN
STA: 1+65.00
N: 2942522.2885
E: 683555.9030

LOW POINT ELEV = 126.96
LOW POINT STA = 1+76.51
PVI STA = 1+90.00
PVI ELEV = 127.03
A.D. = 0.76%
K = 35.57
27' VC

HIGH POINT ELEV = 132.11
HIGH POINT STA = 6+10
PVI STA = 5+60.00
PVI ELEV = 131.76
A.D. = -0.58%
K = 173.67
100' VC
1924.1' SSD

Benchmark #1
MAGNAIL SET, 1' ABOVE
GRADE UPL
Elevation = 128.57
Sta. 1+77.27, 31.61' LT

STA. 1+96.79 CONCORD STREET @ =
STA 200+00.00 VICTORIA GARDEN @

STA. 4+08.22 CONCORD STREET @ =
STA 300+00.00 WATSON PLACE @

CONTINUED ON
SHEET NO. 10

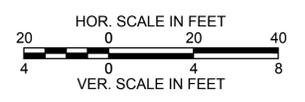
PROJECT: IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET

DESIGN SUBMISSION: 35% 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.
Civil and Structural Engineers (978) 923-0400
Westford, Massachusetts GreenIntl.com



NO.	DATE	REVISIONS

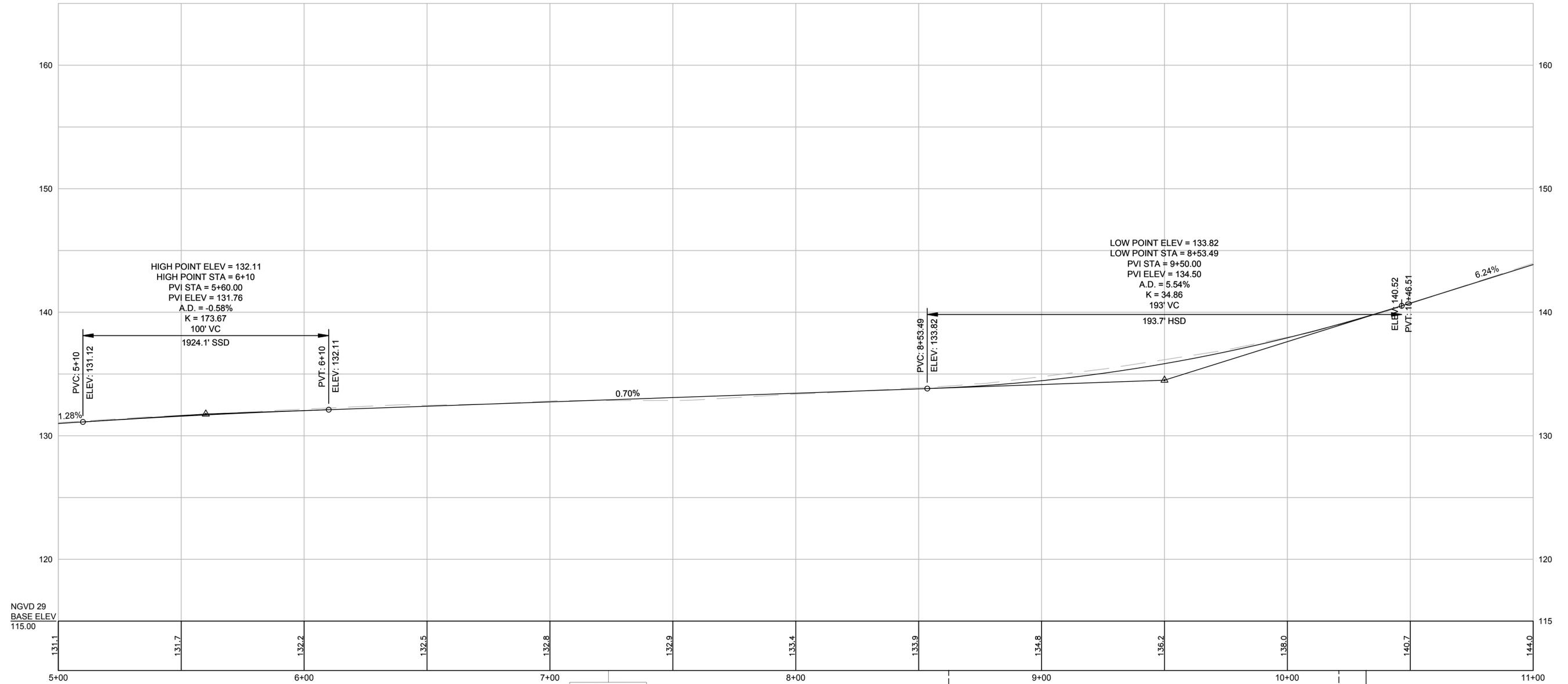
SCALE: AS NOTED
DATE: 08/18/2020
PROJECT NO. 20034

DESIGNED BY: JL
DRAWN BY: JL
CHECKED BY: TB

SHEET NO. 9 OF 51

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CONCORD STREET ALIGNMENT



CONTINUED ON SHEET NO. 9

CONTINUED ON SHEET NO. 11

Benchmark #2
MAG. NAIL SET, 1' ABOVE
GRADE, UPL
Elevation = 133.76'
Sta. 7+23.77, 18.25' RT

Benchmark #3
RR SPIKE FND, 1' ABOVE
GRADE, UPL
Elevation = 139.45
Sta. 10+32.02, 28.55' RT

STA. 8+62.22 CONCORD STREET \mathbb{B} =
STA. 700+00.00 FULLER STREET \mathbb{B}

STA. 10+20.42 CONCORD STREET \mathbb{B} =
STA. 400+00.00 MECHANIC STREET \mathbb{B}

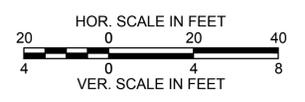
PROJECT: **IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET**

DESIGN SUBMISSION: **35% 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.**
Civil and Structural Engineers (978) 923-0400
Westford, Massachusetts GreenIntl.com

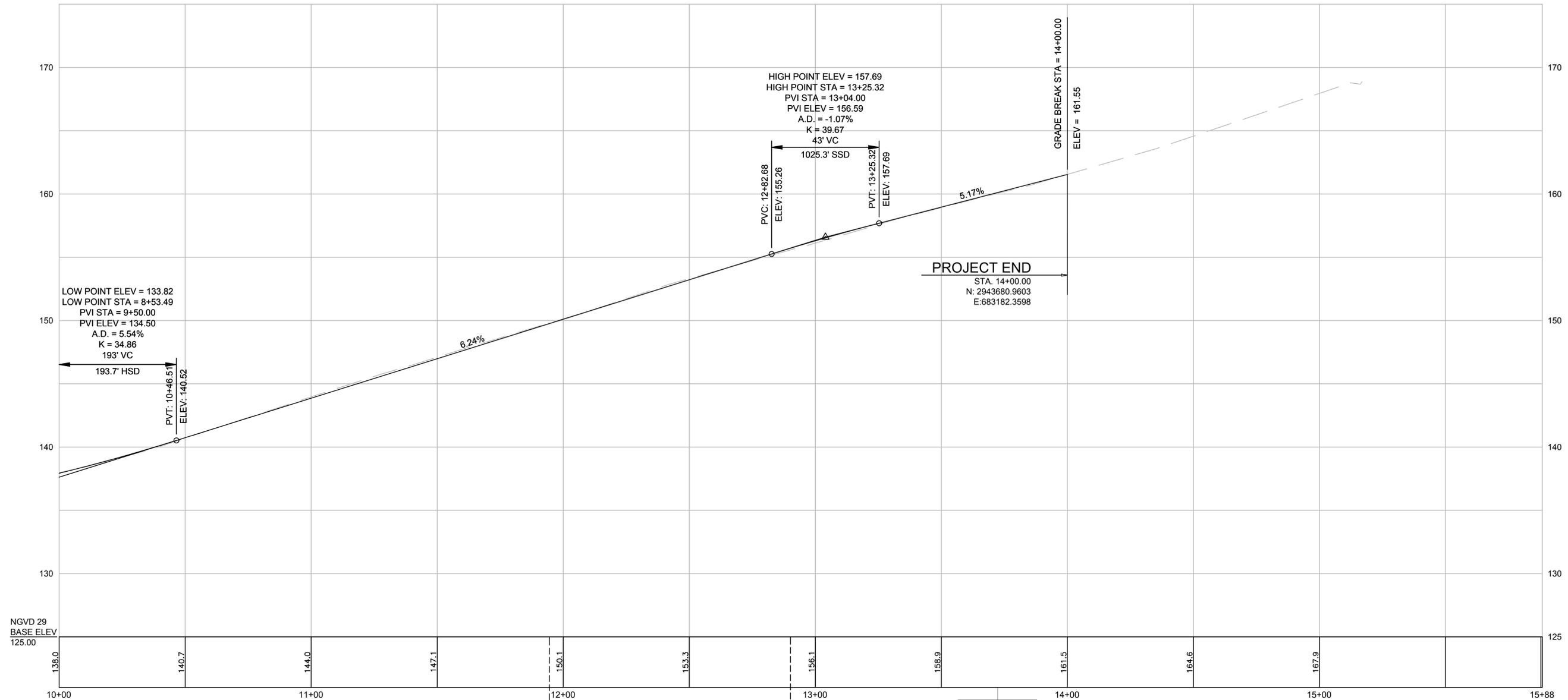


NO.	DATE	REVISIONS

SCALE: AS NOTED	DESIGNED BY: JL	SHEET NO. 10 OF 51
DATE: 08/18/2020	DRAWN BY: JL	
PROJECT NO. 20034	CHECKED BY: TB	

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CONCORD STREET ALIGNMENT



CONTINUED ON SHEET NO. 10

NGVD 29
BASE ELEV
125.00

STA. 11+94.52 CONCORD STREET @ =
STA 500+00.00 DANFORTH STREET @

STA. 12+90.14 CONCORD STREET @ =
STA 104+00 CENTRAL STREET @

Benchmark #4
ROCLCS
Elevation = 160.92
Sta. 13+72.34, 29.31 RT

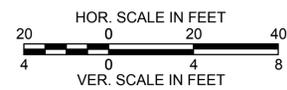
PROJECT: IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET

DESIGN SUBMISSION: 35% DESIGN

DRAWING TITLE: CONSTRUCTION PROFILES - 3

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

PREPARED BY: GREEN INTERNATIONAL AFFILIATES, INC.
Civil and Structural Engineers
Westford, Massachusetts
(978) 923-0400
GreenIntl.com



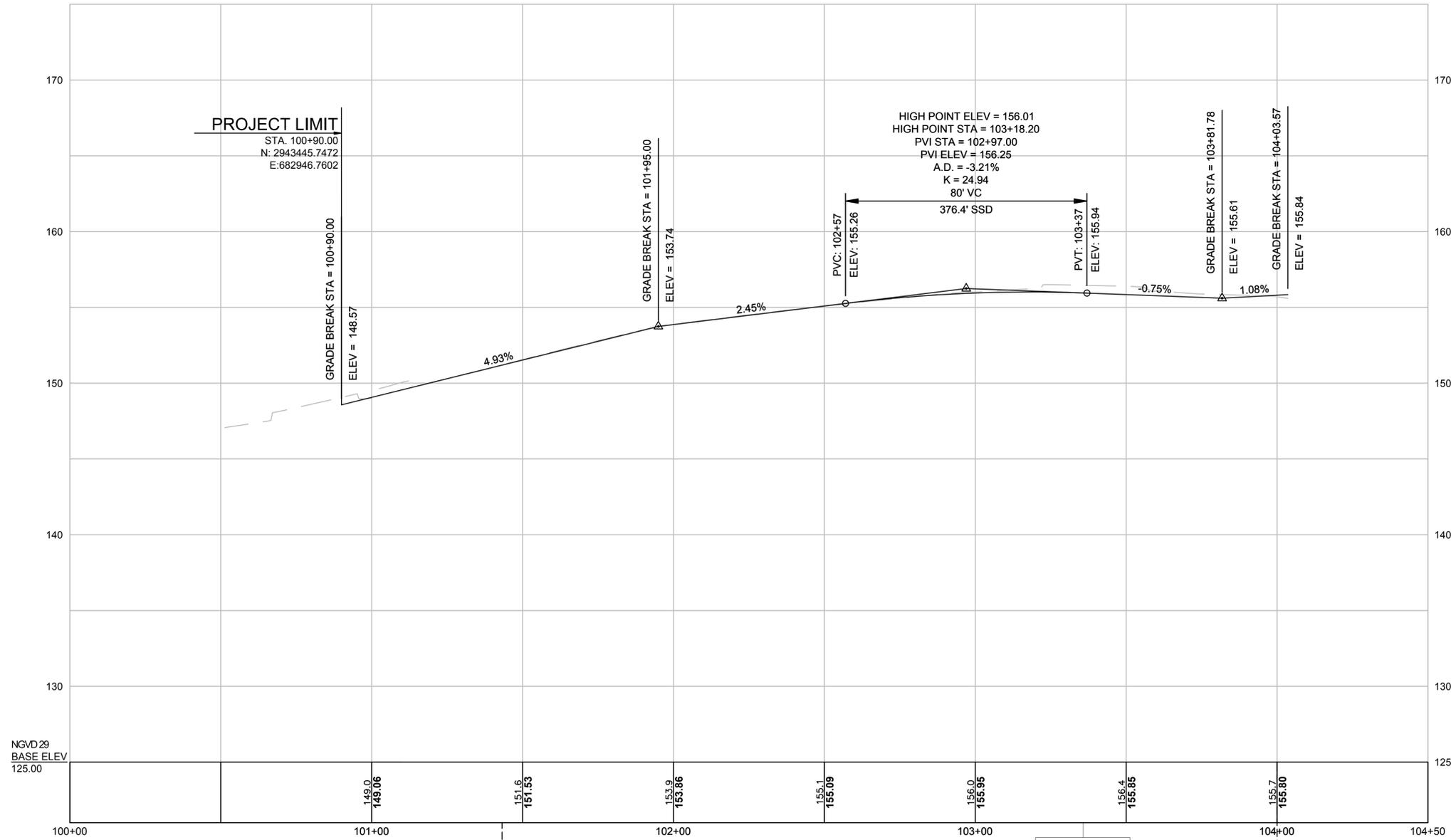
NO.	DATE	REVISIONS

SCALE: AS NOTED
DATE: 08/18/2020
PROJECT NO. 20034

DESIGNED BY: JL
DRAWN BY: JL
CHECKED BY: TB

SHEET NO. 11 OF 51

CENTRAL STREET ALIGNMENT



STA 101+43.22 CENTRAL STREET @
STA. 600+00.00 WATER STREET @ =

STA 104+00 CENTRAL STREET @
STA. 12+90.14 CONCORD STREET @ =

PROJECT: IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET

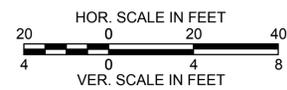
DESIGN SUBMISSION: 35% DESIGN

DRAWING TITLE: CONSTRUCTION PROFILES - 4

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

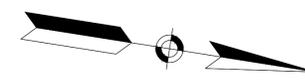
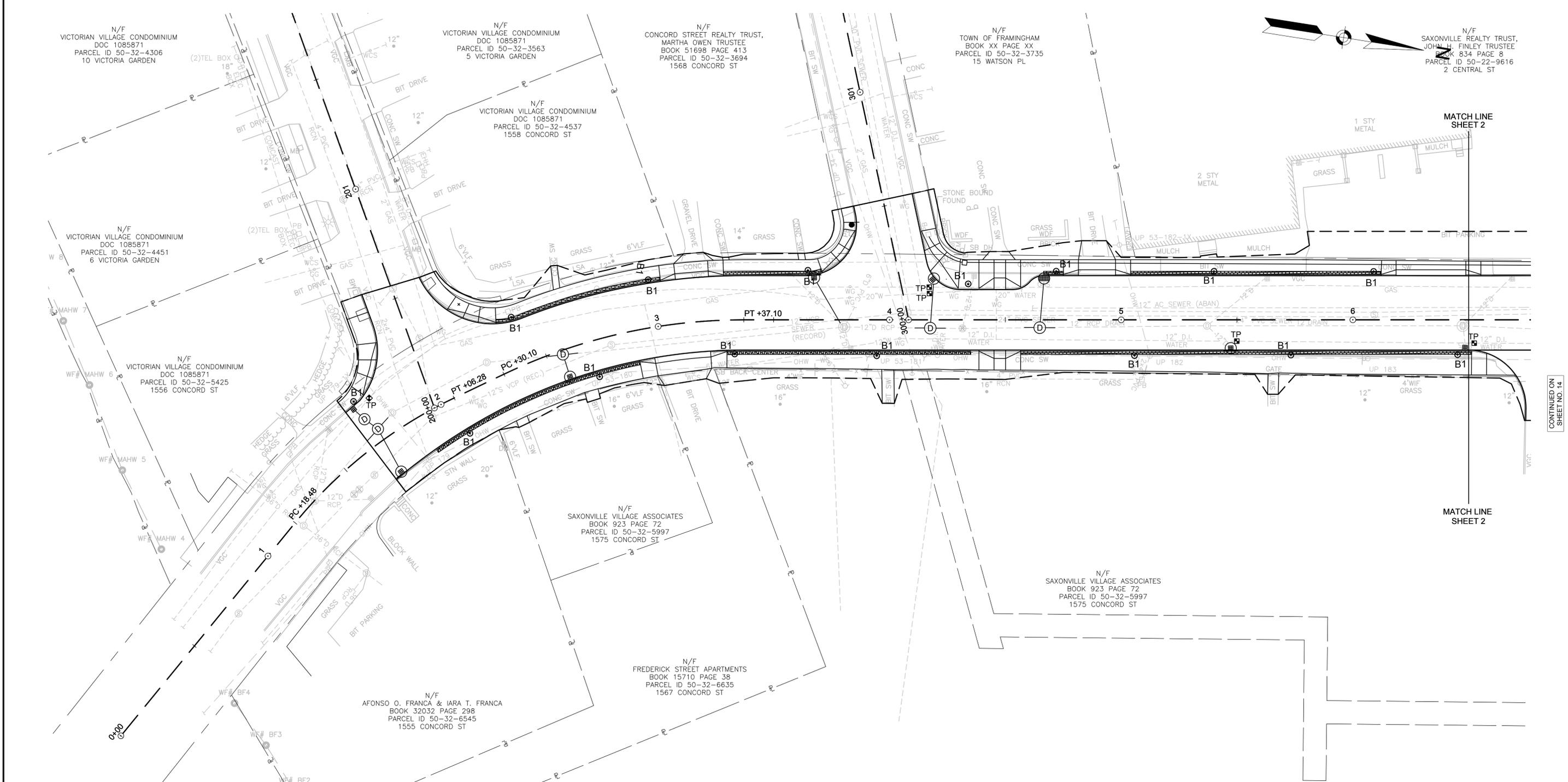
PREPARED BY: GREEN INTERNATIONAL AFFILIATES, INC.
Civil and Structural Engineers Westford, Massachusetts
(978) 923-0400
GreenIntl.com

SCALE: AS NOTED
DATE: 08/18/2020
PROJECT NO. 20034
DESIGNED BY: JL
DRAWN BY: JL
CHECKED BY: TB
SHEET NO. 12 OF 51



NO.	DATE	REVISIONS

CONTINUED ON SHEET NO. 11



CONTINUED ON SHEET NO. 14

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

DESIGN SUBMISSION: **35% DESIGN**

DRAWING TITLE: **LIGHTING PLANS - 1**

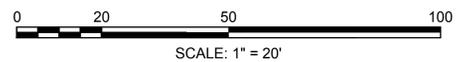
PREPARED FOR:
 **CITY OF FRAMINGHAM**
 DEPARTMENT OF PUBLIC WORKS
 110 WESTERN AVENUE
 FRAMINGHAM, MA 01702

PREPARED BY:
 **GREEN INTERNATIONAL AFFILIATES, INC.**
 Civil and Structural Engineers
 Westford, Massachusetts
 (978) 923-0400
 GreenIntl.com

SCALE: AS NOTED	DESIGNED BY: JL	SHEET NO. 13 OF 51
DATE: 08/18/2020	DRAWN BY: JL	
PROJECT NO. 20034	CHECKED BY: TB	

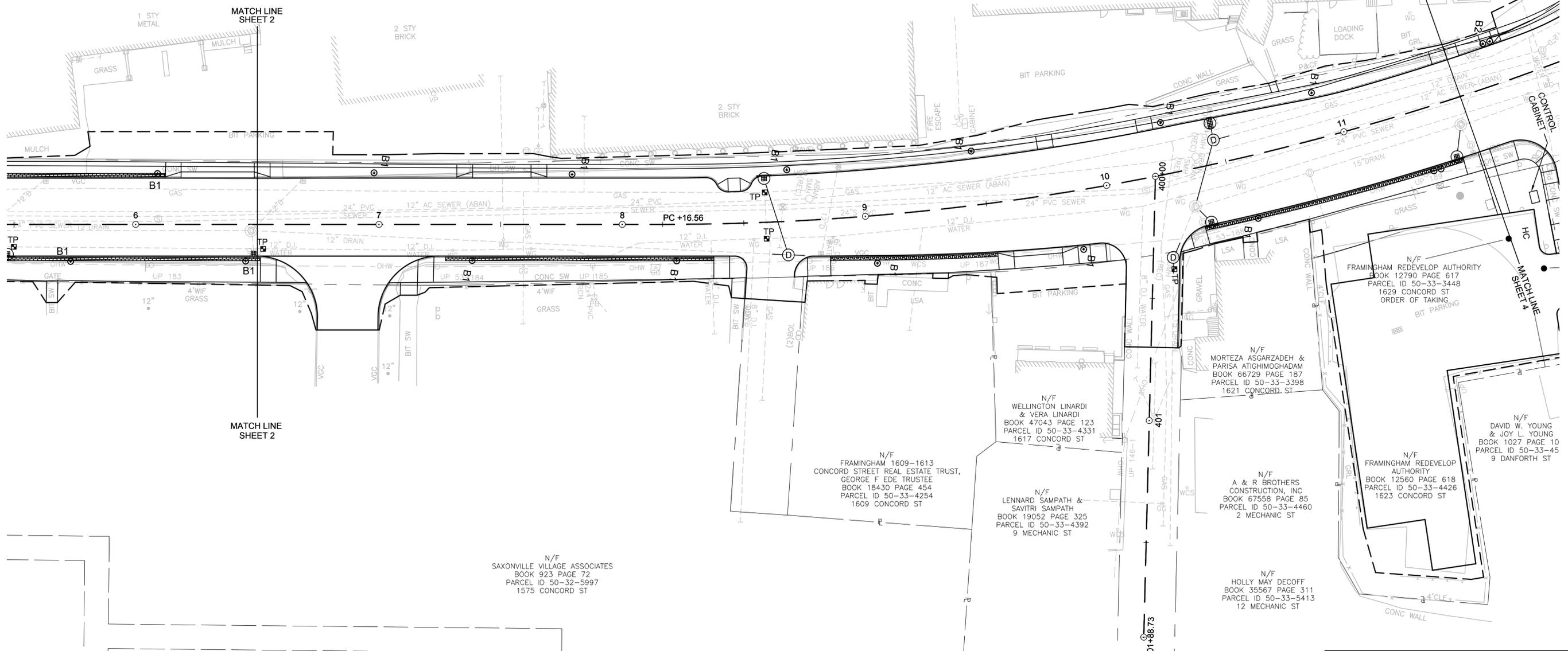
Subconsultant #1 Type
 Subconsultant #1 Name
 Subconsultant #2 Type
 Subconsultant #2 Name

NO.	DATE	REVISIONS
1		



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SAXONVILLE REALTY TRUST,
JOHN J. FINLEY TRUSTEE
BOOK 834 PAGE 8
PARCEL ID 50-22-9616
2 CENTRAL ST



CONTINUED ON
SHEET NO. 13

CONTINUED ON
SHEET NO. 15

PROJECT: **IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET**
 DESIGN SUBMISSION: **35% 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.**
 Civil and Structural Engineers (978) 923-0400
 Westford, Massachusetts GreenIntl.com

SCALE: AS NOTED
 DATE: 08/18/2020
 PROJECT NO. 20034

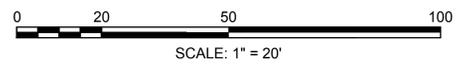
DESIGNED BY: JL
 DRAWN BY: JL
 CHECKED BY: TB

SHEET NO.
14 OF **51**

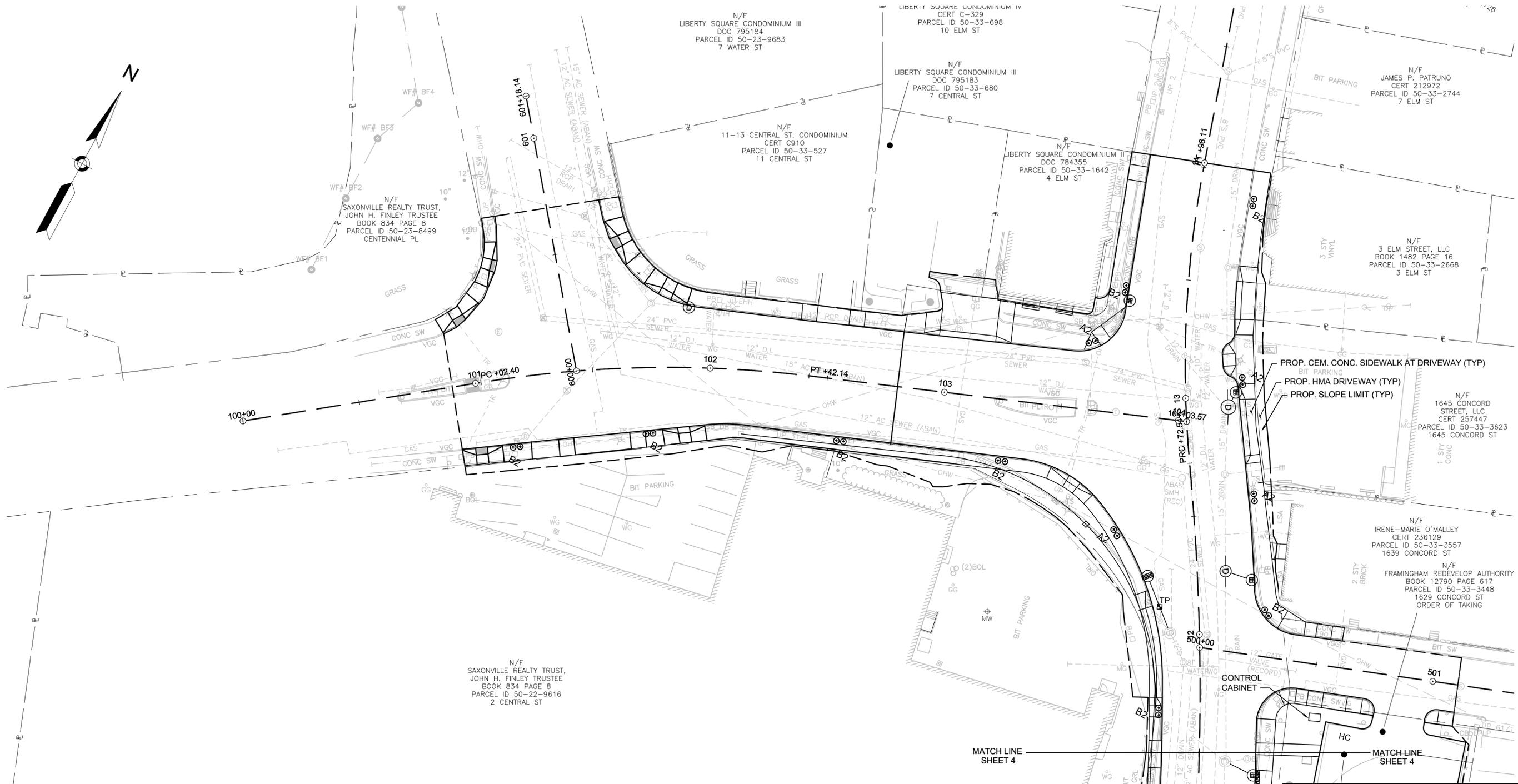
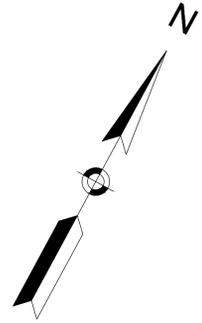
Subconsultant #1 Type
 Subconsultant #1 Name

Subconsultant #2 Type
 Subconsultant #2 Name

NO.	DATE	REVISIONS
1		

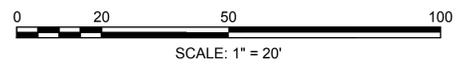


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*NOTE: UTILITY POLE ELEVATION TO BE 6" LOWER THAN EXISTING. COORDINATION WITH UTILITY COMPANIES REQUIRED.

CONTINUED ON SHEET NO. 7



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

DESIGN SUBMISSION: **35% 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.**
 Civil and Structural Engineers (978) 923-0400
 Westford, Massachusetts GreenIntl.com

SCALE: AS NOTED
 DATE: 08/18/2020
 PROJECT NO. 20034

DESIGNED BY: JL
 DRAWN BY: JL
 CHECKED BY: TB

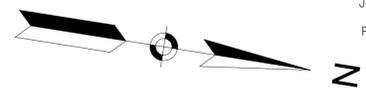
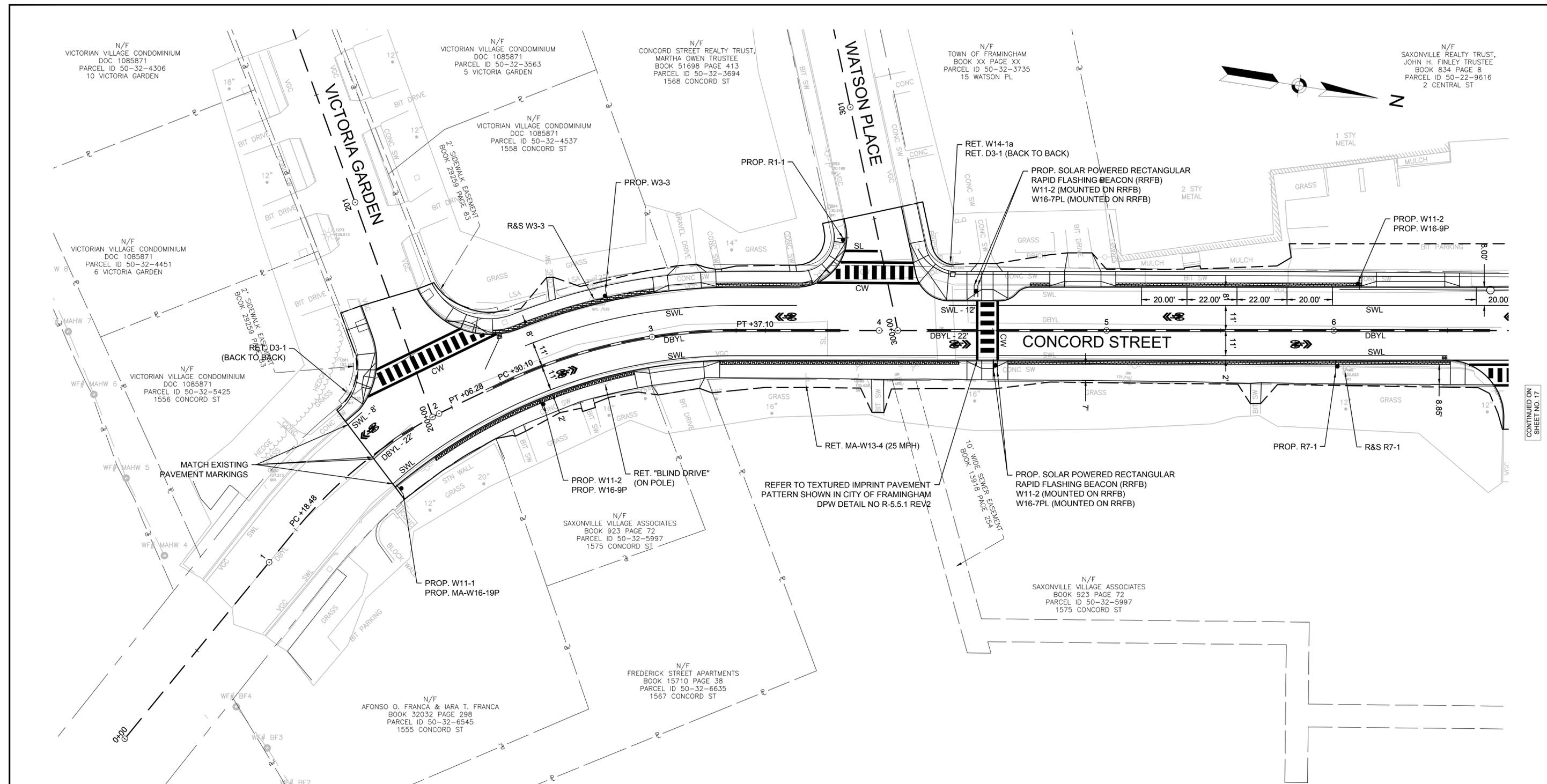
SHEET NO. **15** OF **51**

Subconsultant #1 Type
 Subconsultant #1 Name

Subconsultant #2 Type
 Subconsultant #2 Name

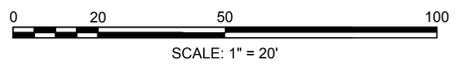
NO.	DATE	REVISIONS
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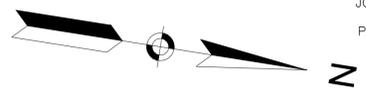
CONTINUED ON SHEET NO. 17

PROJECT: IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET		
DESIGN SUBMISSION: 35% 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. Civil and Structural Engineers (978) 923-0400 Westford, Massachusetts GreenIntl.com		
SCALE: AS NOTED	DESIGNED BY: YC	SHEET NO. 16 OF 51
DATE: 08/18/2020	DRAWN BY: YC	
PROJECT NO. 20034	CHECKED BY: JG	



NO.	DATE	REVISIONS

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SAXONVILLE REALTY TRUST,
JOHN H. FINLEY TRUSTEE
BOOK 834 PAGE 8
PARCEL ID 50-22-9616
2 CENTRAL ST

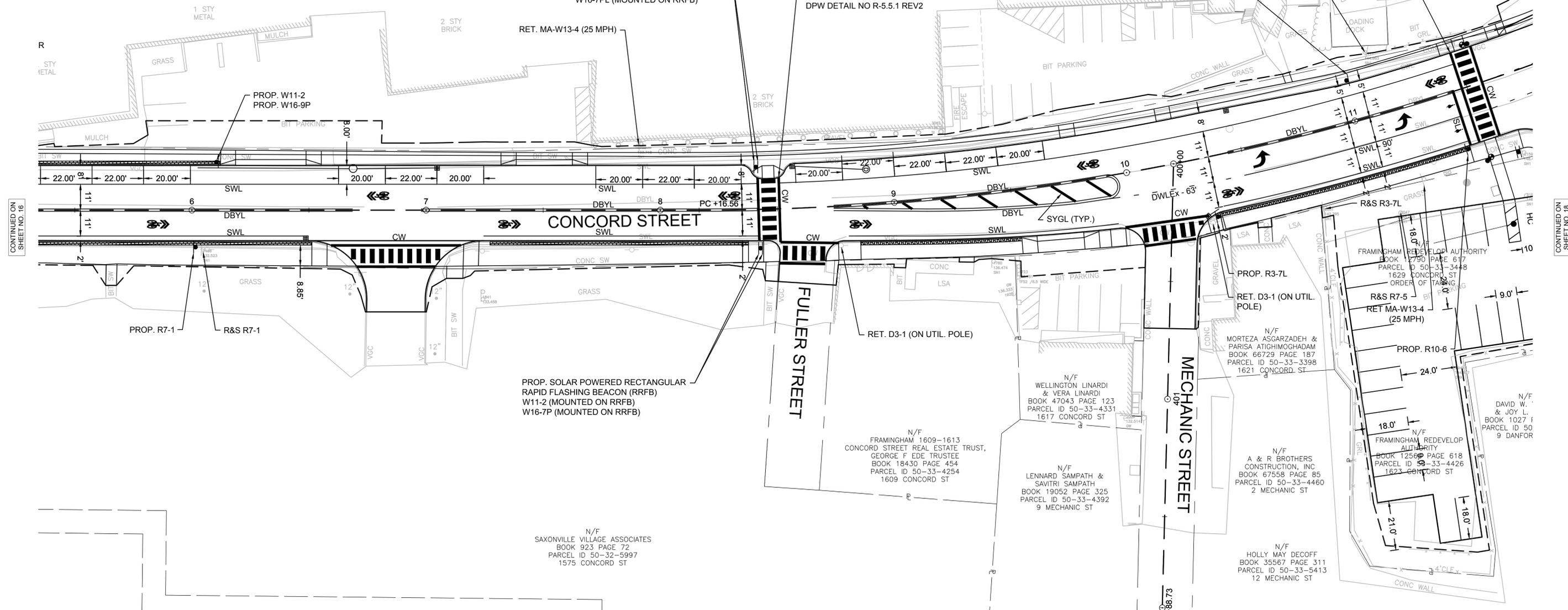
REFER TO TEXTURED IMPRINT PAVEMENT
PATTERN SHOWN IN CITY OF FRAMINGHAM
DPW DETAIL NO R-5.5.1 REV2

PROP. AC POWERED RECTANGULAR
RAPID FLASHING BEACON (RRFB)
W11-2 (MOUNTED ON RRFB)
W16-7PL (MOUNTED ON RRFB)

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

PROP. "NO LEFT TURN
8A TO 9A
3P TO 4P"

R&S "NO LEFT TURN
8A TO 9A
3P TO 4P"



CONTINUED ON
SHEET NO. 16

CONTINUED ON
SHEET NO. 18

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

DESIGN SUBMISSION: **35% DESIGN**

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

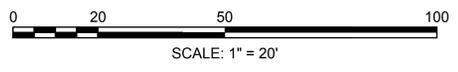
PREPARED FOR:
 **CITY OF FRAMINGHAM**
DEPARTMENT OF PUBLIC WORKS
110 WESTERN AVENUE
FRAMINGHAM, MA 01702

PREPARED BY:
 **GREEN INTERNATIONAL AFFILIATES, INC.**
Civil and Structural Engineers (978) 923-0400
Westford, Massachusetts GreenIntl.com

SCALE: AS NOTED
DATE: 08/18/2020
PROJECT NO. 20034

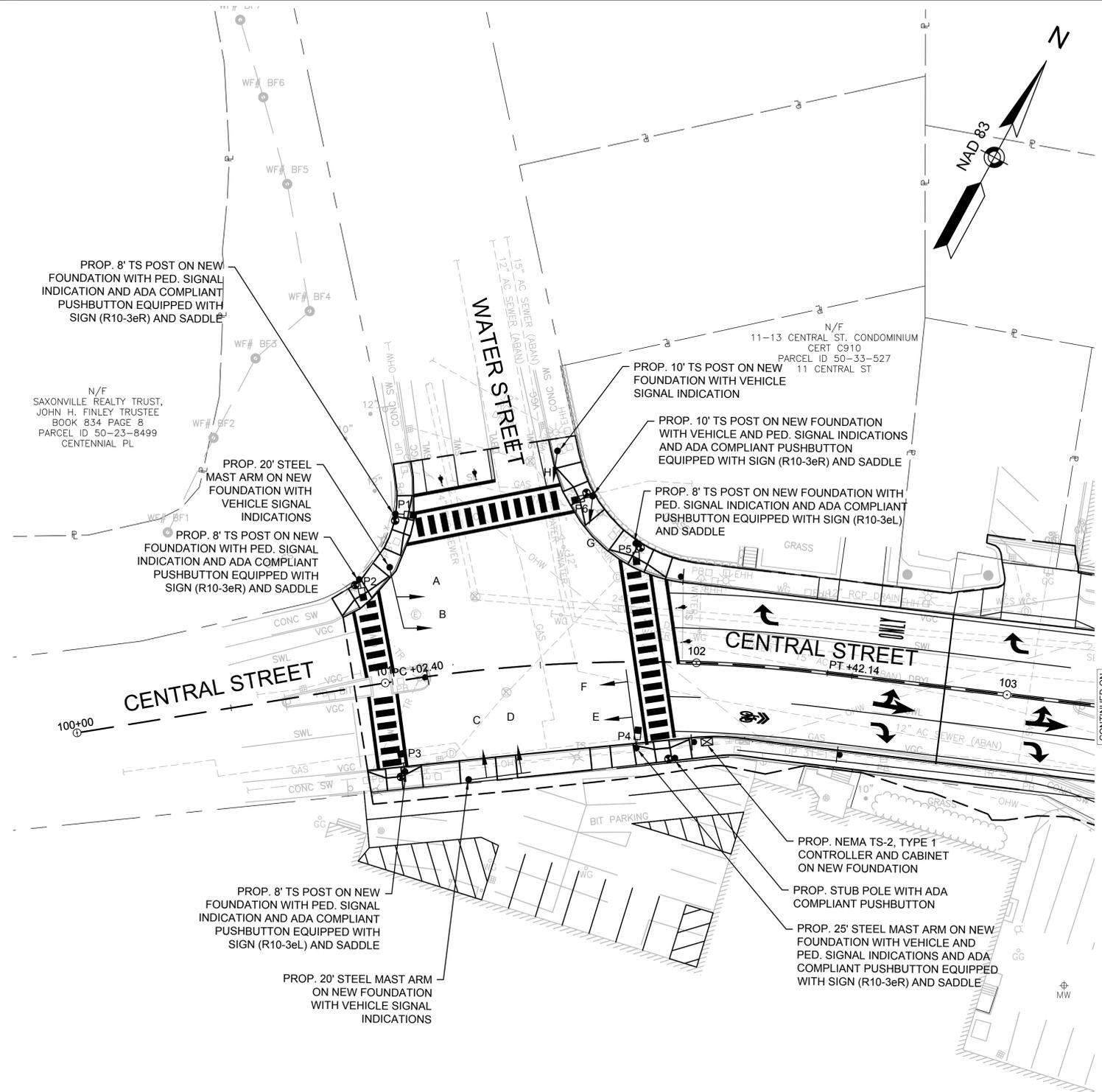
DESIGNED BY: YC
DRAWN BY: YC
CHECKED BY: JG

SHEET NO.
17 OF 51



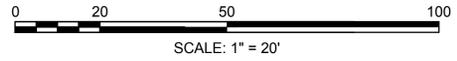
NO.	DATE	REVISIONS

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NOTES:

1. CONTRACTOR SHALL REMOVE AND DISPOSE ALL EXISTING TRAFFIC SIGNAL EQUIPMENT AS DIRECTED BY THE ENGINEER.
2. EXISTING SIGNAL SHALL BE KEPT OPERATIONAL UNTIL THE NEW SIGNAL IS OPERATIONAL AND TESTED.
3. SEE SHEETS 20-22 FOR ALL PAVEMENT MARKINGS AND SIGNS



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

DESIGN SUBMISSION: **35% DESIGN**

DRAWING TITLE: **TRAFFIC SIGNAL PLAN 1**

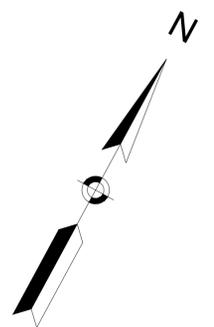
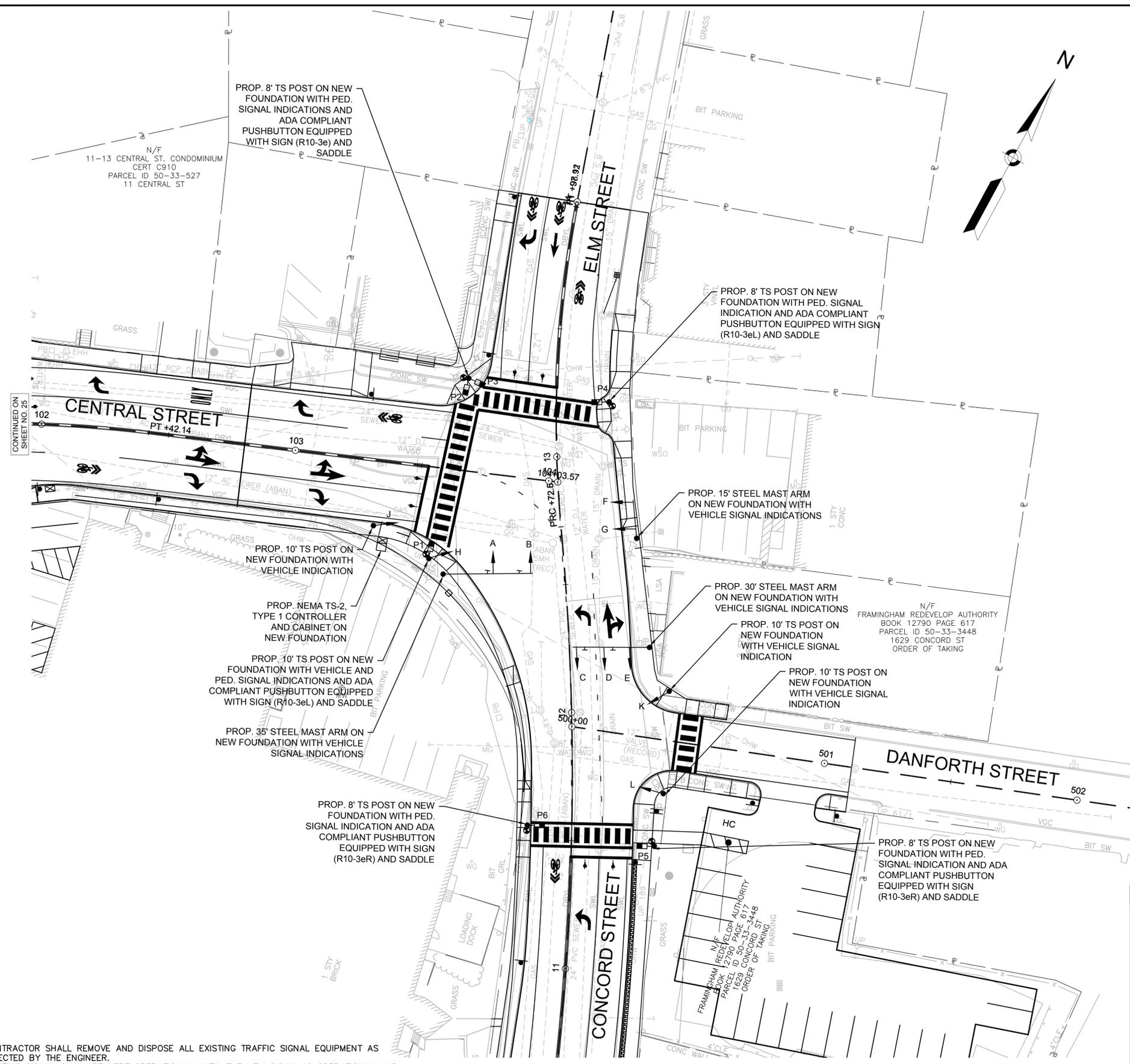
PREPARED FOR:
 **CITY OF FRAMINGHAM**
 DEPARTMENT OF PUBLIC WORKS
 110 WESTERN AVENUE
 FRAMINGHAM, MA 01702

PREPARED BY:
 **GREEN INTERNATIONAL AFFILIATES, INC.**
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 Westford, Massachusetts GreenIntl.com

SCALE: AS NOTED	DESIGNED BY: YC	SHEET NO. 19 OF 51
DATE: 08/18/2020	DRAWN BY: YC	
PROJECT NO. 20034	CHECKED BY: JG	

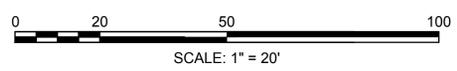
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NOTES:

1. CONTRACTOR SHALL REMOVE AND DISPOSE ALL EXISTING TRAFFIC SIGNAL EQUIPMENT AS DIRECTED BY THE ENGINEER.
2. EXISTING SIGNAL SHALL BE KEPT OPERATIONAL UNTIL THE NEW SIGNAL IS OPERATIONAL AND TESTED.
3. SEE SHEETS 20-22 FOR ALL PAVEMENT MARKINGS AND SIGNS



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

DESIGN SUBMISSION: **35% 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.**
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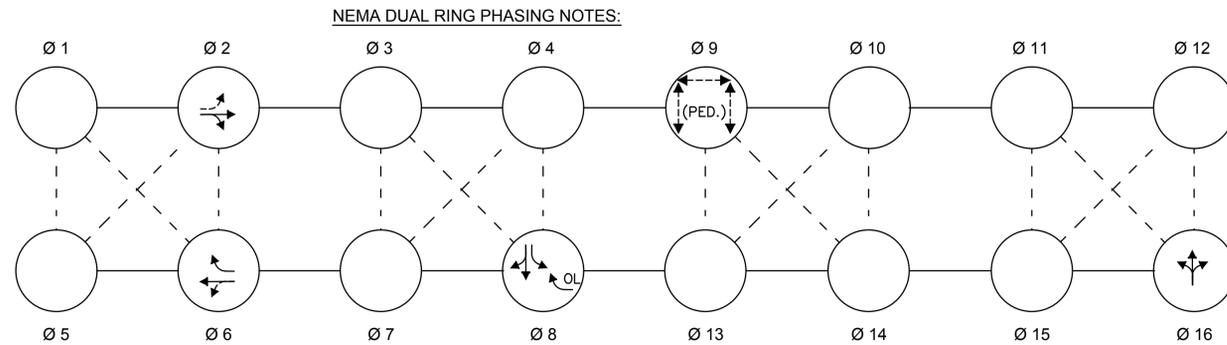
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SEQUENCE & TIMING FOR FULL ACTUATED CONTROL (COORDINATED) CENTRAL STREET AT WATER STREET			Ø 2		Ø 6		Ø 8			Ø 16			Ø 9			FLASHING OPERATION			
APPROACH	DIRECTION	HOUSINGS	1	2	3	4	5	6	7	8	9	7	8	9	10		11	12	
CENTRAL STREET	WB	A	R	R	R	G	Y	R	←	→	R	R	R	R	R	R	R	R	
CENTRAL STREET	WB	B	R	R	R	G	Y	R	R	R	R	R	R	R	R	R	R	R	
WATER STREET	SB	C,D	R	R	R	R	R	R	G	Y	R	R	R	R	R	R	R	R	
CENTRAL STREET	EB	E,F	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
FRAMED IN TIME DRIVEWAY	NB	G,H	R	R	R	R	R	R	R	R	R	G	Y	R	R	R	R	R	
PEDESTRIAN	ALL	P1-P6	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	W	FDW	DW	OUT	
TIMING IN SECONDS																			
MINIMUM GREEN (INITIAL)			8			8			8						4				
MAX GREEN 1	FREE		X			X			X						X				
MAX GREEN 2	COORDINATION PLAN 1&2		14			14			17						4				
VEHICLE EXTENSION			5			5			6						6				
YELLOW CLEARANCE				3			3			3					3				
RED CLEARANCE					3			3			3					2			
PED WALK INTERVAL															7	13		3	
RECALL				SOFT			SOFT			NONE			NONE					NONE	
DETECTION (MEMORY)				NON-LOCK			NON-LOCK			NON-LOCK			NON-LOCK					LOCK	
COORDINATION DATA			COORDINATION PHASE TIMING (SEC.)																
TIMING PLAN	CYCLE LENGTH (SEC.)	REF/OFFSET (SEC.)	Ø 2				Ø 6				Ø 8			Ø 16			Ø 9		
COORDINATION PLAN 1 M-F (6AM - 10AM) SAT (11AM - 2PM)	75	0	20				20				23			9			23		
COORDINATION PLAN 2 M-F (3PM - 7PM)	75	0	20				20				23			9			23		

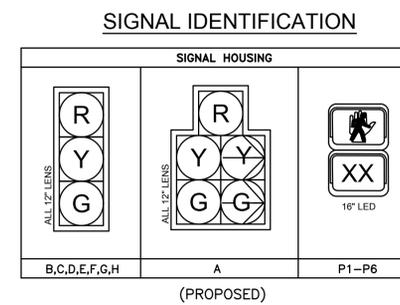
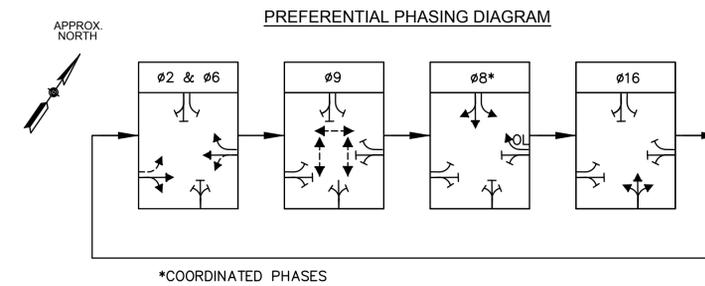
- NOTES:
- STANDARD NEMA CLEARANCES SHALL APPLY.
 - MAXIMUM GREEN 1 SHALL BE IN EFFECT DURING ALL TIMES EXCEPT AS NOTED BELOW.
 - MAXIMUM GREEN 2 SHALL BE IN EFFECT ON WEEKDAYS FROM 6:00AM TO 10:00AM AND FROM 3:00PM TO 7:00PM AND ON SATURDAYS FROM 11:00AM TO 2:00PM.



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

CENTRAL STREET AT WATER STREET MAJOR ITEMS LIST	
QUANTITY	ITEM
1	SERVICE CONNECTION (OVERHEAD)
1	MASTER SIGNAL CONTROLLER NEMA 8 PHASE TS-2 (TYPE-1), CAB. & FDN.
2	20 FT ORNAMENTAL, GALV. STEEL MAST ARM ASSEMBLY, ORNAMENTAL BASE & FDN
1	25 FT ORNAMENTAL, GALV. STEEL MAST ARM ASSEMBLY, ORNAMENTAL BASE & FDN
4	ORNAMENTAL TRAFFIC SIGNAL POLE AND BASE, 8 FT. W / FOUNDATION
2	ORNAMENTAL TRAFFIC SIGNAL POLE AND BASE, 10 FT. W / FOUNDATION
7	12 INCH 1 WAY 3-SECTION LED VEHICLE SIGNAL INDICATION
1	12 INCH 1 WAY 5-SECTION LED VEHICLE SIGNAL INDICATION
6	16 INCH LED PEDESTRIAN INDICATION WITH COUNTDOWN
6	PUSHBUTTON-INTEGRATED ACCESSIBLE PEDESTRIAN SIGNAL W/SIGN AND SADDLE
1	VIDEO DETECTION SYSTEM

PLUS ALL NECESSARY DUCT, CABLE, LABOR, MISCELLANEOUS MATERIAL AND EQUIPMENT TO COMPLETE THE INSTALLATION OF A FULLY OPERATIONAL SIGNAL SYSTEM AS INTENDED ON THESE PLANS



- NOTES:
- ALL VEHICLE AND PEDESTRIAN LENSES SHALL BE LED TYPE.
 - ALL VEHICLE SIGNAL HEADS SHALL BE 12 INCHES.
 - ALL HOUSINGS TO BE PROVIDED WITH TUNNEL VISORS AND 5-INCH NON-LOUVERED BACKPLATES WITH 3-INCH RETROREFLECTIVE BORDER.
 - ALL HOUSINGS TO BE FIXED MOUNTED.
 - ALL SIGNAL HEAD BACKPLATES SHALL BE NON-LOUVERED.

PROJECT: IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET

DESIGN SUBMISSION: 35% DESIGN

DRAWING TITLE: SEQUENCE & TIMING PLAN 1

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

PREPARED BY: GREEN INTERNATIONAL AFFILIATES, INC.
Civil and Structural Engineers (978) 923-0400
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SCALE: AS NOTED DESIGNED BY: JG

DATE: 08/18/2020 DRAWN BY: DP SHEET NO. 21 OF 51

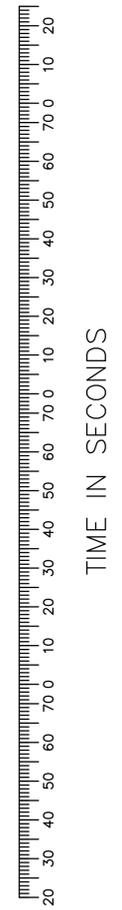
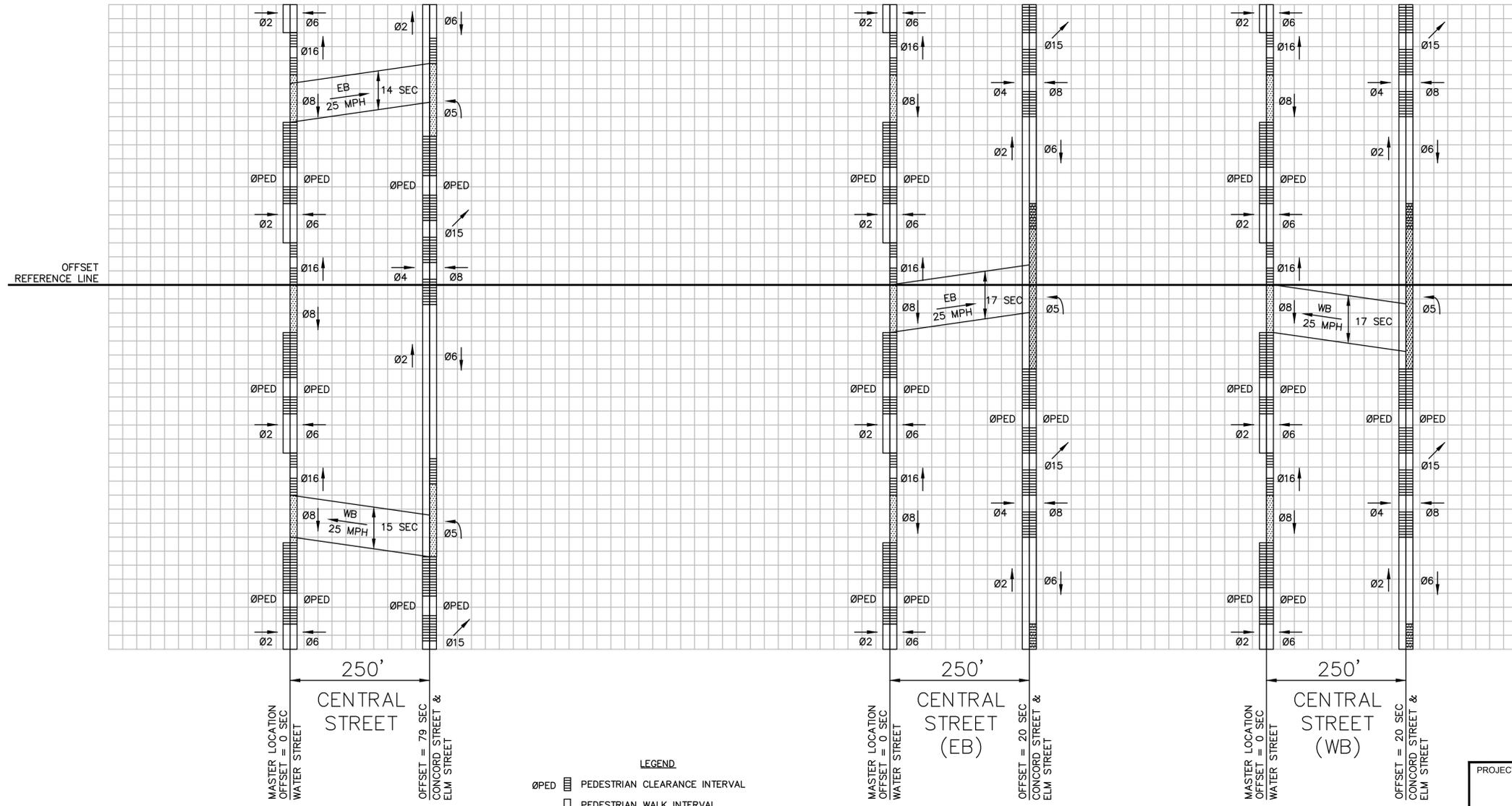
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CENTRAL STREET & CONCORD STREET
 75 SECOND CYCLE (COORDINATION PLAN 1)
 WEEKDAY: 6:00AM TO 10:00AM;
 SATURDAY: 11:00AM TO 2:00PM)

CENTRAL STREET & CONCORD STREET
 75 SECOND CYCLE (COORDINATION PLAN 2)
 WEEKDAY: 3:00PM TO 7:00PM)



- LEGEND**
- ØPED [hatched box] PEDESTRIAN CLEARANCE INTERVAL
 - ØPED [white box] PEDESTRIAN WALK INTERVAL
 - [hatched box] YELLOW/RED CLEARANCE INTERVAL
 - ØX [dotted box] GREEN TIME FOR COORDINATED PHASE
 - ØX [white box] GREEN TIME FOR NON-COORDINATED PHASE

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

DESIGN SUBMISSION: **35% DESIGN**

DRAWING TITLE: **TIME SPACE DIAGRAM**

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

PREPARED BY:
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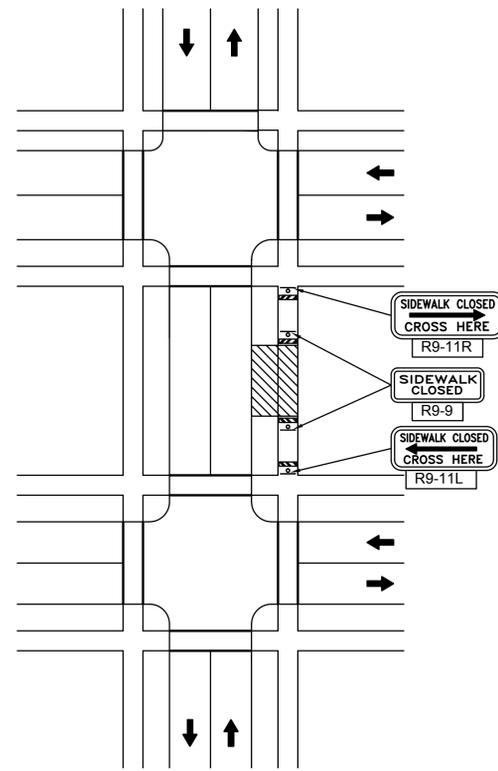
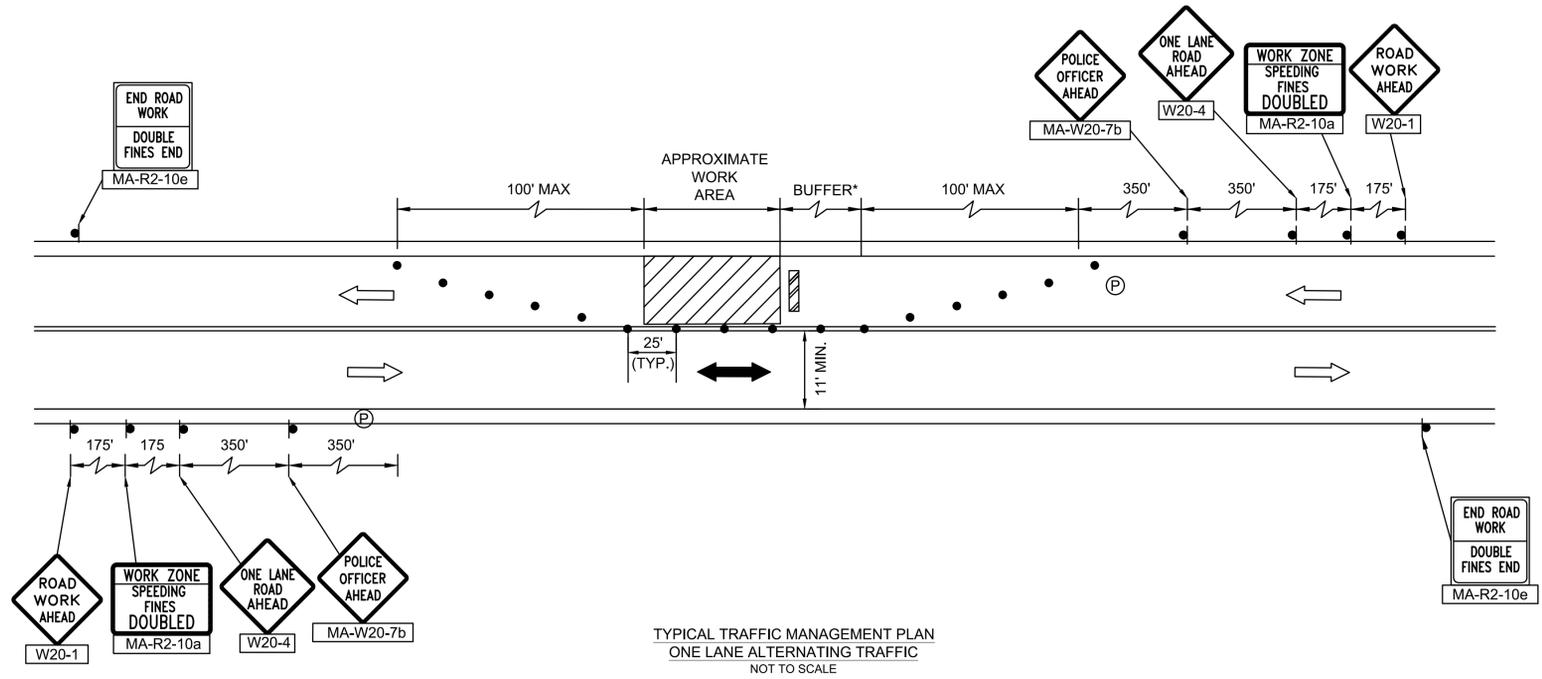
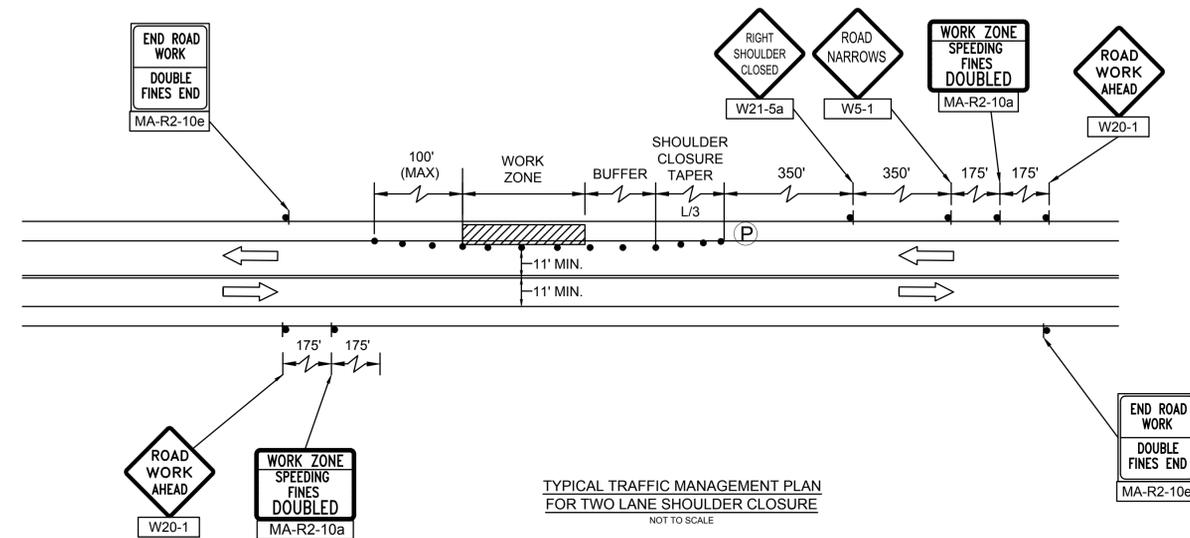
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NO.	DATE	REVISIONS

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TEMPORARY TRAFFIC CONTROL NOTES:

- MINIMUM LANE WIDTH OF 11 FEET SHALL BE MAINTAINED UNLESS OTHERWISE NOTED. MINIMUM LANE WIDTH TO BE MEASURED FROM THE EDGE OF THE DRUMS OR CONES (IF USED).
- THE CONTRACTOR SHALL COORDINATE APPROVAL OF ANY CHANGES TO THE TEMPORARY TRAFFIC CONTROL PLAN WITH THE CITY OF FRAMINGHAM PRIOR TO CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL ALSO NOTIFY THE CITY OF FRAMINGHAM THREE (3) WEEKS IN ADVANCE OF PLACING TEMPORARY TRAFFIC CONTROL SIGNS.
- THESE PLANS ARE NOT INTENDED TO LIMIT THE CONTRACTOR'S APPROACH TO SCHEDULE THE WORK BUT TO OUTLINE ONE WAY OF PROGRESSING. THE CONTRACTOR IS EXPECTED TO USE KNOWLEDGE AND EXPERIENCE TO PERFORM THE WORK IN THE MOST EFFICIENT AND SAFE MANNER IN COMPLIANCE WITH THE DRAWINGS AND SPECIFICATIONS.
- PLACE ALL SAFETY DEVICES AND CONSTRUCTION SIGNING BEFORE ACTUAL CONSTRUCTION WORK BEGINS.
- DISTANCES ARE A GUIDE AND MAY BE ADJUSTED BASED ON FIELD CONDITIONS WITH THE APPROVAL OF THE ENGINEER.
- WHEN EXISTING SIGNS ARE NO LONGER APPLICABLE THEY SHALL BE TEMPORARILY COVERED DURING CONSTRUCTION OR REMOVED AND RESET UPON COMPLETION OF CONSTRUCTION. THE COST SHALL BE INCIDENTAL TO THE CONTRACT.
- ALL SIGNS SHALL BE REFLECTORIZED, WITH REFLECTIVE SHEETING CONFORMING TO M9.30.0. ALL SIGN COLORS SHALL BE PER THE CONSTRUCTION SIGN SUMMARY TABLE AND CURRENT MUTCD.
- SIGNS AND SIGN SUPPORTS LOCATED ON OR NEAR THE TRAVELED WAY, CHANNELIZING DEVICES, BARRIERS, AND CRASH ATTENUATORS MUST PASS THE CRITERIA SET FORTH IN NCHRP REPORT 350, "RECOMMENDED PROCEDURES FOR THE SAFETY PERFORMANCE EVALUATION OF HIGHWAY FEATURES" AND/OR "MANUAL FOR ASSESSING SAFETY HARDWARE" (MASH).
- CONTRACTOR SHALL REMOVE ALL TRAFFIC CONTROL DEVICES IMMEDIATELY WHEN NO LONGER NEEDED.
- UNLESS OTHERWISE NOTED, ALL PAVEMENT MARKINGS, SIGNS AND OTHER TRAFFIC EQUIPMENT REMOVED OR DAMAGED AS A RESULT OF THE CONTRACTOR'S OPERATIONS SHALL BE REPLACED IN CONFORMANCE WITH THE CONTRACT DOCUMENTS.
- CONTRACTOR SHALL INSTALL, RENEW, AND MAINTAIN ALL TRAFFIC CONTROL DEVICES AS SHOWN ON THE DRAWINGS IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
- ACCESS/EGRESS TO ALL ABUTTERS SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION.
- CONTRACTOR SHALL MAINTAIN EMERGENCY PASSAGE AT ALL TIMES TO BUILDINGS WITHIN AND ADJACENT TO THE PROJECT LIMITS AS WELL AS A LARGER AREA IF AFFECTED BY CONSTRUCTION CONDITIONS. CONTRACTOR SHALL MAINTAIN 24 HOUR EMERGENCY VEHICLE ACCESS TO CONSTRUCTION AREAS.
- CONTRACTOR SHALL COORDINATE WITH ABUTTERS FOR THE PROPOSED WORK AND SHALL NOTIFY EACH ABUTTER AT LEAST 24 HOURS IN ADVANCE OF THE START OF THE WORK THAT WILL REQUIRE TEMPORARY CLOSURE OF ACCESS TO THEIR PROPERTY.
- THE CONTRACTOR SHALL COORDINATE THE WORK WITH ALL ABUTTING PROJECTS.
- ALL TEMPORARY TRAFFIC CONTROL WORK SHALL CONFORM TO THE LATEST EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) AND ALL REVISIONS, UNLESS SUPERCEDED BY THESE PLANS.
- THE FIRST FIVE (5) PLASTIC DRUMS OF A TAPER SHALL BE MOUNTED WITH SEQUENTIAL FLASHING LIGHTS.
- ALL SIGNS SHALL BE MOUNTED ON THEIR OWN STANDARD SIGN SUPPORTS.
- CONTRACTOR SHALL MAINTAIN ADA COMPLIANT ACCESS AT ALL TIMES INCLUDING PEDESTRIAN GUIDANCE SYSTEMS. ALL PEDESTRIAN DETOURS OR BYPASSES SHALL BE ADA COMPLIANT WITH PROPER BARRICADES, RAILINGS, RAMPS, SIGNS, ETC.



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

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

DESIGN SUBMISSION: **35% DESIGN**

DRAWING TITLE: **TRAFFIC MANAGEMENT PLAN 1**

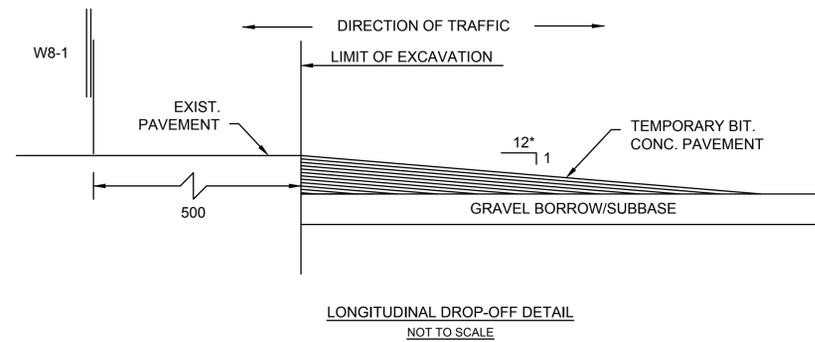
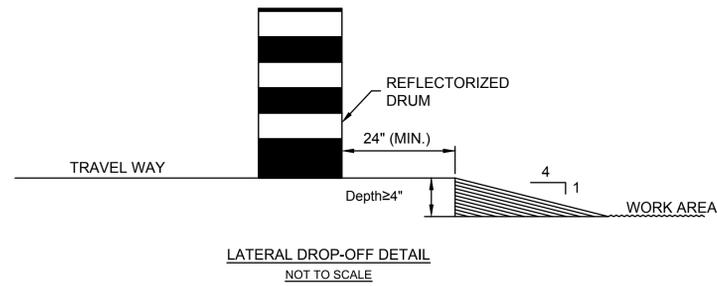
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110 WESTERN AVENUE
FRAMINGHAM, MA 01702

PREPARED BY: **GREEN INTERNATIONAL AFFILIATES, INC.**
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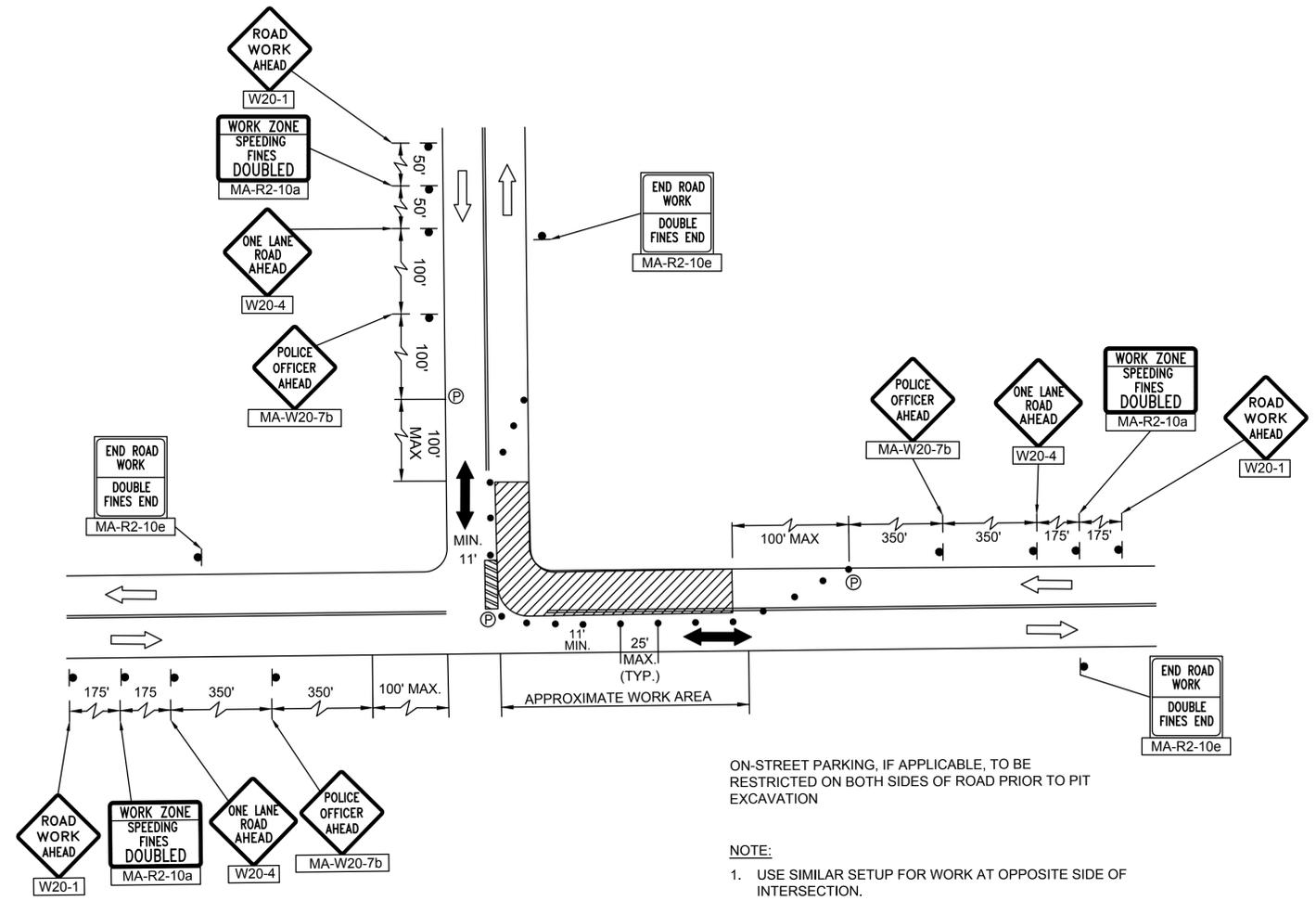
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* - INCREASE SLOPE RATIO FOR HIGHER SPEEDS



ON-STREET PARKING, IF APPLICABLE, TO BE RESTRICTED ON BOTH SIDES OF ROAD PRIOR TO PIT EXCAVATION

NOTE:
1. USE SIMILAR SETUP FOR WORK AT OPPOSITE SIDE OF INTERSECTION.

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

PROJECT: IMPROVEMENTS TO CENTRAL STREET AND CONCORD STREET

DESIGN SUBMISSION: 35% 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.
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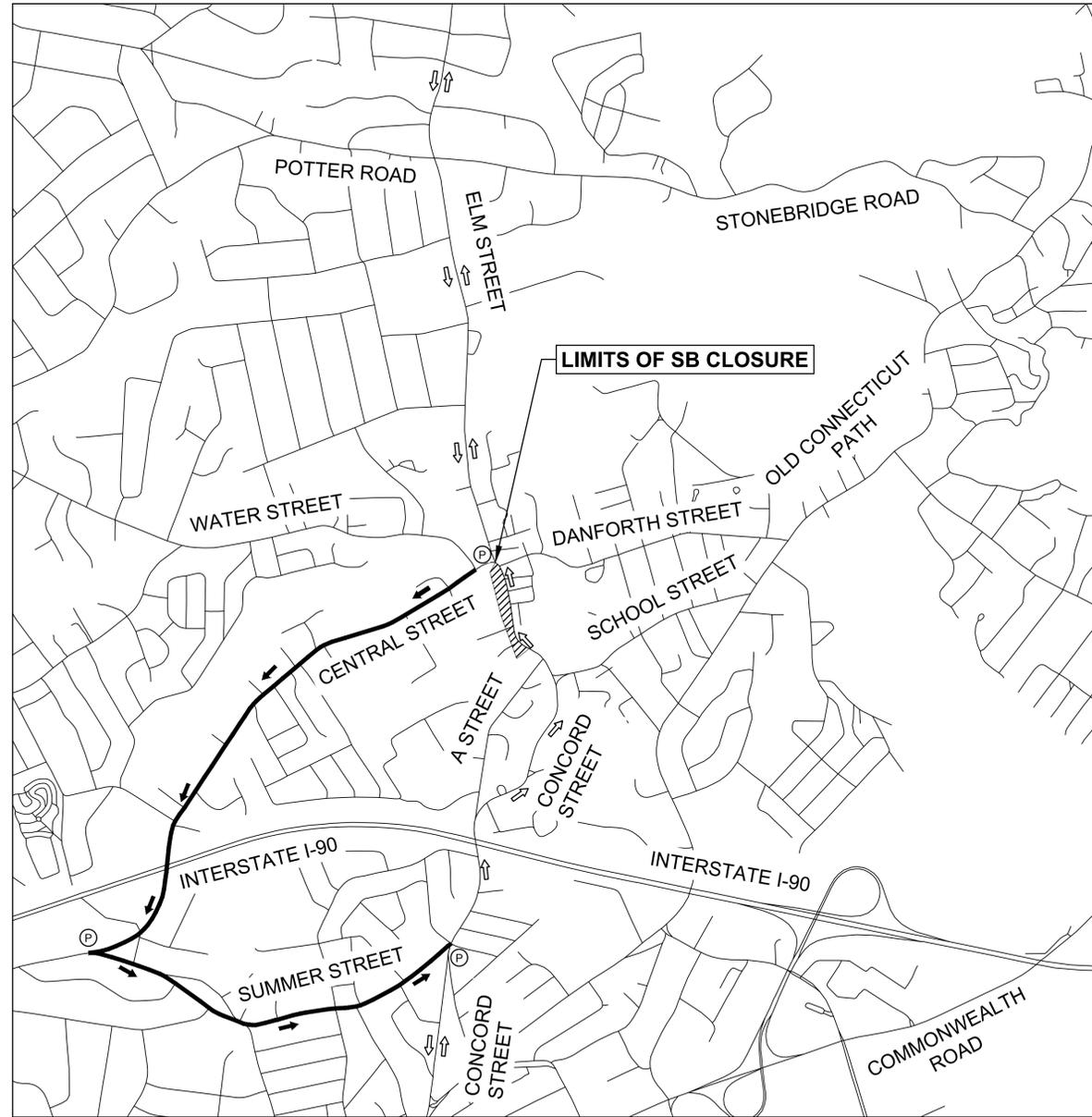
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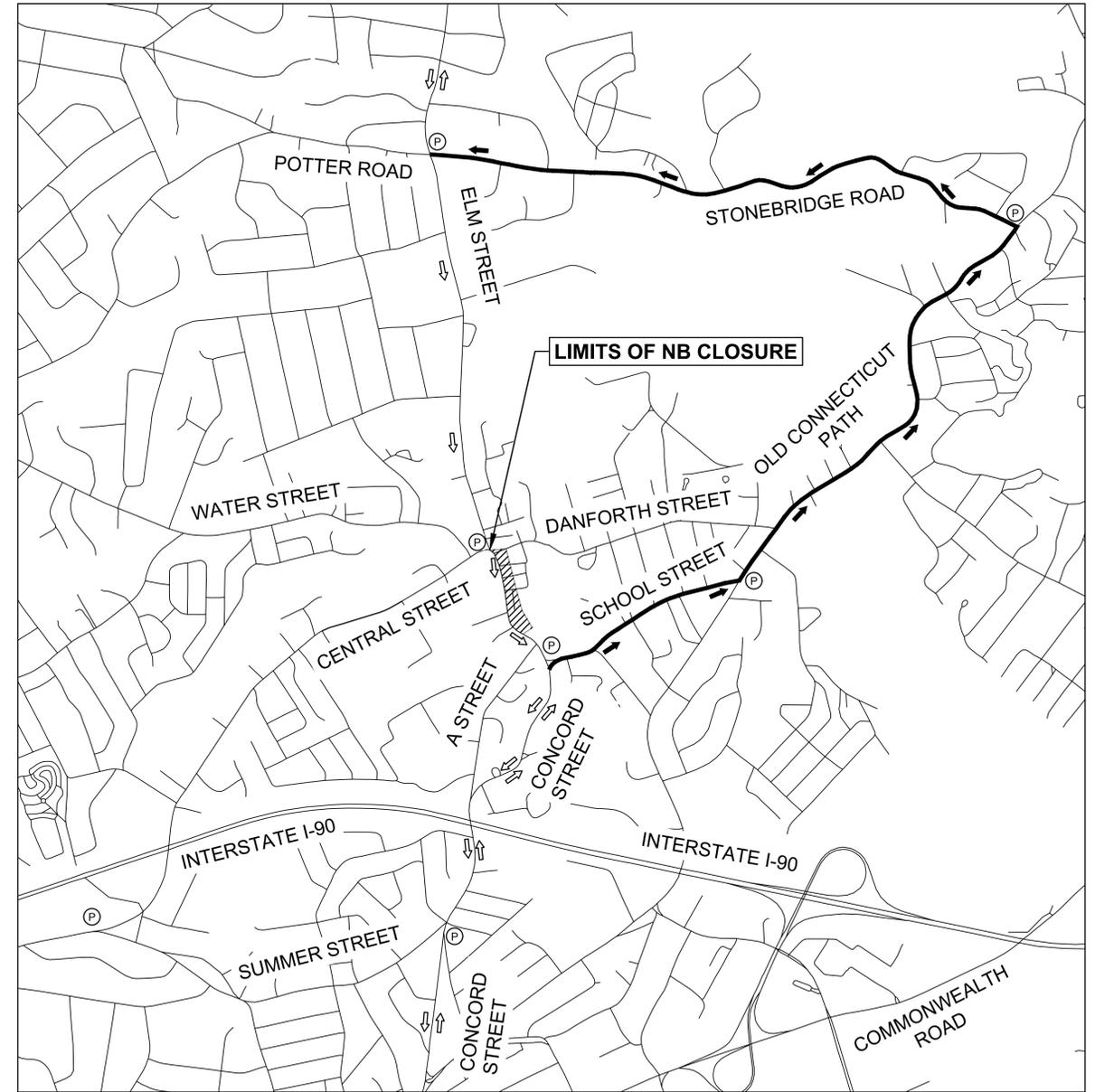
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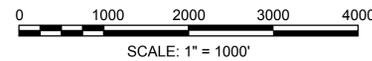
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MAP SOURCE: MASSGIS CONCORD STREET - SOUTHBOUND DETOUR



MAP SOURCE: MASSGIS CONCORD STREET - NORTHBOUND DETOUR



TRAFFIC DEVICE LEGEND

-  WORK ZONE
-  DIRECTION OF VEHICULAR TRAFFIC
-  DIRECTION OF DETOURED VEHICULAR TRAFFIC
-  POLICE OFFICER

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

DESIGN SUBMISSION: **35% DESIGN**

DRAWING TITLE: **DETOUR PLAN**

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

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